International Journal of Safety and Security Engineering
Vol. 16, No. 1, January, 2026, pp. 29-42
Journal homepage: http://iieta.org/journals/ijsse

Policy Capacity and Local Disaster Management Effectiveness: Assessing Institutional Performance in Rokan Hulu Regency, Indonesia

Zikri Alhadi[1*], Iip Permana[1], Roni Ekha Putera[2], Fitri Eriyanti[1], Rahmadani Yusran[1], Rizki Hidayat[3], Hidayatul Fajri[1], Ory Riandini[4]

[1] Department of Public Administration & Research Center for Policy, Governance, Development & Empowerment, Universitas Negeri Padang, Padang 25132, Indonesia
[2] Department of Public Administration, Faculty of Social and Political Science, Universitas Andalas, Padang 25163, Indonesia
[3] Research Center for Policy, Governance, Development & Empowerment, Universitas Negeri Padang, Padang 25132, Indonesia
[4] Padang City Government & Research Center for Policy, Governance, Development & Empowerment, Universitas Negeri Padang, Padang 25132, Indonesia

Corresponding Author Email: zikrialhadi@fis.unp.ac.id

https://doi.org/10.18280/ijsse.160103

Received: 15 November 2025
Revised: 31 December 2025
Accepted: 17 January 2026
Available online: 31 January 2026

Keywords:
policy capacity, disaster management effectiveness, institutional performance, disaster risk governance, subnational governance, sustainable development goals

ABSTRACT

Subnational disaster risk governance in decentralized settings often performs relatively well in emergency response but struggles to sustain evidence-based planning and long-term political commitment to disaster risk reduction (DRR). This study examines how policy capacity shapes the effectiveness of local disaster management in Rokan Hulu Regency, Indonesia. Using a sequential triangulation mixed-methods design, the study combines documentary analysis of the 2025–2029 Disaster Management Plan (DMP) and related planning and evaluation documents with a structured institutional self-assessment survey (n = 30) and semi-structured interviews and focus group discussions (FGDs) with key agencies. Quantitative data were analyzed using descriptive statistics, while qualitative materials were coded thematically and integrated through cross-source validation. The findings reveal an asymmetric capacity profile: operational capacity is comparatively strong, particularly in coordination routines, emergency logistics, and program implementation, whereas analytical capacity, including integrated data use, risk analysis, and monitoring and learning, and political capacity, especially budget anchoring, stakeholder coalitions, and legislative support, remain comparatively weak. These imbalances result in only a moderate overall Policy Effectiveness Index (PEI) score of 3.38/5. The study recommends institutionalizing an inter-agency data and policy analysis function, strengthening monitoring, evaluation, and feedback loops within the planning cycle, and securing multi-year DRR budget commitments through local regulations to support sustained capacity integration.

1. INTRODUCTION

Disaster risk governance is one of the most challenging areas of public administration, requiring cross-sector coordination, rapid decision-making under conditions of uncertainty, and the continuous integration of disaster risk reduction (DRR) into development planning at various levels of government [1-4]. Despite numerous Disaster Management Plans (DMPs) and decentralization reforms, policy effectiveness remains uneven: local institutions may comply with formal requirements yet achieve only limited reductions in vulnerability and risk exposure [5-7].

These gaps indicate institutional, not merely technical, issues. Drawing on the concept of policy capacity, this article analyzes how analytical, operational, and political capacities interact to shape disaster management effectiveness at the local community level, and why some policy frameworks do not translate into consistent, measurable outcomes [8-10].

Rokan Hulu Regency is a substantial case for scrutinizing the relationship between capacity and effectiveness. Located in northern Riau Province, it covers an area of 8,230 km^2 and has a population of 573,520 persons. The region's biogeophysical conditions, characterized primarily by watershed and peatland ecosystems, rendered it highly vulnerable to hydrometeorological hazards, including floods, landslides, and forest or land fires.

To reduce these risks, the local government established its Disaster Management Plan for Rokan Hulu 2025–2029, consistent with the National Disaster Management Master Plan (NDMMP) 2020–2044. The Disaster Management Plan has three main objectives:

1. Strengthening institutional coordination and governance capacity,
2. Enhancing community-based disaster preparedness, and
3. Developing resilient infrastructure and ecosystems.

These goals are understandable and appropriate, but remain constrained by institutional and budgetary realities. The Disaster Management Plan of Rokan Hulu even recognizes its chronically under-skilled technical workforce, dispersed data, and reliance on centrally provided transfers as impeding the delivery of long-term resilience.

These restrictions reveal a more profound problem of an imbalance in policy capacity: operational capacity (for implementing emergency response) is often strong, whereas analytical and political capacities are weak [11-13]. This asymmetry leads to short-term reactivity and long-term ineffectiveness—a pattern characteristic of disaster governance systems that are primarily prompted by emergencies rather than preventive planning [14-16].

Empirical Issues for Local Disaster Response

The Disaster Management Plan of Rokan Hulu 2025–2029 and the Disaster Risk Assessment (DRA) of Rokan Hulu 2023—2027 highlight several recurring governance and capacity issues. Policy capacity can be further described along three dimensions: analytical, operational, and political [9, 10, 17, 18]. The explanation can be seen in the following Table 1.

Table 1. Empirical challenges in local disaster management in Rokan Hulu Regency

Dimension of Policy Capacity	Empirical Evidence from Disaster Management Plan / Field Observation	Observed Effects on Policy Effectiveness	Analytical Interpretation
Analytical capacity	- Absence of integrated data between RDMA, Community-based surveillance (CBS), and sectoral agencies. - Limited technical staff for Geographic Information System (GIS) based hazard analysis. - Risk assessment updates are irregular (last full update in 2023).	Poor prioritization of interventions; planning reactive rather than anticipatory.	Weak analytical capacity limits evidence-based policymaking and undermines learning.
Operational capacity	- RDMA is capable of mobilizing logistics and coordinating emergency response. - Community drills were conducted, but coverage is uneven. - Coordination during recovery phases is often fragmented.	High responsiveness in crisis, but low efficiency in recovery and prevention.	Operational capacity is strong during an emergency, weak during planning and rehabilitation.
Political capacity	- Funding is mainly dependent on central government allocations. - Disaster risk reduction (DRR) agenda is rarely prioritized in local budget debates. - Inter-agency coordination based on ad hoc relationships.	Policy continuity was disrupted by leadership turnover, and there was limited local ownership of the DRR agenda.	Weak political capacity constrains sustainability and cross-sectoral legitimacy.
Cross-cutting issues	- Lack of standardized performance indicators for DRR. - Coordination mechanisms not institutionalized. - Limited culture of learning or evaluation.	Monitoring remains descriptive; adaptive improvement is absent.	Points to systemic deficit in integrated policy learning and reflexivity.

Note: Regional Disaster Management Agency (RDMA); Disaster risk reduction (DRR).
Source: Author's synthesis based on Disaster Management Plan of Rokan Hulu 2025–2029, Disaster Risk Assessment (DRA) of Rokan Hulu 2023–2027, and stakeholder interviews (2024).

Analytical Perspective: Policy Capacity and Effectiveness

The above empirical facts show that disaster institutional performance cannot be judged solely by the formal structures, mechanisms, and compliance with laws. It needs to be analyzed in terms of capacity and effectiveness: that is, how effectively public actors can mobilize analytic knowledge, operational capabilities, and political legitimacy in support of policy objectives [19-21].

The policy capacity framework is advantageous in this regard, as it acknowledges that capacity is multifaceted within complex governance systems.

a. Analytical capacity is comprised of technical expertise as well as cognitive ability to define problems, analyze data, and design policies.
b. Operational capacity represents the management and administrative resources needed to translate, monitor, and revise programmes.
c. Political capacity revolves around maintaining support from interested parties, forming alliances, and obtaining legitimacy for decisions [17].

In a decentralized setting such as Indonesia, these capacities are interlinked. Local governments could, for example, have high operational capacity (i.e., they perform well during crises) but low political and analytical capacity (e.g., weak data use, unstable commitment). These asymmetries help explain why so much regional policy appears administratively performant but strategically ineffective.

