Formosa Journal of Multidisciplinary Research (FJMR)
Vol. 5 No. 9, 2026: 3233-3250

Beyond the Command Table: Socio-Ecological Collaborative Governance for Flood Disaster Management in Berau Regency, Indonesia

Yusup Gunawan[1]*, V. Rudy Handoko[2], Achluddin Ibnu Rochim[3]
Doctoral Program in Administrative Science, Faculty of Social and Political Sciences, Universitas 17 Agustus 1945 Surabaya, Indonesia
Corresponding Author: Yusup Gunawan gunawanyusup89@gmail.com

A R T I C L E I N F O
Keywords: Collaborative Governance; Flood Disaster Management; New Public Service; Customary Knowledge; NVivo

Received : 27, July
Revised : 23, August
Accepted: 25, September

©2026 Gunawan, Handoko, Rochim: This is an open-access article distributed under the terms of the Creative Commons Atribusi 4.0 Internasional.

A B S T R A C T
Floods in Berau Regency, East Kalimantan, have changed from seasonal events into a persistent and largely human-induced crisis, while the local government's response capacity remains far below the scale of exposure. This study examines how collaborative governance operates in flood disaster management in Berau, identifies the factors that hinder and support it, and formulates a design for a more suitable governance model. A constructivist qualitative approach with a single case study design was used. Data were collected through in-depth interviews with key informants from government, the regional disaster management agency (BPBD), the military and police, affected residents, the Dayak customary community, a coal company, non-governmental organizations, and the media, complemented by field observation and document analysis. The data were coded in NVivo using the four dimensions of Ansell and Gash (2008). The findings show that collaboration was driven by resource scarcity rather than by shared trust: BPBD had only 10 permanent rapid-response personnel and 19 boats for about 38,788 people at risk. The multisector command system was formalized through a contingency plan and a regent's decree, yet it did not include customary leaders, NGOs, and independent media. The response was sustained by frontline territorial officers, private-sector logistics, analog radio volunteers, and village-level resilience groups. The study proposes a Socio-Ecological Collaborative Governance model that rests on spatial and ecological justice, decentralized customary authority, distributed field leadership, and cross-medium communication.

DOI: https://doi.org/10.55927/fjmr.v5i9.211
ISSN-E: 2829-8896
https://journalfjmr.my.id/index.php/fjmr

INTRODUCTION

Climate change has become one of the main drivers of the growing frequency and intensity of hydrometeorological disasters around the world. The World Meteorological Organization (2024) reported that global average temperature had risen to about 1.55°C above the pre-industrial level, a condition that makes extreme rainfall harder to predict. Floods are the most visible result of this trend. They are no longer seen only as natural phenomena, but also as the accumulated outcome of weak environmental management and governance that does not adapt to change. Countries with limited mitigation capacity are the most exposed, because a single flood can damage food security, local livelihoods, and social stability at the same time.

Indonesia is highly vulnerable to this problem. The National Disaster Management Agency recorded 2,107 disasters in 2024, and more than 99% of them were wet hydrometeorological events such as floods, landslides, and extreme weather (Badan Nasional Penanggulangan Bencana [BNPB], 2025). The problem is not caused by heavy rain alone. Land conversion, deforestation, and weak enforcement of spatial planning rules make the same amount of rainfall far more destructive than before. This situation is clearly visible in Berau Regency, East Kalimantan. The regency covers 36,962.37 km² with a population density of only 8.1 people per km², so in principle it should have enough ecological space to absorb extreme weather (Badan Pusat Statistik [BPS] Kabupaten Berau, 2025). In reality, its economy depends heavily on extractive sectors. Coal mining contributed 63.15% of the regency's gross regional domestic product, which reached IDR 50.82 trillion in 2024, while agriculture and plantations contributed only around 13% (BPS Kabupaten Berau, 2025). Between 2000 and 2022, the upstream area lost 145,130 hectares of forest cover (Global Forest Watch, 2024), and 94 mining concessions covering about 400,000 hectares are located in the regency (Jaringan Advokasi Tambang [JATAM] Kalimantan Timur, 2024).

The flood record shows a pattern of escalation. In 2023, BPBD Kabupaten Berau (2025) recorded 15 flood events, and 8 of them (53%) occurred in the upstream sub-districts of Segah and Kelay, which function as the catchment area. In the Kelay sub-basin, significant overbank floods increased from 18 events in 2015–2016 to 21 events in 2017–2018 and 27 events in 2019–2020. In May 2021, one of the worst floods in two decades affected 14 villages and more than 11,000 people. The situation became more serious in 2025, when two floods occurred within about two months (Table 1). The number of affected villages increased from 9 to 17, and the number of affected people rose from 10,327 to 12,025. In the upstream villages, the water reached three to five meters and carried timber and mud, so the event was no longer a simple inundation but a destructive flash flood.

Table 1. Comparison of the Two Flood Waves in Berau Regency in 2025

Parameter	March 2025 (wave 1)	May 2025 (wave 2)
Affected villages	9 villages	17 villages
Affected neighborhoods (RT)	56 RT	67 RT
Affected households	3,444	3,993

Parameter	March 2025 (wave 1)	May 2025 (wave 2)
Affected people	10,327	12,025
Water depth	Around 1 m on average	1.5 m; 3–5 m in upstream villages
Fatalities	2 people	None (earlier evacuation)

Source: Processed from BPBD Kabupaten Berau (2025)

The fiscal burden is also heavy. In 2025 the regional government allocated IDR 515.36 billion for flood-related spending, consisting of IDR 30 billion of unexpected expenditure, IDR 415.36 billion for urban drainage, and IDR 70 billion for the Teluk Bayur area (Pemerintah Kabupaten Berau, 2025). At the same time, the regency has limited authority over the root causes upstream, because mining and plantation permits are often issued by the central or provincial government while the consequences are borne by the regency. Berau Regional Regulation No. 8 of 2022 already requires planned, integrated, and coordinated disaster management, but coordination across sectors is still hindered by sectoral ego in practice. A flood problem of this kind crosses jurisdictions, has many interconnected causes, and cannot be solved by one actor alone. It fits the description of a wicked problem (Head & Alford, 2015; Rittel & Webber, 1973), which is why collaborative governance is a logical approach to examine.

Previous studies have provided a good foundation. Research on collaborative emergency management has explained how interorganizational networks form and perform under stress (Kapucu et al., 2010) and how problem severity and organizational capacity push public managers to collaborate (McGuire & Silvia, 2010). Studies on collaborative environmental governance also warn that excluding holders of local ecological knowledge weakens the legitimacy of a policy (Bodin, 2017). However, less attention has been given to how the framework of Ansell and Gash (2008) works in a resource-rich region where a dominant extractive industry is at once a source of resources and a source of risk, and where power asymmetry between corporations and local government is very large. In such a setting, a multi-stakeholder forum can easily become a pseudo-collaboration in which the actor with the most resources still decides the substance. This gap is the research gap addressed here.

The urgency of the study lies in three points. First, the scale of exposure is increasing, and the local government cannot respond alone. Second, public funds are absorbed by curative spending instead of prevention. Third, there is still no governance design that fits the social and ecological conditions of Berau. This study therefore aims to (1) analyze how collaborative governance is practiced in flood disaster management in Berau, (2) identify the hindering and supporting factors, and (3) formulate a collaborative governance model that is adaptive and implementable for the regency.

LITERATURE REVIEW

New Public Service

The New Public Service (NPS) was developed by Denhardt and Denhardt (2000) as a response to the New Public Management, which emphasizes

efficiency, market mechanisms, and the view of citizens as customers. NPS argues that public administrators should serve rather than steer. Their main task is to help citizens articulate and meet shared interests, not to control society or to run government like a business. Among its principles are serving citizens and not customers, seeking the public interest, valuing citizenship over entrepreneurship, thinking strategically and acting democratically, and valuing people, not just productivity (Denhardt & Denhardt, 2000, 2015).

This perspective is relevant to disaster management. Disaster response is not only a technical task of the disaster agency, but a collective public service to protect citizens. Law No. 24 of 2007 on Disaster Management also opens space for the participation of the community and the business sector (Republik Indonesia, 2007). In this study, NPS serves as the value orientation for judging whether the state acts as a commander who gives instructions or as a facilitator that strengthens the capacity that citizens already have.

Collaborative Governance

Ansell and Gash (2008) define collaborative governance as an arrangement in which one or more public agencies directly involve non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative. From a review of 137 cases, they built a model with four broad variables. Starting conditions cover the imbalance of power, resources, and knowledge among stakeholders, the history of cooperation or conflict, and the incentives to participate. Institutional design refers to the basic ground rules, process transparency, and participatory inclusiveness. Facilitative leadership concerns mediation, empowerment, and the ability to keep stakeholders committed. Collaborative process is the core of the model and consists of face-to-face dialogue, trust building, commitment to the process, shared understanding, and intermediate outcomes.

Emerson et al. (2012) offer a broader integrative framework in which collaborative governance regimes are shaped by system context, drivers, and collaborative dynamics that produce a capacity for joint action. Bryson et al. (2015) add that cross-sector collaboration is needed but hard to sustain, especially when partners have unequal power and different institutional logics. These works show that collaboration is not automatic. It is a process that must be designed, led, and continuously maintained, and this is the reason the four dimensions of Ansell and Gash are used to structure the analysis in this study.

Collaboration in Disaster Management and Wicked Problems

Rittel and Webber (1973) described wicked problems as problems without a clear definition, with many causes, and without a single correct solution. Head and Alford (2015) argue that such problems require cross-boundary cooperation because no single organization has the knowledge, resources, and legitimacy to deal with them alone. Floods in an extractive region are a good example, since rainfall, land use, permits, and settlement patterns interact with one another.

In disaster settings, Kapucu et al. (2010) found that coordination among governments and organizations in catastrophic events was often not successful and recommended more investment in community capacity at the local level.

McGuire and Silvia (2010) showed that perceived problem severity and organizational capacity influence how often public managers collaborate. Bodin (2017) stresses that collaborative environmental governance depends on incorporating local knowledge and building trust. Together, these studies suggest that scarcity and severity can push actors to collaborate, but that trust, inclusion, and local knowledge decide whether the collaboration lasts.

METHODOLOGY

This study is grounded in the constructivist paradigm, which sees social reality as something formed and negotiated through the interaction of the actors involved (Creswell & Poth, 2018; Lincoln & Guba, 1985). Collaboration is therefore treated as a process whose meaning can differ among actors: a bureaucrat may judge success by compliance with procedures, whereas a customary leader may judge it by whether local ecological knowledge is respected. A descriptive qualitative approach with a single case study design was used to obtain a thick and context-rich description of the process (Yin, 2018). Berau Regency was chosen because it combines the Kelay–Segah river basin, which links upstream and downstream communities, the presence of the Dayak customary community with its own ecological knowledge, and the strong influence of the mining and plantation industries.

Primary data were collected through in-depth interviews using a structured interview guide, field observation, and documentation. Informants were selected purposively according to their role and direct involvement in flood management, and they represent the pentahelix elements: the Regional Secretary, the head of BPBD, the military and the police, affected residents, the Dayak Berau customary community, a representative of the coal company PT Berau Coal, NGOs, and the editor-in-chief of a local online media outlet. Secondary data came from the Contingency Plan for floods, the regent's decree on the multisector rapid reaction team, regional regulations, and official disaster statistics.