Public policy effectiveness is defined as the extent to which a policy achieves its anticipated outcomes or costs [22-24]. In disaster response, this includes both outcome-level measures (e.g., exposure to hazard mitigated; early warning systems versus other previous practices) and process-level measures (e.g., coordination of all stakeholders; learning loops) [25-28]. The relationship between capacity and effectiveness can be illustrated conceptually as:

a. Strong analytical capability → better evidence-based decision making and prioritization.

b. High operating schedules → optimize program delivery and logistics coordination.
c. Political capacity → legitimacy, resource, and sustainability.

If these three elements function well, policy effectiveness will increase through increased consistency, learning, and adaptation. Conversely, if one dimension is weak (in part due to strong operations but weak analytics), it may produce short-term outcomes through initiatives, but may not yield sustainable impact. A similar pattern can be observed in disaster management performance in Rokan Hulu, where a sustained reduction in disaster vulnerability did not correspond to a strong emergency response.

Emerging Theoretical Problem

The above findings highlight an analytical gap in how local governments understand and implement disaster policies. The Disaster Management Plan of Rokan Hulu 2025–2029 is predominantly a tool for measuring success through administrative achievements such as completed plans, numerous training activities, and disbursed funds rather than through assessments of institutional learning and resilience outcomes. This "input–output" bias reflects weak analytical and political capacities, including a lack of reflexivity, which are essential for adaptive governance [29-31].

For policy studies, Rokan Hulu offers an informative case of what Wu et al. [32] refer to as a capacity–effectiveness mismatch, that is, when there is a high degree of procedural compliance alongside low levels of performance. The problem is not the absence of a plan, but the insufficient capacity to translate policy into ongoing collective action [32-35].

Therefore, the analytical purpose of this study is 'to assess how differences in analytical, operational, and political capacities determine local disaster policy effectiveness in Rokan Hulu Regency'. It also aims to make a theoretical contribution to the broader discussion of policy capacity as a determinant of successful policies in decentralized systems.

Analytical Gaps in Design and Implementation of Policy Measures

The Disaster Management Plan of Rokan Hulu 2025-2039 is the result of a well-defined monument for disaster management planning, but its application was found lacking in analysis and institutionalization. These discrepancies reveal a mismatch between the rational policy capacity prescribed in planning and the actual policy capacity that unfolds during implementation [36-38].

At the analytical level, the absence of an integrated risk information system impedes evidence-based policy [39, 40]. The Disaster Management Plan for Rokan Hulu is dominated by descriptive hazard mapping, without a spatial–economic assessment of risk. As a result, mitigation priorities are based primarily on administrative convenience rather than vulnerability. Population exposure, infrastructure at risk, and socioeconomic sensitivity data are not consistently combined, preventing the government from conducting cost–benefit analyses for prevention investments [41-43].

At the tactical level, the Regional Disaster Management Agency (RDMA) of Rokan Hulu is skilled at immediate logistics and mass action but disorganized in monitoring rehabilitation. There is more of a 'project logic' than a 'policy cycle logic' in implementation [32], such that, once projects end, lessons are rarely documented and used iteratively to learn.

Politically, local-level commitment to DRR fluctuates with shorter-term changes in leadership. This makes it difficult to sustain discussions on policy issues emphasized by local parliamentary policymakers, such as infrastructure and the economy, and even more so for DRR programs, which are considered secondary expenditure commitments. The Disaster Management Plan action plans are seldom considered in the Regional Medium-Term Development Plan or in annual budgeting, indicating limited political capacity and low institutionalization of DRR within policy processes.

Overall, these two gaps suggest the coexistence of an enduring capacity–effectiveness paradox: Rokan Hulu's organizations possess the capacity to produce technically sound plans but struggle to realize their policy outputs. This dilemma is not specific to Rokan Hulu but is symptomatic of a widespread challenge surrounding decentralized policy structures that are fragmented along analytical, operational, and political axes.

Research Problem and Objectives

Given these shortfalls in analytical and institutional capacity, the central problem this study addresses is: How does policy capacity—analytical, operational, and political—vary, and what are the consequences of such variation for local disaster management policy effectiveness in Rokan Hulu?

Three related research questions are derived from this line of inquiry:

a. To evaluate the existing state of analytical, operational, and political capability for disaster management institutions in Rokan Hulu.
b. To assess the implications of these capabilities for realising DRR outcomes with the Disaster Management Plan of Rokan Hulu 2025–2029.
c. To find out strategic priorities for enhancing institutional performance and policy learning towards more effective and sustainable local disaster governance.
d. These goals are designed to push past just descriptive evaluations of disaster programs, and toward a more conceptual understanding of why some policies work—or not—given a particular institutional environment.

Policy Capacity–Effectiveness Problem Matrix

To structure the empirical diagnosis, the study uses a policy capacity–effectiveness problem matrix (Table 2) to map observed capacity gaps onto effectiveness constraints. The detailed operationalization of indicators and the evidence base used to populate the matrix are explained in the Methods and reported in the Results section. The explanation can be seen in Table 2.

The problem matrix indicates that effectiveness constraints are unevenly distributed across capacity dimensions: operational routines may function adequately, whereas analytical learning and political support remain fragile. This implies that improving local disaster governance requires capacity integration, not isolated technical fixes.

a. From compliance to performance: Success is often calibrated in terms of adherence to procedures (number and quality of reports produced, number of activities completed, or spending targets achieved) by local government. However, policy performance requires outcome-based evaluation, which is linked to risk reduction and increased resilience.
b. From individual to systemic capacity: Training programs have not strengthened institutional learning capacity. Systemic barriers still exist (e.g., fixed budget lines, siloed coordination). Real capacity building is

about more than individual skills; it also requires attention to institutional and political structures that support the adaptive management of ecosystems.

c. From short-term task performance to long-term learning: The main aim of most disaster programs supported in Rokan Hulu is rapid response. But effectiveness also depends on the extent to which institutions learn from each incident and translate those lessons into policy improvements. This is consistent with the view that policy learning is a bedrock of effectiveness.

d. From centralized to distributed authority: There is a formal decentralization of DRR, but fiscal and political control over DRR policy stays concentrated. The building of local political capacity — whether through the establishment of cross-sectoral forums for inclusive governance, broad access by communities to the political process and decisions through support for participatory budgeting, or public accountability — has the potential to enhance both legitimation and responsiveness.

Table 2. Policy capacity–effectiveness problem matrix in Rokan Hulu Regency

Dimension of Policy Capacity	Core Concept	Empirical Problems	Impact on Policy Effectiveness	Indicative Measurement / Indicator
Analytical capacity	Ability to generate, interpret, and use information for policy design and learning [32].	- Limited integration of hazard, exposure, and socioeconomic data. - Lack of policy analysis staff trained in Geographic Information Systems and risk modeling. - Risk maps are outdated and underutilized in decision-making.	Poor targeting of mitigation priorities; reactive planning.	- Frequency of data updates. - Number of analytical staff. - Use of evidence in policy documents.
Operational capacity	Managerial and administrative competence to execute and coordinate programs [32].	- Fragmented coordination among RDMA, the Regional Development Planning Agency, and line agencies. - Inconsistent Standard Operating Procedures (SOPs) for post-disaster recovery. - Weak monitoring and evaluation framework.	Implementation delays, inefficiency in response and recovery, and lack of policy learning.	- Standard Operating Procedure (SOP) compliance rate. - Inter-agency coordination index. - Timeliness of response.
Political capacity	Ability to mobilize political support, legitimacy, and resources for policy continuity [44].	- Disaster management is not prioritized in regional budget debates. - No cross-party consensus on DRR funding. - Leadership turnover disrupts policy continuity.	Policy instability, underfunded programs, and weak legitimacy of the DRR agenda.	- DRR budget share. - Frequency of coordination meetings. - Existence of DRR regulations.
Cross-dimensional interaction	Synergistic integration among analytical, operational, and political dimensions [45].	- No integrated performance indicators linking capacity and outcomes. - Absence of feedback loops between policy evaluation and redesign.	Systemic inefficiency and low institutional learning.	- Existence of an integrated evaluation system. - Iteration frequency of Disaster Management Plan (DMP) review.