The data were managed and analyzed with NVivo, following the interactive model of Miles et al. (2014), which consists of data management, data condensation, data display, and conclusion drawing and verification (Bazeley & Jackson, 2013). Transcripts were imported and classified by informant type. Open coding was followed by axial coding, in which parent nodes were arranged deductively according to the four dimensions of Ansell and Gash (2008) and the hindering and supporting factors, and then by selective coding to build the model. Project maps were used to display the relationships among nodes. Trustworthiness was maintained through the four criteria of Lincoln and Guba (1985): credibility (source and technique triangulation, member checking, and prolonged engagement), transferability (thick description), dependability, and confirmability (an audit trail in NVivo and a reflexive journal).

RESEARCH RESULT

Research Setting: Hydro-climatic Profile and Human-Induced Drivers

Berau Regency lies within the Berau–Kelai River Basin Area, which contains 15 river basins with a total catchment of 20,581 km², and about 89.28% of this catchment falls under the administrative jurisdiction of the regency. The Kelay

River (254 km) and the Segah River (152 km) meet near the capital, Tanjung Redeb, so runoff from the upstream area passes through the same downstream settlements before reaching the sea. In the national disaster risk index, Berau is classified as very highly prone to hydrometeorological disasters and ranks first in East Kalimantan, with a cumulative vulnerability score of 202, a social vulnerability of 59,277 exposed people, and an environmental vulnerability that covers 13,755 hectares.

Rainfall acts as a trigger, not as the only cause. During critical periods the western part of the regency received 300–400 mm of rain per month, which was linked to a positive sea surface temperature anomaly of 0.8–1.0°C in the Sulawesi Sea. When large upstream discharge met high tide in the estuary, a backwater effect raised the river level and pushed water into low-lying settlements. The second wave in May 2025 was also a compound event, because river overflow occurred together with coastal tidal flooding, secondary landslides, and strong winds. Modeling studies cited in the dissertation show that the forest cover that once intercepted rainfall and supported infiltration had been converted into open land, so rainfall was turned quickly into surface runoff. The consequences went beyond houses. About 10 hectares of rice fields were inundated in March 2025, about 2 hectares of maize failed completely in May, the Mapulu Bridge collapsed, and access roads were cut, which raised logistics costs and food prices in the affected villages.

Starting Conditions: Collaboration Born from Scarcity and Distrust

The most striking starting condition is the imbalance of resources inside the government. BPBD Kabupaten Berau had only 10 permanent rapid-response team (TRC) members, supported by 32 firefighters, and its water-evacuation equipment consisted of 2 fiber boats and 17 rubber boats. In the regency, floods periodically inundate 21 villages and affect about 38,788 people. If these numbers are compared, one boat has to serve more than 2,000 residents scattered across remote areas. This shortage became the incentive to participate that pushed the government to form a multisector TRC, because the state could not carry out evacuation on its own.

The gap was filled by other actors. The private sector contributed 11 rescue cars, 4 fire trucks, several excavators, and thousands of food packages, and it did so partly because flooding also threatens its logistics and hauling roads. When cellular networks failed because of power outages and submerged base stations, 74 members of the Indonesian Citizens' Radio Association (RAPI) in Region 1810 Berau took over emergency communication on the analog frequency of 142.020 MHz and guided evacuation boats in real time. On the other side, the NVivo map in Figure 1 shows that the starting conditions were also marked by limited equipment, limited BPBD human resources, low public trust, climate change, increasing risk, regional growth, and uneven access to information.

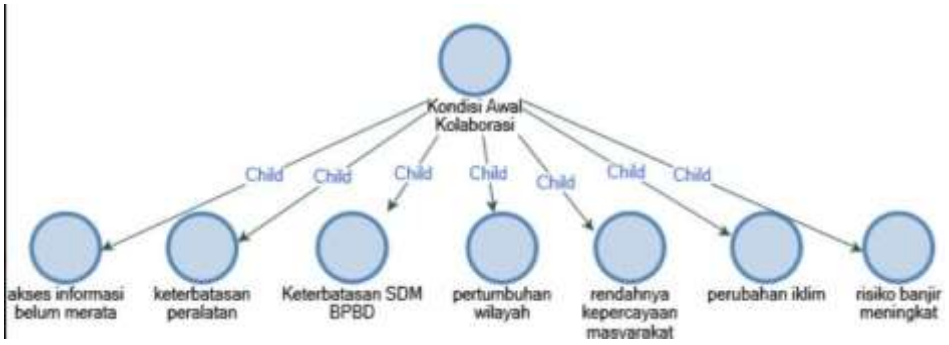

Figure 1. NVivo Project Map of the Starting Conditions of Collaboration
Source: NVivo data analysis (2026). Node labels are in Indonesian, the language of the interview data.

The most difficult starting condition is the prehistory of antagonism. Residents and customary leaders see the floods not as weather anomalies but as the result of deforestation, monoculture plantations, and mining upstream. They feel that local ecological knowledge about protecting natural catchment zones has been set aside and never entered the formal Contingency Plan. Public suspicion is reinforced by the closed environmental impact data of extractive companies and by unclear information on the distribution of corporate social responsibility funds. This distrust is an ecological trauma that is deeper than an ordinary communication problem.

The NVivo coding shows that the three starting conditions of Ansell and Gash (2008) appear in Berau in an uneven form. The imbalance of power is jurisdictional as well as material: the regency bears the consequences of floods, but permits for mining and plantations are often issued by higher levels of government, and the companies own heavy equipment that the government lacks. The history of cooperation is thin at the formal level, but there are earlier experiences of working together at the village level, such as the fire-care community groups and Disaster-Resilient Villages in Labanan Makarti and Merasa. The incentive to participate is strong for every actor, yet it differs in nature: the government needs equipment and personnel, companies need to protect roads and assets, residents need rescue and recovery, and customary leaders want their knowledge of the river to be recognized. The leadership analysis in Section 4.4 also shows that trust has two directions, namely public trust in the government and public trust in outside companies, and the two must be rebuilt separately.