Note: Disaster Management Plan; Regional Disaster Management Agency (RDMA); Disaster risk reduction (DRR).
Source: Author's synthesis from the Disaster Management Plan of Rokan Hulu 2025–2029, the Disaster Risk Assessment (DRA) of Rokan Hulu 2023–2027, and interviews with local institutions (2024).

This research begins with a central question: why is disaster management in a decentralized context often ineffective despite the existence of formal structures and legal mandates at the local level? The study argues that the key problem lies in an imbalance in policy capacity: relatively strong instrumental/operational capacity but weak analytical and political capacity, creating a bottleneck to policy performance. Therefore, improvements cannot be achieved through technical training or organizational restructuring; instead, strengthening analytical reflexivity and political coherence within the local governance system is necessary.

The significance of this research is twofold. Empirically, this study maps policy capacity in Rokan Hulu, identifying the dimensions that most constrain effectiveness and the relationships among them. Theoretically, this research strengthens the link between policy capacity and policy effectiveness in decentralized disaster governance, with lessons relevant for other subnational governments in Indonesia and the ASEAN region. By integrating an evaluative framework, policy capacity is positioned not merely as a managerial issue but as a key factor in policy performance and resilience.

2. LITERATURE REVIEW

From Policy Capacity to Policy Effectiveness

Policy effectiveness refers to the extent to which policy goals are achieved and valued by stakeholders, including goal attainment, implementation efficiency, perceived responsiveness, and sustained outcomes [9, 46-48]. In this study, effectiveness is treated as an outcome that depends on institutions' ability to translate formal plans into practice; Table 3 summarizes the expected linkages between analytical, operational, and political capacities and the components of policy effectiveness. More detailed information can be seen in Table 3.

In essence, policy capacity acts as the "engine" of policy effectiveness, and without analytical rigor, operational competence, and political commitment, even well-designed policies risk stagnation [49-51]. This conceptualization moves beyond the simplistic notion of capacity building as training or

resource allocation, emphasizing capacity governance instead. These institutional processes allow governments to continuously develop, deploy, and adapt their capacities in response to policy challenges [12, 32, 44].

Table 3. Policy capacity to policy effectiveness

Analytical Linkage	Explanation
Policy capacity → Policy effectiveness	Higher levels of analytical, operational, and political capacity improve problem definition, policy design, and the coherence of implementation.
Capacity deficits → Implementation gaps	When one or more capacity dimensions are weak, policy effectiveness declines, leading to delayed outcomes or unintended effects.
Capacity alignment → Sustainable outcomes	The balance and synergy among analytical, operational, and political capacities foster learning and adaptive improvement, sustaining effectiveness over time.

Applying the Policy Capacity Conceptual Framework to Disaster Management

Disaster management offers a particularly revealing domain for applying policy capacity theory because it involves high uncertainty, cross-sectoral coordination, and urgent decision-making [52, 53]. Governments must analyze risks, manage operations, and sustain public trust simultaneously—demands that correspond closely to the three capacity dimensions [10, 11].

In Indonesia's decentralized system, disaster management has become a policy stress test for local administrations. Local governments are legally mandated to develop a Disaster Management Plan and to mainstream DRR into their development planning [54, 55]. However, empirical studies show that while procedural compliance has improved, the actual effectiveness of DRR implementation remains limited.

In Rokan Hulu, the Disaster Management Plan of Rokan Hulu 2025–2029 identifies precisely these capacity constraints: a lack of trained analytical staff, fragmented coordination mechanisms, and dependence on central government transfers. These weaknesses create a structural imbalance in which operational activities (emergency response) dominate while analytical and political functions remain underdeveloped. Building upon the reviewed literature, this study constructs a conceptual model linking policy capacity and policy effectiveness in the context of local disaster management. The model assumes that each dimension of policy capacity contributes to effectiveness through distinct but interdependent mechanisms.

However, prior studies often (i) treat policy capacity as an abstract attribute without specifying how it is evidenced in local planning routines, (ii) emphasize operational response metrics while under-examining analytical learning and political anchoring in decentralized settings, and (iii) provide limited empirical integration between perception-based measures and documentary or stakeholder evidence. Addressing these limitations, this study links the reviewed concepts to the research questions by examining (RQ1) the distribution of analytical, operational, and political capacities across key local agencies and (RQ2) how these capacity profiles relate to observable policy effectiveness in the implementation of the local Disaster Management Plan. More detailed information can be seen in Table 4.

Table 4. Theoretical linkages between policy capacity and policy effectiveness

Dimension of Policy Capacity	Functional Mechanism	Expected Policy Outcome	Indicators of Effectiveness
Analytical capacity	Enables accurate problem diagnosis, prioritization, and evaluation.	Evidence-based disaster planning; risk-informed resource allocation.	Frequency of data updates, quality of risk mapping, and policy coherence index.
Operational capacity	Ensures efficient coordination and delivery of policy actions.	Timely response, efficient resource use, and improved preparedness.	Response time, implementation rate, and inter-agency coordination index.
Political capacity	Builds legitimacy and secures sustained commitment.	Stable funding and the institutionalization of disaster risk reduction (DRR) in local agendas.	DRR budget proportion, policy continuity, and stakeholder participation.
Capacity integration	Synergy among all capacities enhances institutional learning.	Adaptive governance and continuous policy improvement.	Learning frequency, periodic policy revision, and feedback mechanisms.

Source: Synthesized from the previous studies [17, 22, 44].

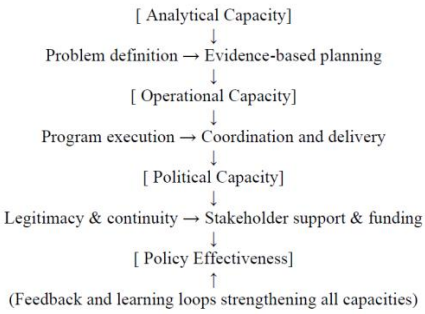

Figure 1. Conceptual scheme of the policy capacity–effectiveness relationship

This model provides the analytical framework for assessing how variations in capacity translate into differences in policy effectiveness across governance dimensions. To visualize this interaction, the following conceptual scheme illustrates how each capacity dimension influences different stages of the policy process and contributes to overall effectiveness (Figure 1).

Feedback from policy outcomes reinforces learning and deepens institutional capability. In Figure 1, the "feedback and learning loop" denotes the set of mechanisms through which implementation experiences are captured (monitoring indicators, after-action reviews, evaluation reports, and stakeholder feedback) and then fed back into the next planning and budget cycle. When functioning, this loop strengthens analytical capacity (better evidence and prioritization), refines operational capacity (updated Standard Operating Procedures and coordination routines), and supports political capacity by justifying sustained DRR commitments and resource allocation. The framework can be expressed in Table 5.

The framework will guide subsequent empirical analysis by linking observed institutional behaviors and outcomes to these theoretical dimensions. Rather than treating adaptive governance or resilience frameworks as endpoints, as much prior work has done, this research adopts a policy capacity and effectiveness lens.

Table 5. Conceptual framework: Capacity dimensions and policy effectiveness outcomes

Capacity Dimension	Policy Process Function	Manifestation in Disaster Governance	Effectiveness Outcome
Analytical	Knowledge generation, problem framing, policy design.	Data integration, risk mapping, evidence-based prioritization.	Coherent and targeted Disaster Management Plan.
Operational	Coordination, resource management, implementation.	Regional Development Planning Agency (RDMA)–Sectoral collaboration, Standard Operating Procedure execution.	Timely and efficient disaster response.
Political	Legitimacy, resource mobilization, and commitment building.	Budget allocation, legislative support, stakeholder forums.	Policy continuity and institutional sustainability.
Learning feedback	Evaluation and adaptive improvement.	Regular plan revision, monitoring reports, and performance review.	Incremental enhancement of capacity and effectiveness.

Note: Regional Disaster Management Agency (RDMA).

The framework conceptualizes learning as an ongoing process that sustains capacity and effectiveness over more extended periods of time. These findings position the study to contribute not only to the literature on local governance in Indonesia but also to broader debates about policy performance in complex, risk-ridden strategic policy domains.