Institutional Design: Formal but Not Yet Inclusive

The regional government has tried to institutionalize collaboration from the top down. The Contingency Plan for floods for 2025–2027 and Regent's Decree No. 588 of 2024 on the multisector TRC form the Disaster Emergency Handling Command System (SKPDB), which brings various entities into one operational command channel. This design gives clear ground rules and legal legitimacy, and the informants from the disaster agency and the security forces described it as an important basis for coordination.

The NVivo results show that the design still has a functional elitism. Local NGOs, environmental activists, and independent journalists often do not get an equal deliberative space, there is no centralized press room at the command post, and customary representatives were not invited when spatial arrangements were discussed. The principle of participatory inclusiveness has therefore not been fully achieved. Formal documents exist, but the actors who hold local knowledge and public oversight are still at the edge of the process.

Two sides of the design can be distinguished. On the procedural side, the Contingency Plan, the decree, and the command system give the response a clear structure and a legal basis for using the resources of several agencies at once. On the substantive side, the design treats non-state actors mainly as suppliers of resources, such as equipment, logistics, and volunteers, and much less as participants in decisions about spatial planning and mitigation. Highest-level customary figures, including the Sultan of Sambaliung and the head of the Dayak customary community, said that their ecological knowledge had not entered the formal planning documents. The forum therefore works well as an operational command structure, but it is weaker as a deliberative arena in which conflicting interests can be negotiated before a disaster occurs.

Facilitative Leadership: Strong at the Frontline

Where the upper layers struggled with trust and spatial issues, leadership at the field level worked more effectively. About 60 village noncommissioned officers (Babinsa) and dozens of village police officers (Bhabinkamtibmas) approached residents in a humane and cultural way, entered chest-deep water with limited equipment, and evacuated vulnerable groups without waiting for formal orders from the regency capital. The leadership map shows the same pattern: the role of the military and police is linked to a single command, the role of BPBD as coordinator is linked to a strengthened SKPDB, and the leadership of customary leaders is linked to mitigation based on customary territory. The nodes of field leadership and village head leadership indicate that the first rescue actions depended on initiatives at the site level, while the ability to mobilize resources was linked to strengthening each command post.

A second map of facilitative leadership identifies five actions: bridging communication among actors, initiating collaboration, facilitating coordination forums, encouraging evaluation and improvement, and building trust. The initiating role was taken by the public authority, in this case BPBD, which invited other parties to join. The trust-building action is the most demanding because it branches into public trust in the government and public trust in outside companies. This suggests that a facilitative leader in Berau must do more than convene meetings. The leader must also guarantee transparency of data and budgets, so that suspicion caused by earlier ecological damage can slowly be converted into social capital.

Collaborative Process and Intermediate Outcomes

Figure 2 shows that the collaborative process consists of workshops to prepare the Contingency Plan, coordination at field posts, cross-sector communication, face-to-face dialogue, an emergency-response command

process, and post-disaster evaluation. Cross-sector communication is linked to the idea of a single command, and evaluation is linked to strengthening the posts. Dialogue was not limited to formal meetings, because during the flood it took place through radio, messaging groups, and direct contact at the posts. Communication tools rooted in the community, such as RAPI and the traditional wooden signal drum (kentongan), helped fill the gap when digital infrastructure stopped working.

The most important intermediate outcome is the growth of independent capacity at the village level. Disaster-Resilient Villages (Destana) and fire-care community groups in villages such as Labanan Makarti and Merasa show that residents changed from passive victims into active participants who manage evacuation and public kitchens by themselves. This outcome is consistent with the NPS idea that the state should facilitate the capacity of citizens, not monopolize command.

Read against the five components of the collaborative process, the evidence is uneven. Face-to-face dialogue was strongest at the field posts and in the workshops that prepared the Contingency Plan, but weak between companies, customary leaders, and NGOs on the issue of spatial planning. Trust building was still incomplete, since public suspicion of the closed environmental data remained. Commitment to the process was visible in the response phase, when interdependence was obvious to everyone, and much less visible in prevention. Shared understanding was hindered by the gap between the technical language of the government and the way upstream residents read natural signs. The intermediate outcomes are the single-command logic in the field, post-disaster evaluation, and the growth of Destana. Independent media also played a role in checking information and reducing rumors during the emergency, although the absence of a press room at the command post limited it.

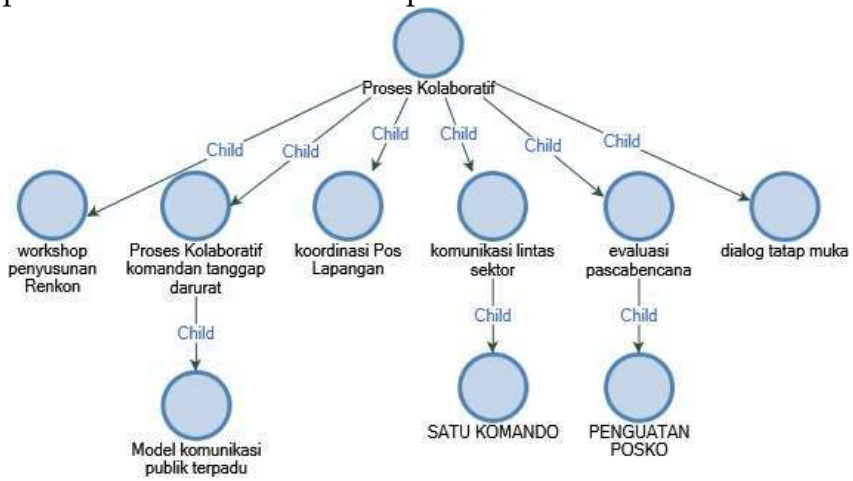

Figure 2. Nvivo Project Map of the Collaborative Process

Source: Nvivo data analysis (2026). Node labels are in Indonesian, the language of the interview data.

Hindering and Supporting Factors

Figure 3 presents the hindering factors. The main ones are the limited involvement of customary actors, slow delivery of aid, information that is not open, limited expert personnel, delayed data, and difficult access to upstream

areas. Behind these nodes are three structural problems: the limited physical evacuation capacity of the government, the systematic exclusion of customary leaders and NGOs, and the crisis of trust caused by the closed damage data of mining and plantation operations upstream.

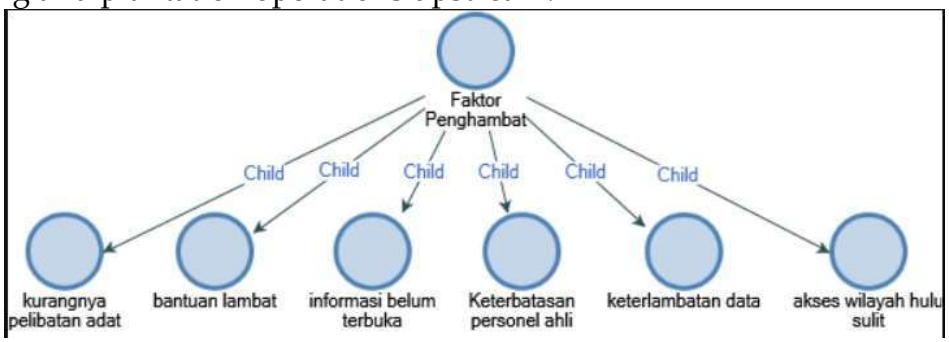

Figure 3. NVivo Map of the Hindering Factors of Collaboration
Source: NVivo data analysis (2026). Node labels are in Indonesian, the language of the interview data.

The supporting factors are shown in Figure 4. They include volunteer support, private-sector support, support from the military and police (linked to media support), mutual aid (gotong royong), messaging groups, and customary law. Most of these supports come from outside the formal state structure. Frontline officers made quick tactical decisions, companies injected logistics and heavy equipment out of concern for their own assets, radio volunteers restored communication, and strong social capital allowed villages to organize evacuation independently.

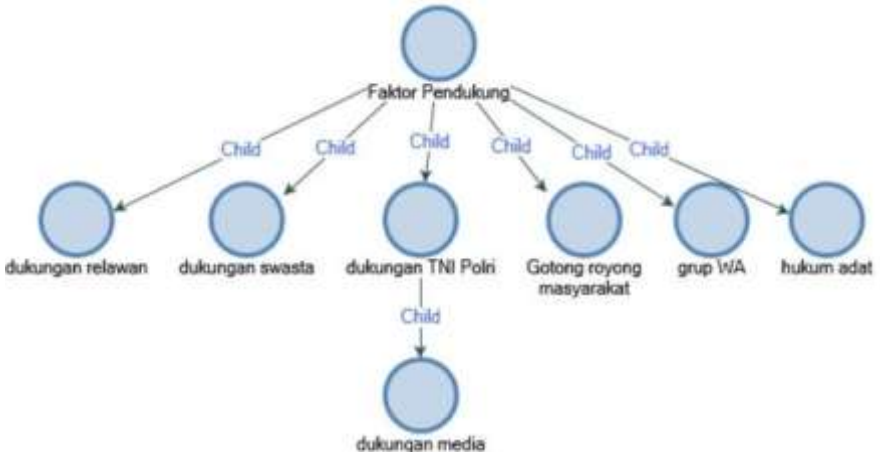

Figure 4. NVivo Map of the Supporting Factors of Collaboration
Source: NVivo data analysis (2026). Node labels are in Indonesian, the language of the interview data.

The maps also show that the actors defined the success of collaboration in different ways. For the government agencies and the security forces, success meant fast evacuation, a clear command line, and compliance with the Contingency Plan. For customary leaders and residents, success also meant that knowledge of the river and customary territory was taken into account, even when aid arrived on time. NGOs and the media placed more weight on the transparency of data and emergency funds, while the private sector acted mainly

to protect its logistics and assets. These expectations are not always compatible, and the current forum has no permanent arena to negotiate them. The model proposed in the next section is designed to provide that arena.

A comparison map (Figure 5) shows that transcripts from the customary community, affected residents, and the police and military were coded under both the hindering and the supporting nodes. This means that the two sets of factors are not opposite camps of actors. The same actor can be a source of strength and a source of constraint. For example, frontline officers were praised for their initiative, while the same informants noted that slow procedures and limited equipment restricted what they could do. Customary law appears as a supporting factor, yet the limited involvement of customary actors appears as a hindering one, which shows that the resource exists but is not yet used.

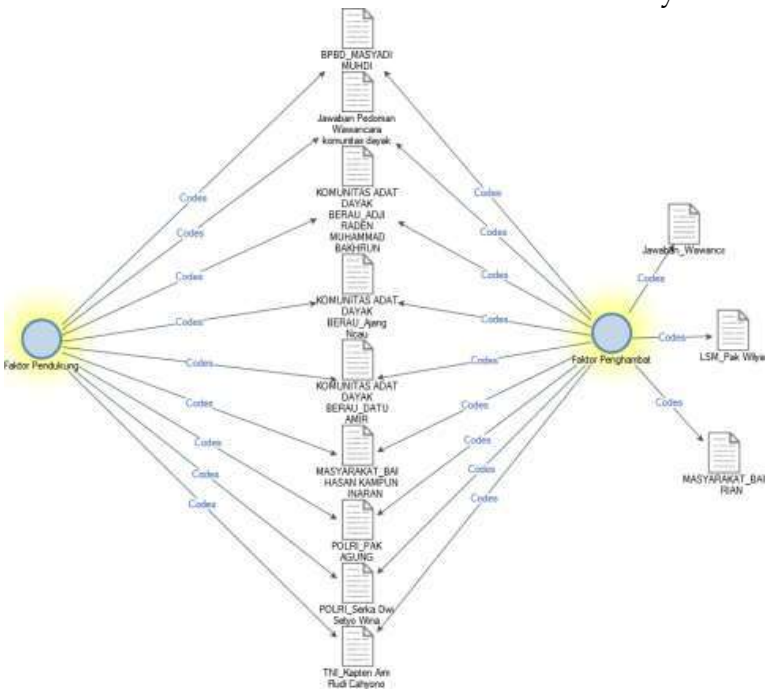

Figure 5. NVivo Comparison Map of Hindering and Supporting Factors
Source: NVivo data analysis (2026). Node and file labels are in Indonesian.