The literature review concludes that policy capacity is a cornerstone of policy success, particularly in disaster management, where complexity and coordination requirements are high. The analytical/operational/political model provides a strong perspective for assessing institutional capabilities and performance. Applied to Rokan Hulu, it enables a structured assessment of how strengths and weaknesses in capacity drive the effectiveness of its disaster management policy.

The 'framework for active policy capacity' will be used in the subsequent section of this paper in an empirical sense, where document analysis, institutional self-assessment, and stakeholder interviews are combined to assess how each dimension of policy capacity facilitates or hinders the effectiveness of the Disaster Management Plan for Rokan Hulu 2025–2029.

3. METHODS

Research Design and Approach

This study employs a mixed-method case study design grounded in the policy capacity framework. Data were drawn from (1) documentary sources, (2) a structured institutional self-assessment survey administered to key officers involved in DRR planning and implementation, and (3) semi-structured interviews and focus group discussions with representatives of the agencies listed in Table 6. The design supports sequential triangulation by using survey profiles to guide qualitative probing and by validating perception-based findings against documentary and stakeholder evidence.

a. Documentation review that includes reviewing the Local Disaster Management Plan of Rokan Hulu 2025–2029 and its complement, a document known as the Disaster Risk Study of Rokan Hulu 2023–2027, the Regional Development Plans 2021–2026, and the RDMA annual reporting.
b. A structured capacity questionnaire developed from the policy capacity diagnostic framework to conduct institutional self-assessment was implemented among local agencies working in disaster management.
c. Semi-structured interviews and focus group discussions were conducted with purposively selected informants representing the RDMA, Regional Development Planning Agency, relevant sectoral agencies (e.g., public works and social affairs), as well as Non-Governmental Organization (NGO) and university stakeholders. Selection prioritized officials with direct responsibility for DRR planning, budgeting, inter-agency coordination, or program delivery. Data collection followed a common topic guide aligned to the three capacity dimensions; sessions were documented (field notes and transcripts) and analyzed through thematic coding.

This design enables triangulation among formal policy instruments, self-assessed institutional capacities, and practitioner perceptions, a method conducive to policy research.

Table 6. The agencies responsible for policy design and implementation

Agency / Institution	Primary Role in Disaster Governance	Capacity Dimension Most Relevant
Regional Disaster Management Agency (RDMA)	Lead coordination in emergency response, policy implementation	Operational and analytical
Regional Development Planning Agency	Integrating the Disaster Management Plan into the Local Medium-Term Development Plan and spatial plans	Analytical and political
Public Works Agency	Infrastructure mitigation and rehabilitation	Operational
Social Affairs Agency	Social protection and post-disaster recovery	Operational and political
Local Parliament	Budget approval and political oversight	Political

The research focuses on Rokan Hulu Regency, a medium-sized local government in Riau Province, Indonesia, that has been repeatedly affected by floods, landslides, and peatland fires. The Disaster Management Plan of Rokan Hulu 2025–2029 identifies 16 subdistricts as being at medium-to-high disaster risk. Institutionally, the study examines five core

agencies responsible for policy design and implementation. More detailed information can be seen in Table 6.

This institutional scope reflects a cross-sectoral configuration, consistent with disaster management's whole-of-government nature.

Policy Analysis

The first step involved systematic document analysis of key planning instruments. Following the policy analysis approach proposed by Dunn [22], the study extracted data on policy objectives, implementation mechanisms, and evaluation indicators. Each document was reviewed using a coding framework with three dimensions of capacity:

a. Analytical indicators (e.g., data use, evidence base, analytical staff, policy coherence).
b. Operational indicators (e.g., Standard Operating Procedures, coordination routines, timeliness, monitoring mechanisms).
c. Political indicators (e.g., budget allocation, stakeholder participation, political commitment).

The coding was conducted using NVivo 14 to organize and categorize textual evidence from more than 1,000 pages of planning and evaluation documents.

Institutional Self-Assessment Survey

A structured institutional self-assessment questionnaire was distributed to 30 respondents using a purposive (near-census) approach targeting key officers across the agencies in Table 6 who are directly involved in DRR planning and implementation. Because the population of such officers is limited at the regency level, n = 30 represents the accessible core of decision-makers rather than a statistical sample intended for population inference. Items used a 1–5 Likert scale across 12 indicators (four per dimension). Throughout the manuscript, the term institutional self-assessment survey is used consistently to refer to this perception-based instrument (Table 7).

Table 7. Indicators of policy capacity used in the survey

Dimension	Indicators	Example Question
Analytical capacity	Data integration, technical expertise, evidence-based planning, and knowledge management	"Our agency regularly uses risk data and analysis in decision-making."
Operational capacity	Coordination, administrative routines, responsiveness, M&E system	"Coordination mechanisms across agencies are clearly defined and functional."
Political capacity	Budget support, stakeholder legitimacy, leadership stability, disaster risk reduction (DRR) advocacy	"Disaster risk reduction is consistently prioritized in political discussions."

Responses were aggregated to produce average scores for each institution and dimension. The data were analyzed descriptively (means and variances) and compared with secondary evidence from policy documents to assess the coherence between perception and practice.

Data Analysis Techniques

The analytical process followed a sequential triangulation logic. First, the institutional self-assessment survey was summarized descriptively (mean, dispersion) to map capacity profiles across agencies. Second, documentary evidence and interview/focus group discussion materials were coded thematically to explain, contextualize, and challenge the quantitative patterns. Third, integration was achieved through cross-validation (joint interpretation), where convergent and divergent evidence was documented to strengthen the credibility of inferences about capacity–effectiveness linkages. Given the small-N, the quantitative strand is used for profiling rather than hypothesis testing.

a. Descriptive quantitative analysis to summarize institutional self-assessment scores.
b. Qualitative coding and thematic analysis of documentary and interview data.
c. Cross-validation between qualitative themes and quantitative patterns to ensure interpretive coherence.

More detailed information can be seen in Table 8.

Table 8. Analytical framework for data triangulation

Data Source	Analytical Focus	Analytical Tool / Method	Expected Output
Policy documents	Formal capacity and performance indicators	Content analysis with NVivo 14	Baseline of institutional commitments and gaps
Institutional survey	Perceived analytical, operational, and political capacities	Descriptive statistics with Statistical Package for the Social Sciences (SPSS)	Mean capacity scores per institution
Focus group discussions and interviews	Mechanisms behind capacity gaps and political constraints	Thematic analysis (manual + NVivo)	Explanatory insights for–capacity-effectiveness linkage

Note: Disaster Management Plan; Regional Disaster Management Agency (RDMA).

This triangulation enhances reliability, as multiple sources and perspectives support each proposition. Policy effectiveness is defined in this study as the extent to which policy outputs and outcomes achieve intended objectives, relative to available resources and expectations [22, 32].

Reliability and Triangulation

Three approaches were used to ensure the reliability:

a. Inter-rater agreement – standardized questionnaires and coding manuals were used in all centres.
b. Cross-source validation-comparing documentary evidence to survey and interview information.
c. Inter-coder reliability-Translation as well as qualitative coding was double-coded by two separate investigators.

Face validity was strengthened by grounding the indicators in established policy capacity frameworks and widely used effectiveness criteria, and by aligning item wording with the documentary indicators extracted from the Disaster Management Plan and related planning instruments. Consistency in interpretation was supported through the coding manual, joint review of indicator definitions, and cross-source triangulation between perception-based responses and documentary/interview evidence.

Limitations of the Research Design

Although the multi-method design enhances the depth of analysis, several limitations should be noted:

a. Temporal constraint – The analysis is based on capacity and effectiveness for a single planning cycle (2025–29). A longitudinal effects study would provide more compelling evidence of learning.
b. Perceptual bias – Surveys could be biased to self-assess the performance of an institute in a better light. Triangulation reduces, but cannot eliminate, such a bias.
c. Data access – Some of the agencies were circumspect about financial details, which limited comprehensive budgetary analysis.
d. Generalization – The case study approach emphasizes depth to add an element of generalizability through replication rather than through statistical sampling.

However, these limitations do not affect the validity of the conclusions; instead, they highlight the contextual complexity of investigating policy capacity in decentralized governance systems. Contextual insight and analytical rigor are integrated into the methodological framework. It provides an organised method for studying the influence of various capacity dimensions (analytically, operationally, and politically) on the effectiveness of the local disaster management policy process.