Proposed Model

Based on the weaknesses of the existing system, the study proposes a four-level model (Figure 6). Level 1 is a permanent collaboration forum with an oversight board that includes NGOs and the media. Level 2 is the main SKPDB post supported by a single-data disaster portal, which contains spatial planning information, environmental impact analysis, emergency fund realization, and corporate social responsibility flows. Level 3 decentralizes command into upstream–downstream zonal posts and customary mandate zones. Level 4 consists of Disaster-Resilient Villages and volunteer teams as the executors at the grassroots. Data and field feedback move upward, while logistics and cultural authority move downward.

The model was built from the selective coding of seven design nodes: a forum linking customary leaders, government, and companies; an integrated public communication model; a mitigation model based on customary territory;

a single-data model; a single-command model; a strengthened SKPDB; and stronger command posts. Each node answers a weakness found in the earlier sections. The forum and the single-data model respond to distrust and closed information, the customary-territory model responds to the exclusion of local knowledge, the single-command model and stronger posts respond to limited capacity and slow procedures, and the communication model responds to the failure of digital channels.

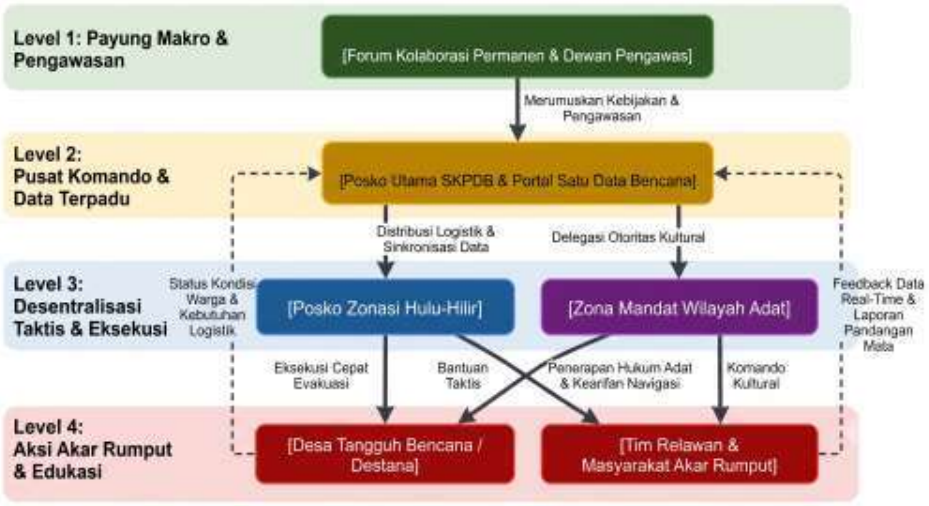

Figure 6. Proposed Four-Level Collaborative Governance Model for Flood Management in Berau

Source: Author's synthesis based on NVivo analysis (2026). Labels are in Indonesian.

DISCUSSION

Starting Conditions: From Managerial Obstacle to Ecological Trauma

In the original model, distrust is treated as a managerial obstacle that can be reduced by intensive dialogue and neutral mediation. In Berau, the distrust comes from a structural injury, namely the perception that upstream ecological damage has been allowed to happen and is hidden behind closed data. This is consistent with Bodin (2017), who argues that excluding local ecological knowledge weakens legitimacy. For this reason, this study adds spatial and ecological justice as a condition for collaboration, for instance through public audits of corporate environmental impact and transparent reporting of corporate social responsibility funds. Without such transparency, a collaboration forum risks becoming a form of greenwashing.

The Berau case also adds nuance to the idea of interdependence as an incentive. McGuire and Silvia (2010) show that perceived problem severity and organizational capacity shape how often managers collaborate, and the scarcity of boats and personnel in Berau fits this pattern. However, interdependence there is asymmetrical: companies hold equipment, the government holds legitimacy, and communities hold knowledge of the river. Companies also join partly to protect their own assets, so their participation may be instrumental. Scarcity can therefore start a collaboration, but it does not by itself produce the trust needed to keep it going.

Institutional Design: Written Rules and Unwritten Knowledge

Ansell and Gash (2008) emphasize clear ground rules and inclusiveness, and the Berau government has provided written rules through the Contingency Plan and the regent's decree. The problem is that inclusion is often understood as the physical presence of non-state representatives in a structure controlled by the state. The results show that unwritten rules, such as customary knowledge of rivers and sacred catchment zones, were left out. A hybrid design that combines state law and customary systems, in which customary leaders act as zone field commanders, therefore seems more appropriate. Bryson et al. (2015) note that power imbalance is a central difficulty in cross-sector collaboration, and the proposed decentralization of authority is one way to reduce it.

This point also connects to the concept of pseudo-collaboration raised in the research gap. A forum can be fully formal and still leave the substance of spatial decisions to the actor with the most resources. The exclusion of customary leaders from spatial discussions, the lack of a press room, and the closed environmental data are signs of this risk. Making the oversight board a formal part of the design, with NGOs and the media as members, is meant to prevent the forum from becoming only an operational tool of the government and companies.

Facilitative Leadership: Distributed Rather than Centralized

The original model describes a mediator at the center of the forum. In an emergency with very little time and isolated topography, this arrangement does not work well. The success of evacuation in Berau depended on discretion at the field level, which we call distributed field leadership. This finding is in line with McGuire and Silvia (2010) and with Kapucu et al. (2010), who recommend building capacity at the local level because it responds faster than higher levels. It suggests that authority to decide should be delegated formally to Babinsa, Bhabinkamtibmas, and village heads, so that their actions are legitimate and not merely informal exceptions.