More detailed information about the methodology used can be seen in Table 9.

Table 9. Summary of the methodological framework

Research Component	Objective	Method / Source	Expected Contribution
Policy document analysis	Identify institutional commitments and gaps.	Disaster Management Plan of Rokan Hulu 2025–2029, Local Medium-Term Development Plan 2021–2026, and RDMA reports	Baseline of formal policy design
Institutional survey	Measure perceived policy capacity	30 respondents across five institutions	Quantitative indicator of capacity
Focus group discussions and interviews	Explain the mechanisms behind capacity gaps	Stakeholder discussions and key informant interviews	Qualitative understanding of institutional dynamics
Triangulation and analysis	Integrate findings for evaluation.	NVivo + Statistical Package for the Social Sciences (SPSS) cross-validation	Evidence-based interpretation of the capacity-effectiveness relationship

Note: Disaster Management Plan; Regional Disaster Management Agency (RDMA).

This integrated approach provides both the breadth of measurement and the depth of explanation required to assess institutional performance in public policy contexts. In summary, the methodology of this study reflects a hybrid between policy analysis and institutional evaluation, consistent with the analytical traditions of contemporary public administration. By integrating multiple data sources and analytical perspectives, the study aims to provide a comprehensive understanding of how local governments—specifically the Rokan Hulu Regency—translate policy capacity into effective disaster management outcomes.

The following section, Results and Discussion, will apply this framework to analyze empirical findings, evaluate variations in capacity and effectiveness across institutions, and discuss their implications for strengthening local disaster governance.

4. RESULTS AND DISCUSSION

To enhance readability, this section first reports the descriptive results (capacity scores and effectiveness indices) and then discusses their interpretation in light of the policy capacity framework. Where interpretation is provided, it is explicitly grounded in documentary and interview/focus group discussion evidence to reduce repetition and strengthen the synthesis.

Overview of Institutional Policy Capacity in Rokan Hulu

Descriptive results reveal an asymmetric profile of policy capacity in Rokan Hulu: local institutions are comparatively strong in operational routines for preparedness and response, but weaker in the analytical and political capacities required for evidence-based prioritization, sustained learning, and durable DRR commitment.

Based on the institutional self-assessment survey (2024), triangulated with documentary evidence and focus group discussions, the overall mean policy capacity score across institutions is 3.52 (scale 1–5). Table 10 details how capacity varies across institutions and dimensions, highlighting instances in which implementation competence outpaces analytical learning and political anchoring.

Table 10. Policy capacity scores by dimension and institution (2024)

Institution	Analytical Capacity	Operational Capacity	Political Capacity	Overall Average
Regional Disaster Management Agency (RDMA)	3.6	4.3	3.2	3.7
Development Planning Agency	3.8	3.4	3.5	3.6
Public Works Agency	3.1	4.0	2.9	3.3
Social Affairs	3.0	3.8	3.1	3.3
Local Parliament	2.8	3.2	3.9	3.3
Mean	3.26	3.94	3.32	3.52

Source: Institutional self-assessment, Focus Group Discussion (FGDs), and Disaster Management Plan of Rokan Hulu 2025–2029.

Table 10 confirms this pattern: operational capacity records the highest mean score (3.94), while analytical capacity (3.26) and political capacity (3.32) lag. Rather than repeating the same deficit across subsections, the discussion below specifies the distinct mechanisms through which each weaker dimension constrains effectiveness (e.g., fragmented evidence and monitoring on the analytical side; budget and coalition fragility on the political side).

Rokan Hulu's RDMA demonstrates relatively strong operational capacity, as evidenced by established coordination routines and emergency response practices. However, operational strength alone does not guarantee risk-reduction gains when analytical functions (integrated data, evaluation, and scenario planning) and political functions (budgetary and legislative support) are not institutionalized alongside day-to-day implementation.

Accordingly, the results should be read as a capacity-integration problem: strong operational execution is necessary but insufficient without consistent analytical learning and political commitment for prevention-oriented governance.

Policy Effectiveness Assessment

In addition to the capacity assessment, policy effectiveness was evaluated using the five indicators introduced in the methods section. The results are summarized in Table 11.

The composite policy effectiveness index (PEI) score of 3.38 indicates that Rokan Hulu's disaster management policy achieves moderate effectiveness, driven by strong operational execution but constrained by weak sustainability and learning. This imbalance suggests that capacity development has not yet matured into a comprehensive system of adaptive governance, thereby confirming the study's premise that capacity and effectiveness are causally linked.

Analytical Dimension: Evidence-Based Policy Deficits

Rokan Hulu's analytical capacity, while improving, remains constrained by fragmented data ecosystems and limited analytical staff. The Disaster Management Plan hazard maps are based primarily on national datasets from the NDMA and the Meteorology, Climatology, and Geophysics Agency, which are updated irregularly and are often not integrated with local socioeconomic data. More detailed information can be seen in Table 12.

Table 11. Policy effectiveness index (PEI) for Disaster Management Plan implementation (2024)

Indicator of Effectiveness	Definition	Mean Score (1–5)	Interpretation
Goal achievement	Fulfillment of objectives stated in the Disaster Management Plan of Rokan Hulu 2025–2029	3.5	Moderate: Some objectives achieved (institutional setup, early warning upgrades)
Implementation efficiency	Timeliness and resource use in executing DRR programs	3.8	High: Effective emergency response, moderate prevention planning
Stakeholder satisfaction	Stakeholders' perception of government performance	3.6	Moderate to high: Strong community trust in RDMA
Outcome sustainability	Long-term continuity of results and programs	3.1	Low: Limited institutionalization and funding continuity
Learning and adaptation	Presence of feedback, review, and evaluation mechanisms	2.9	Low: Weak data feedback loops and policy learning
Composite PEI	Composite score computed as an equal-weight average across five indicators (0.20 each)	3.38	Moderate effectiveness

Note: Disaster Management Plan; Regional Disaster Management Agency (RDMA); Disaster risk reduction (DRR).
Source: Author's synthesis based on survey data, Focus Group Discussions, and Disaster Management Plan progress reports.

Table 12. Indicators of analytical capacity performance

Analytical Function	Current Status (2024)	Observed Limitation	Implication for Effectiveness
Data integration	Partial integration between the Regional Disaster Management Agency (RDMA) and the Regional Development Planning Agency systems	Incompatible software and a lack of a standard format	Weak evidence base for prioritization
Risk mapping	Updated in 2023, used mainly for spatial planning	No dynamic updates or socioeconomic overlays	Risk profiles are outdated quickly
Analytical staffing	5 analysts across RDMA and the Regional Development Planning Agency	Insufficient technical specialization	Limited internal analysis capacity
Knowledge sharing	Occasional workshops and ad hoc reviews	No permanent knowledge management system	Institutional memory is not retained

A lack of a formal knowledge management system impairs learning. Policy analysts depend on project-specific reports, which also leads to information silos. This finding is consistent with the argument that analytical capacity should be institutionalized rather than treated as an individual enterprise to make sense of policy learning [32]. In Rokan Hulu, this challenge is further exacerbated by a lack of budget for analytical software and staff training. Interviews with Regional Development Planning Agency staff suggest that most analysis and expertise are outsourced to consultants, resulting in weak ownership of policy knowledge. As a result, data are available but unused—indicative of low analytical capacity that directly undermines policy impact.

The operational dimension: strengths and coordination challenges.

The strongest dimension of policy capacity in Rokan Hulu is operational, as disaster mitigation procedures and inter-organizational coordination already exist. The RDMA's Command Center operates 24 hours with the assistance of Radio Communication Networks and local volunteer groups. More detailed information can be seen in Table 13.

Operational performance is commendable; however, given the continuity of monitoring, sustainability is limited. It's still reactive in its logic of implementation—leaning toward emergency rather than prevention. Still, Rokan Hulu's operational vigor also serves as an entry point for reform. With greater analytical and political capabilities, these operational systems could become the backbone of comprehensive resilience policy.