Distributed leadership also carries a risk. If the response depends on the courage of individual officers, it is fragile, and accountability becomes unclear when decisions are made quickly without written orders. Formal delegation should therefore be accompanied by simple reporting rules and by the single-data platform, so that field decisions can be reviewed after the event. This is where the role of BPBD changes from commander to orchestrator, which matches the NPS principle that public officials should serve and facilitate.

Collaborative Process: Cross-Medium Communication

Ansell and Gash (2008) place face-to-face dialogue at the center, assuming that communication infrastructure is available. During the floods in Berau, digital networks were disrupted and geographic isolation limited direct meetings. The process therefore relied on a mix of media: hydrometeorological data, natural signs known by local people, traditional signals, and analog radio. We call this cross-medium communication orchestration. Shared understanding can only be achieved when the bureaucracy recognizes and uses the communication channels that already exist in the community.

The intermediate outcomes deserve attention as well. Destana villages and public kitchens are examples of co-production, in which residents do not wait for services but organize them. Emerson et al. (2012) describe the capacity for joint action as the result of collaborative dynamics, and the Berau case shows that this capacity can be built at the village level even when the higher-level forum is still weak. The next step is to connect these village capacities with the formal command system so that they do not remain isolated initiatives.

Hindering and Supporting Factors Reconsidered

The comparison map indicates that hindering and supporting factors are entangled. The same actors are described as both strong and constrained, and the strongest supports come from outside the state structure. This pattern is encouraging because it shows that social capital and private resources exist, but it is also a warning. A system that survives mainly because of volunteers, corporate goodwill, and the initiative of frontline officers may not be able to repeat its performance when the next flood is larger. For this reason, the recommendations focus on turning informal strengths into institutional arrangements, such as legitimized radio networks, pre-positioned logistics, and permanent forums.

Theoretical and Practical Implications

Table 2 compares the emphasis of the original model with the evidence from Berau and the resulting adjustment, and Figure 7 shows the same adjustment visually.

Table 2. Comparison of the Ansell and Gash (2008) Model with the Berau Evidence

Dimension	Ansell and Gash (2008)	Evidence from Berau	Adjustment
Starting conditions	Trust and incentives; conflict seen as a communication problem	Ecological trauma; closed data; asymmetric interdependence	Spatial and ecological justice
Institutional design	Clear ground rules; inclusive participation	Written rules exist; customary knowledge excluded	Decentralized customary authority
Facilitative leadership	Mediator at the center of the forum	Field officers decide under time pressure	Distributed field leadership
Collaborative process	Face-to-face dialogue; shared understanding	Digital blackout; isolation; language gap	Cross-medium communication

Source: Author's synthesis based on Ansell and Gash (2008) and NVivo analysis (2026)

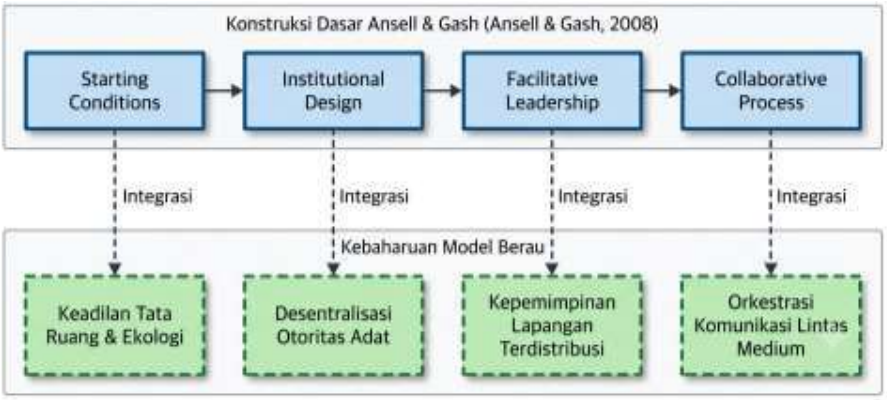

Figure 7. Adjustment of the Ansell and Gash (2008) Model in the Berau Case
Source: Author's synthesis based on NVivo analysis (2026). Labels are in Indonesian and English.

These results also support the value orientation of the New Public Service (Denhardt & Denhardt, 2000, 2015). The independence of Destana villages and public kitchens shows that residents already have strong communitarian capacity, so the most appropriate role of the state is to facilitate that capacity. The findings also agree with Emerson et al. (2012) that collaboration needs a capacity for joint action, but they add that in extractive regions this capacity depends on how power and information are shared. From these findings, a proposition can be formulated: a hybrid socio-ecological collaborative governance that combines spatial and ecological justice with the involvement of local cultural authority will strengthen operational agility and field leadership, and this will increase community resilience when the process is supported by reliable frontline actors.

For practice, the findings imply a change in the role of BPBD from an instructing commander to a facilitative orchestrator. The agency needs to open equal and transparent mediation spaces between affected residents and companies, give field officers legal discretion, and bring innovations from civil society, such as the RAPI radio and the kentongan, into early warning procedures. The private sector can be tied into pre-disaster mitigation, for example by pre-positioning heavy equipment and logistics at vulnerable points, but this cooperation will only be credible if companies publish real data on environmental damage and the flow of their social responsibility funds.

Limitations

This study has several limitations. It is a single case study with qualitative data, so the relative weight of each factor cannot be measured, and the figures on equipment and personnel describe conditions during the study period. The NVivo maps also show the structure of themes and not their frequency, so they should be read as a display of relationships rather than a ranking of importance. Because of this, the findings are not meant for statistical generalization. Even so, the triangulation of sources and techniques strengthens their credibility, and the thick description allows other disaster-prone regions with similar characteristics to judge transferability.