Table 13. Operational capacity highlights and gaps

Operational Function	Strengths	Remaining Gaps	Effectiveness Outcome
Emergency response	Rapid mobilization within 2 hours; good coordination	Limited logistics in remote subdistricts	High short-term responsiveness
Recovery and rehabilitation	Active social assistance distribution	Weak inter-agency planning for long-term rehabilitation	Short-term recovery, weak sustainability
Infrastructure mitigation	Routine flood control and drainage maintenance	Low integration with ecological restoration	Preventive capacity limited
Coordination mechanism	Functional command post structure	Lack of joint monitoring post-response	No institutionalized feedback mechanism

Political Dimension: Lack of Commitment and Continuity

The weakest dimension is political capacity—the ability to garner support, retain legitimacy, and ensure a flow of resources. But, as a political issue, DRR continues to be marginal – not more than 1.8% of regional spending in 2024 will go in that direction. According to legislative interviews, this is because DRR projects are typically seen as invisible investments with little electoral return. Ibid. More detailed information can be seen in Table 14.

Table 14. Political capacity assessment

Indicator	Observation (2024)	Interpretation
Budget allocation	1.8% of the total regional budget is directed to DRR activities	Insufficient funding undermines multi-year resilience projects
Political commitment	DRR is absent from the top five local development priorities	Limited policy salience in political debates
Institutional legitimacy	RDMA is respected technically, but lacks cross-sectoral authority	Coordination depends on personal networks
Stakeholder engagement	Sporadic consultation with Non-Governmental Organizations (NGOs) and communities	Limited participatory legitimacy

Note: Regional Disaster Management Agency (RDMA); Disaster risk reduction (DRR).

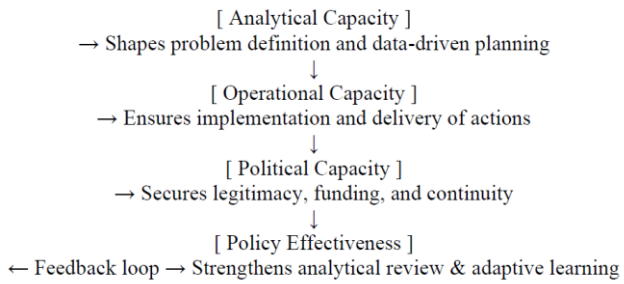

Figure 2. The capacity–effectiveness interaction model

This low political prioritization mirrors findings from Lodge and Wegrich [44], who argue that political capacity is often the "missing middle" in local governance—an informal yet decisive factor in determining policy continuity. In Rokan Hulu, leadership turnover disrupts DRR program cycles. Each new administration tends to reorient development priorities, resetting institutional memory. Without stable political support, capacity-building programs risk discontinuation, leading to the recurrent "reinvention" of coordination mechanisms rather than institutional consolidation.

When the three capacity dimensions are cross-analyzed against the effectiveness indicators, a consistent pattern emerges: operational capacity drives immediate results, but analytical and political capacities determine sustainability and learning. The schematic of this section can be seen in Figure 2.

The diagram shows that effectiveness is not linear but cyclical: success in one dimension reinforces others through feedback and learning. In Rokan Hulu, however, this cycle is incomplete—the feedback from implementation (operational capacity) does not loop back into improved planning (analytical) or sustained commitment (political). This confirms the "capacity discontinuity" problem identified in comparative governance studies [32]. Empirically, this explains why Rokan Hulu achieves short-term success (rapid response, strong community engagement) but struggles to institutionalize preventive or learning-oriented governance.

A cross-agency comparison provides further insight into variations in capacity-performance. In detail, the information can be seen in the following Table 15.

Table 15. Cross-institutional performance synthesis

Institution	Strongest Capacity	Main Weakness	Effectiveness Consequence
Regional Disaster Management Agency (RDMA)	Operational	Analytical (data and evaluation)	High response, low policy learning
Regional Development Planning Agency	Analytical	Political (budget negotiation)	Good planning, weak implementation control
Public Works	Operational	Political (coordination legitimacy)	Infrastructure-focused, not risk-informed
Social Affairs	Operational	Analytical	Strong recovery response, weak risk targeting
Regional People's Representative Council	Political	Analytical	Influential in funding, low technical understanding

This comparison highlights that no single agency possesses balanced capacity. The policy system's overall effectiveness depends on interagency synergy—currently weak due to fragmented mandates and the absence of joint accountability mechanisms. The evidence points to a clear conclusion: policy capacity, not merely resource availability, determines policy effectiveness in local disaster management. Rokan Hulu's policy success is constrained less by lack of funding than by lack of integrative capacity. The findings suggest several

strategic implications:

a. Institutionalization of Analytical Capacity:
   - Create a Local Policy Analysis Unit within RDMA–Regional Development Planning Agency to centralize data and evaluation.
   - Introduce capacity indicators into civil service performance systems.
b. Operational Integration through Performance Contracts:
   - Develop an inter-agency Memorandum of Understanding with measurable performance targets.
   - Link budget disbursement to achievement of Disaster Management Plan milestones.
c. Political Reinforcement through Legislative Mandates:
   - Institutionalize DRR financing in the annual budget process.
   - Establish a standing Disaster Policy Committee within Local Parliament to ensure oversight continuity.

In detail, the information can be seen in the following Table 16.

Table 16. Policy recommendations derived from findings

Key Problem	Recommended Intervention	Expected Impact
Weak analytical capacity	Establish a local disaster risk reduction (DRR) data observatory	Improved evidence-based planning
Fragmented coordination	Formalize a cross-agency coordination mechanism	Streamlined implementation
Low political commitment	Mandate DRR budget tagging and legislative reporting	Sustained funding and legitimacy
Limited learning feedback	Institutionalize an annual DRR evaluation conference	Strengthened policy learning and accountability

By aligning with these guidelines, Rokan Hulu will transition from procedural compliance to capacity-based policy effectiveness. Based on the Rokan Hulu case, empirical evidence indicates that the capacity-effectiveness nexus hypothesised by policy scholars exists. Empirically, the findings show that local governance is a measure of how these three dimensions of capacity interact. In theory, it reinforces the point that policy capacity is not a static property but rather a relational one, more or less effective depending on whether institutional coherence and learning feedback occur. In terms of public administration, the study makes three theoretical contributions:

a. Capacity balancing argument: Policy performance is enhanced when capacities at three levels of operation – analytical, operational, and political are relatively balanced.
b. Feedback-loop hypothesis: Efficacy is enhanced by feeding implementation data back into policy design (in formal evaluation systems).
c. Legitimacy-continuity thesis: Political capacity can maintain effectiveness by integrating DRR into routine governance and public accountability measures.

The disaster management policy system in Rokan Hulu is moderately effective, underpinned by operational capability but constrained by analytical and political weaknesses. The obstacle is not a lack of policy tools, but rather weak institutional capacity to understand, absorb, and sustain policy learning and coordination. Policy-wise, the region is a case of a capacity-dependent regime where future improvements in disaster effectiveness will rely on focused investment in analysis systems, interagency links, and political institutionalization. Contextualizing these findings into the broader policy capacity literature, the study offers new insights into how institutional performance can be enhanced through capacity governance strategies in decentralized settings.

5. CONCLUSIONS

The authors examine how differences in analytic, operational, and political policy capacity affect the local disaster-governance system in Rokan Hulu Regency, Indonesia, in managing disasters. Applying a mixed method – including document analysis, institutional survey, and stakeholder interview – the results suggest an asymmetrical capacity structure. Readiness is relatively high, as evidenced by efficient emergency coordination, logistics, and community response. Nevertheless, analytical and political capabilities are weak, particularly in data integration, evidence-based planning, and consistent budgetary or legislative support. The PEI substantiates this myopia: strong in the short term but weak in longer-term learning and institutionalization. This pattern reflects an ability–effectiveness paradox in which groups demonstrate competence in administrative outputs but have limited strategic impact. Our results confirm the theoretical proposition that high-performance policy effectiveness is not a function of any single capacity but instead of the dynamic interplay among the analytical, operational, and political capacities.

Theoretical and Practical Implications

In theory, this study advances the policy capacity–effectiveness nexus by showing that, in decentralized disaster governance, high operational capacity can coexist with only moderate policy effectiveness when analytical learning and political anchoring are weak and poorly integrated. Empirically, the Rokan Hulu case illustrates how fragmented data, limited evaluation routines, and discontinuities in budget and legislative support can prevent Disaster Management Plan ambitions from translating into sustained risk-reduction outcomes. In practice, this implies that strengthening DRR requires institutional arrangements that link evidence, implementation, and political authorization through the planning–budget–monitoring cycle.

Policy Recommendations

a. Develop analytical capacity: (0–12 months) institutionalize an inter-agency data and policy analysis function (RDMA–Development Planning Agency at Sub-National Level–Central Bureau of Statistics and sectoral agencies) with standard data-sharing protocols; (12–24 months) build staff competencies for risk modelling and policy evaluation; and implement routine monitoring and annual analytical reviews that directly inform the next Disaster Management Plan update.
b. Strengthen operational integration: Consolidate coordination mechanisms into clear Standard Operating Procedures and performance routines across agencies; standardize reporting and after-action reviews so that operational learning feeds the planning

cycle; and use practical digital tools to track program implementation and inter-agency responsibilities.

c. Political commitment and legitimacy: Secure DRR budget anchoring through multi-year local regulations or budget tagging; formalize cross-sector stakeholder engagement (including village and community representatives) to sustain legitimacy; and strengthen legislative oversight through a dedicated forum/committee that reviews DRR performance and financing.

d. National–local synergy: Align regency-level capacity strengthening with provincial and national support by prioritizing technical assistance for analytical functions, incentives for integrated data systems, and guidance that links local planning indicators to national DRR priorities while preserving local discretion for context-specific implementation.

Limitations and Future Research

The study relies on a small, purposively targeted institutional survey (n = 30) and cross-sectional evidence; findings are therefore diagnostic rather than causal and are not intended for statistical generalization. Future research should apply longitudinal designs, larger comparative samples across regencies, and stronger inferential tests to examine how capacity reforms translate into sustained effectiveness over time.

In summary, improving the effectiveness of disaster policy in Rokan Hulu requires a capacity-integration reform that integrates analytical evidence, operational coordination, and political legitimacy within a single planning–implementation–learning cycle. While the findings provide a grounded diagnosis of where integration breaks down in a decentralized setting, the evidence base remains institution-specific and cross-sectional; expanding comparative and longitudinal analyses is essential to confirm how reforms affect effectiveness over time.

ACKNOWLEDGMENT

The Research Team expresses its appreciation and gratitude to LPDP, BRIN, and Universitas Negeri Padang for conducting this research. Cooperation Agreement: Grant No.: 36/IV/KS/02/2025 (BRIN) & Grant No.: 1113/UN35.15/KS/2025 (UNP).

REFERENCES

[1] Manandhar, B., Dongol, Y., Ganapati, E.N. (2022). Governing the post-disaster recovery network in Nepal: Organizational challenges of public managers. International Journal of Disaster Risk Reduction, 81: 103245. https://doi.org/10.1016/j.ijdrr.2022.103245

[2] Acharya, P., Sharma, K.K., Pokharel, G.R., Adhikari, R. (2022). Managing postdisaster reconstruction after the 2015 Gorkha, Nepal earthquake and lessons learned. Natural Hazards Review, 23(4). https://doi.org/10.1061/(asce)nh.1527-6996.0000585

[3] Campos, K., Gil, M. (2025). State legibility and disaster management in Chile: Strengths, challenges, and lessons for public policy. Sustainability, 17(9): 3917. https://doi.org/10.3390/su17093917

[4] Afonso, A., Jalles, J.T., Venâncio, A. (2024). Fiscal decentralization and public sector efficiency: Do natural disasters matter? Economic Modelling, 137: 106763. https://doi.org/10.1016/j.econmod.2024.106763

[5] Mintrom, M., O'Connor, R. (2024). Policy coordination and development in a VUCA world. Global Policy, 15(S6): 41-52. https://doi.org/10.1111/1758-5899.13430

[6] Savoia, E., Piltch-Loeb, R., Stanton, E., Koh, H.K. (2023). Learning from COVID-19: Government leaders' perspectives to improve emergency risk communication. Globalization and Health, 19: 86. https://doi.org/10.1186/s12992-023-00993-y

[7] Porter, T., Tan, N.C. (2022). An integrated complex adaptive governmental policy response to cyberthreats. Journal of Economic Policy Reform, 26(3): 283-297. https://doi.org/10.1080/17487870.2022.2125390

[8] Corcaci, A., Kemmerzell, J. (2023). Trans-local action and local climate policy. Configurations of success for climate innovations in the European multilevel system. Review of Policy Research, 40(6): 1120-1143. https://doi.org/10.1111/ropr.12536

[9] Khan, R.U., Hussain, F. (2024). Assessing policy capacity and policy effectiveness: A comparative study using sustainable governance indicators. European Policy Analysis, 10(4): 575-603. https://doi.org/10.1002/epa2.1217

[10] Brenton, S., Baekkeskov, E., Hannah, A. (2022). Policy capacity: Evolving theory and missing links. Policy Studies, 44(3): 297-315. https://doi.org/10.1080/01442872.2022.2043266

[11] Sharma, S., Wu, X., Papyshev, G. (2025). Capacity-learning paradox: How Hong Kong and Singapore's crisis responses shape and are shaped by policy capacities. Review of Policy Research, 43(2): e70033. https://doi.org/10.1111/ropr.70033

[12] Ohemeng, F.L.K. (2025). The state of policy capacity problems in Africa: The viewpoint of historical institutionalism from Ghana. Review of Policy Research, 43(2): e70044. https://doi.org/10.1111/ropr.70044

[13] Salazar Morales, D.A., Pineda, P., Lauriano, L.A. (2024). Governing schools in times of pandemic: A set-theoretical analysis of the role of policy capacities in school closure. Governance, 37(4): 1433-1463. https://doi.org/10.1111/gove.12860

[14] Davis, B., Reid, A. (2025). Relational symmetries of disaster resilience explored through the Sendai framework's guiding principles. International Journal of Disaster Risk Science, 16: 128-138. https://doi.org/10.1007/s13753-024-00611-4

[15] Liu, W., Qian, J., Wu, S. (2024). How to improve smart emergency preparedness for natural disasters? Evidence from the experience of ten pilot provinces in China for smart emergency. Heliyon, 10(11): e32138. https://doi.org/10.1016/j.heliyon.2024.e32138

[16] Lam, L.M. (2023). Asymmetrical power relationships in disaster reduction remain the key barrier to sustainable recovery: Neoliberalism and Nepal's post-earthquake recovery experiences. Sustainable Development, 32(2): 1483-1495. https://doi.org/10.1002/sd.2683

[17] Wu, X., Ramesh, M., Howlett, M. (2015). Policy capacity: A conceptual framework for understanding policy competences and capabilities. Policy and Society, 34(3-4): 165-171. http://doi.org/10.1016/j.polsoc.2015.09.001