CONCLUSIONS AND RECOMMENDATIONS

This study concludes that collaborative governance in flood management in Berau was born from the absolute resource limits of the disaster agency, not from prior trust among actors. The starting conditions were marked by power imbalance and ecological distrust, the institutional design was formal but not fully inclusive, leadership was strong and flexible at the frontline, and the collaborative process began to produce intermediate outcomes in the form of independent village capacity. The main hindering factors are limited government capacity, exclusion of customary leaders and NGOs, closed environmental data, and slow bureaucracy and digital communication. The main supporting factors are frontline officers, private-sector logistics, analog radio volunteers, and community social capital. The proposed Socio-Ecological Collaborative Governance model responds to these conditions through decentralized command, integration of customary authority, and cross-medium communication.

Three recommendations follow. First, the regional government should build an integrated single-data portal that openly presents spatial planning, environmental impact analysis, emergency fund realization, and corporate social responsibility flows, to rebuild trust. Second, the SKPDB should be reformed into upstream–downstream zonal posts, and a formal regulation should give customary leaders, village heads, and frontline officers delegated operational authority. Third, BPBD and the communication agency should legitimize analog radio as a backup communication system, and the government should invest in pre-positioned logistics and training for Disaster-Resilient Village cadres in every flood-prone point.

ADVANCED RESEARCH

Future research could test the proposed Socio-Ecological Collaborative Governance model in other resource-rich regencies through comparative case studies or mixed methods, and could measure the effect of each element, such as the single-data portal or customary zone command, on evacuation time and community resilience. Further studies may also examine how power asymmetry between extractive companies and local governments can be managed in the long term, including the effectiveness of independent oversight boards.

ACKNOWLEDGMENT

The authors thank the Doctoral Program in Administrative Science, Faculty of Social and Political Sciences, Universitas 17 Agustus 1945 Surabaya, for academic guidance and support. Appreciation is also extended to the Berau Regency Government, BPBD Kabupaten Berau, the military and police, PT Berau Coal, the Dayak customary community, volunteers, the media, and the residents of Berau who willingly served as informants and facilitated the field observation.

REFERENCES

Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. Journal of Public Administration Research and Theory, 18(4), 543–571. https://doi.org/10.1093/jopart/mum032

Badan Nasional Penanggulangan Bencana. (2025). [Disaster events data for Indonesia, 2024] [Data set]. BNPB.

Badan Penanggulangan Bencana Daerah Kabupaten Berau. (2025). [Flood events, impacts, and losses in Berau Regency, 2023 and 2025] [Unpublished raw data]. BPBD Kabupaten Berau.

Badan Pusat Statistik Kabupaten Berau. (2025). [Area, population density, and regional gross domestic product of Berau Regency] [Statistical data]. BPS Kabupaten Berau.

Bazeley, P., & Jackson, K. (2013). Qualitative data analysis with NVivo (2nd ed.). SAGE Publications.

Bodin, Ö. (2017). Collaborative environmental governance: Achieving collective action in social-ecological systems. Science, 357(6352), Article eaan1114. https://doi.org/10.1126/science.aan1114

Bryson, J. M., Crosby, B. C., & Stone, M. M. (2015). Designing and implementing cross-sector collaborations: Needed and challenging. Public Administration Review, 75(5), 647–663. https://doi.org/10.1111/puar.12432

Creswell, J. W., & Poth, C. N. (2018). Qualitative inquiry and research design: Choosing among five approaches (4th ed.). SAGE Publications.

Denhardt, J. V., & Denhardt, R. B. (2015). The new public service: Serving, not steering (4th ed.). Routledge.

Denhardt, R. B., & Denhardt, J. V. (2000). The new public service: Serving rather than steering. Public Administration Review, 60(6), 549–559. https://doi.org/10.1111/0033-3352.00117

Emerson, K., Nabatchi, T., & Balogh, S. (2012). An integrative framework for collaborative governance. Journal of Public Administration Research and Theory, 22(1), 1–29. https://doi.org/10.1093/jopart/mur011

Global Forest Watch. (2024). [Tree cover loss in Berau Regency, 2000–2022] [Data set]. World Resources Institute.

Head, B. W., & Alford, J. (2015). Wicked problems: Implications for public policy and management. Administration & Society, 47(6), 711–739. https://doi.org/10.1177/0095399713481601

Jaringan Advokasi Tambang Kalimantan Timur. (2024). [Mining concessions in Berau Regency and their spatial relation to flood locations]. JATAM Kaltim.

Kapucu, N., Arslan, T., & Collins, M. L. (2010). Examining intergovernmental and interorganizational response to catastrophic disasters: Toward a network-centered approach. Administration & Society, 42(2), 222–247. https://doi.org/10.1177/0095399710362517

Lincoln, Y. S., & Guba, E. G. (1985). Naturalistic inquiry. SAGE Publications.

McGuire, M., & Silvia, C. (2010). The effect of problem severity, managerial and organizational capacity, and agency structure on intergovernmental collaboration: Evidence from local emergency management. Public

Administration Review, 70(2), 279–288. https://doi.org/10.1111/j.1540-6210.2010.02134.x

Miles, M. B., Huberman, A. M., & Saldana, J. (2014). Qualitative data analysis: A methods sourcebook (3rd ed.). SAGE Publications.

Pemerintah Kabupaten Berau. (2025). [Budget allocation for flood response and drainage, fiscal year 2025]. Pemerintah Kabupaten Berau.

Peraturan Daerah Kabupaten Berau Nomor 8 Tahun 2022 tentang Penyelenggaraan Penanggulangan Bencana Daerah.

Republik Indonesia. (2007). Undang-Undang Nomor 24 Tahun 2007 tentang Penanggulangan Bencana.

Rittel, H. W. J., & Webber, M. M. (1973). Dilemmas in a general theory of planning. Policy Sciences, 4(2), 155–169. https://doi.org/10.1007/BF01405730

World Meteorological Organization. (2024). State of the global climate 2023 (WMO-No. 1347). WMO.

Yin, R. K. (2018). Case study research and applications: Design and methods (6th ed.). SAGE Publications.