[18] Hussain, F., Tsang, D., Rafique, Z. (2023). Policy

advisory systems and public policy making: Bibliometric analysis, knowledge mapping, operationalization, and future research agenda. Review of Policy Research, 41(5): 713-739. https://doi.org/10.1111/ropr.12564
[19] Lund-Tønnesen, J., Christensen, T. (2023). Learning from the COVID-19 Pandemic: Implications from Governance Capacity and Legitimacy. Public Organization Review, 23: 431-449. https://doi.org/10.1007/s11115-023-00705-5
[20] Mardiyanta, A., Wijaya, C.N. (2022). Policy capacity during COVID-19 in Asia: A systematic literature review. Journal of Public Affairs, 23(1): e2835. https://doi.org/10.1002/pa.2835
[21] De Majo, V. (2022). Institutional conditions for building proactive flood management: Lessons from Santa Fe in Argentina. International Journal of Disaster Risk Reduction, 81: 103251. https://doi.org/10.1016/j.ijdrr.2022.103251
[22] Dunn, W.N. (2015). Public Policy Analysis: An Integrated Approach. Routledge. https://doi.org/10.4324/9781315663012
[23] Meier, K.J., Davis, J.A., Xu, X. (2023). Effectiveness, efficiency and equity tradeoffs in public programs: A citizen experiment. Public Administration Review, 83(6): 1462-1477. https://doi.org/10.1111/puar.13690
[24] Xue, K., Yang, Y., Huang, Z. (2024). Implementation effectiveness evaluation of watershed ecological compensation policy for sustainability based on the Huai river Basin in China. Frontiers in Environmental Science, 12. https://doi.org/10.3389/fenvs.2024.1344942
[25] Hu, Q., Sadiq, A.A., Kapucu, N. (2022). Multiplexity in conceptualizing network effectiveness in emergency management. Journal of Homeland Security and Emergency Management, 19(3): 257-279. https://doi.org/10.1515/jhsem-2021-0089
[26] Sapountzaki, K. (2022). Risk mitigation, vulnerability management, and resilience under disasters. Sustainability, 14(6): 3589. https://doi.org/10.3390/su14063589
[27] Jayasekara, R.U., Siriwardana, C.S.A., Amaratunga, D., Haigh, R. (2022). Evaluating the network of stakeholders in multi-hazard early warning systems for multiple hazards amidst biological outbreaks: Sri Lanka as a case in point. Progress in Disaster Science, 14: 100228. https://doi.org/10.1016/j.pdisas.2022.100228
[28] Miyamoto, M., Kakinuma, D., Ushiyama, T., Rasmy, A.M., Yasukawa, M., Bacaltos, D.G., Sales, A.C., Koike, T., Kitsuregawa, M. (2022). Co-design for enhancing flood resilience in Davao city, Philippines. Water, 14(6): 978. https://doi.org/10.3390/w14060978
[29] Tanguay, L., Herzog, L.M.J., Audet, R., Beisner, B.E., Martin, R., Pahl-Wostl, C. (2023). Opportunities for and barriers to anticipatory governance of two lake social–ecological systems in Germany and Canada. People and Nature, 5(3): 911-928. https://doi.org/10.1002/pan3.10464
[30] Nikkanen, M., Räsänen, A., Juhola, S. (2024). Adaptive governance of disaster preparedness? The case of regional networks in Finland. International Journal of Disaster Risk Reduction, 108: 104549. https://doi.org/10.1016/j.ijdrr.2024.104549
[31] Datta, A., Chaffin, B.C. (2022). Evolving adaptive governance: Challenging assumptions through an examination of fisheries law in Solomon Islands. Ecology and Society, 27(2). https://doi.org/10.5751/es-13251-270230
[32] Wu, X., Ramesh, M., Howlett, M. (2017). Policy capacity: Conceptual framework and essential components. In Policy Capacity and Governance, pp. 1-25. https://doi.org/10.1007/978-3-319-54675-9_1
[33] Iida, K. (2022). Sustainable policy performance and types of governance: Is there a trade-off between consensus and efficiency? European Policy Analysis, 8(2): 209-230. https://doi.org/10.1002/epa2.1143
[34] Lu, A., Matheny, K.T. (2025). Equal inputs, unequal outputs: How capacity limits policy implementation. Educational Evaluation and Policy Analysis, 48(1): 189-213. https://doi.org/10.3102/01623737241310832
[35] McCrea, A.M. (2020). Can administrative capacity address wicked problems? Evidence from the frontlines of the American opioid crisis. Administration & Society, 52(7): 983-1008. https://doi.org/10.1177/0095399719878727
[36] Takase, A. (2022). Analyzing national policy styles empirically using the Sustainable Governance Indicators (SGI): Insights into long-term patterns of policy-making. European Policy Analysis, 8(2): 160-177. https://doi.org/10.1002/epa2.1142
[37] Castaneda, N.J. (2023). Ecological transition without change: A paradox, a misinterpretation, or a renounce? Sustainability, 15(11): 8770. https://doi.org/10.3390/su15118770
[38] Fernández-i-Marín, X., Hinterleitner, M., Knill, C., Steinebach, Y. (2023). Policy growth, implementation capacities, and the effect on policy performance. Governance-an International Journal of Policy Administration and Institutions, 37(3): 927-945. https://doi.org/10.1111/gove.12816
[39] Mondino, E., Scolobig, A., Di Baldassarre, G., Stoffel, M. (2023). Living in a pandemic: A review of COVID-19 integrated risk management. International Journal of Disaster Risk Reduction, 98: 104081. https://doi.org/10.1016/j.ijdrr.2023.104081
[40] Kahlenborn, W., Voss, M., Porst, L., Zebisch, M., Renner, K., Schauser, I. (2025). Integrated risk analyses as part of national climate risk assessments: Lessons learnt from the climate risk assessment of Germany. International Journal of Climate Change Strategies and Management, 17(1): 70-90. https://doi.org/10.1108/ijccsm-10-2023-0128
[41] Zhang, J., Zheng, H., Zhang, X., Lin, Z., VanLooy, J.A., Kennedy, A. (2023). Strategic land acquisition for efficient and equitable flood risk reduction in the United States. Climate Risk Management, 42: 100554. https://doi.org/10.1016/j.crm.2023.100554
[42] Lee, S., Dodge, J., Chen, G. (2022). The cost of social vulnerability: An integrative conceptual framework and model for assessing financial risks in natural disaster management. Natural Hazards, 114(1): 691-712. https://doi.org/10.1007/s11069-022-05408-6
[43] Heo, W.H. (2022). Integrated approach analysis of the effectiveness of disaster prevention projects. International Journal of Disaster Risk Reduction, 69: 102732. https://doi.org/10.1016/j.ijdrr.2021.102732
[44] Lodge, M., Wegrich, K. (2014). The Problem-Solving Capacity of the Modern State: Governance Challenges and Administrative Capacities. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780198716365.001.

0001
[45] Cairney, P. (2021). The concept of a sectoral policy style. In the Routledge Handbook of Policy Styles, pp. 77-88. https://doi.org/10.4324/9780429286322-10
[46] Zheng, S., Li, H., Sun, H. (2021). Crisis lifecycle, policy response, and policy effectiveness. Public Management Review, 25(2): 286-312. https://doi.org/10.1080/14719037.2021.1972683
[47] McConnell, A., Grealy, L., Lea, T. (2020). Policy success for whom? A framework for analysis. Policy Sciences, 53(4): 589-608. https://doi.org/10.1007/S11077-020-09406-Y.
[48] Botterill, L.C. (2024). The values dimension of policy success and failure: Considering two Australian rural adjustment policies. Australian Journal of Public Administration, 1-15. https://doi.org/10.1111/1467-8500.12678
[49] Sainz-Santamaría, J. (2025). Policy capacities under weak institutions: The design of paying for ecosystem services in Latin America. Public Administration and Development, 1-19. https://doi.org/10.1002/pad.70015
[50] Gen, S., Wright, A.C. (2015). Policy capacity is necessary but not sufficient: Comment on" Health reform requires policy capacity". International Journal of Health Policy and Management, 4(12): 837. https://doi.org/10.15171/IJHPM.2015.145
[51] Mukherjee, I., Coban, M.K., Bali, A.S. (2021). Policy capacities and effective policy design: A review. Policy Sciences, 54(2): 243-268. https://doi.org/10.1007/S11077-021-09420-8
[52] Behnke, N., Hegele, Y. (2023). Achieving cross-sectoral policy integration in multilevel structures—Loosely coupled coordination of “energy transition” in the German “Bundesrat.” Review of Policy Research. https://doi.org/10.1111/ropr.12551
[53] Capano, G., Toth, F. (2024). Controversial issues in crisis management. Bridging public policy and crisis management to better understand and address crises. Risk, Hazards & Crisis in Public Policy, 16(3): e12304. https://doi.org/10.1002/rhc3.12304
[54] Alhadi, Z., Riandini, O., Eriyanti, F., Yusran, R., Permana, I. (2024). Analysis of the effectiveness and efficiency of tsunami disaster contingency planning policies in the Province of West Sumatra, Indonesia. International Journal of Safety and Security Engineering, 14(4): 1087-1098. https://doi.org/10.18280/ijsse.140407
[55] Alhadi, Z., Rahman, A., Yusran, R., Yuliarti, Eriyanti, F., Antomi, Y., Permana, I. (2025). Dynamics of flood and landslide risk governance policy in Solok Regency, Indonesia. International Journal of Safety and Security Engineering, 15(6): 1197-1217. https://doi.org/10.18280/ijsse.150611