



# Assessing Institutional Collaboration for Sustainable Watershed Management: A Case Study from Desa Rindu Hati, Bengkulu Tengah

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**Abstract:** This study evaluates institutional collaboration in managing the Bengkulu River Basin (DAS) as outlined in Regional Regulation Number 1 of 2017 on Watershed Management. A qualitative descriptive approach with a case study method was employed, focusing on key aspects of collaboration such as communication, decision-making coordination, conflict resolution, monitoring and evaluation, and procedural improvements. The goal of this research is to assess the steps taken to implement these collaborative elements. The findings indicate that leadership within the collaborating institutions plays a critical role in monitoring and evaluating watershed management efforts. However, despite these efforts, the integration of these institutions has not resulted in a unified approach. Each institution maintains its specific roles and functions, leading to fragmented implementation, even though the intention for collaboration exists. This study highlights both the challenges and opportunities in enhancing institutional collaboration for effective watershed management. It provides insights into how collaborative elements can be better realized to ensure a more integrated and efficient approach to managing the watershed, ultimately contributing to the success of watershed management initiatives. The research underscores the need for improved coordination, clearer roles, and more effective communication among the involved institutions to achieve a cohesive and sustainable management framework.

**Keywords:** Institutional Collaboration, Policy Evaluation, Watershed Management; Sustainable Watershed Management

## Introduction

The Watershed Area (DAS) is an essential ecological system, which includes natural resources such as vegetation, soil, and water that are utilized by humans to meet their needs. As an integral part of the hydrological cycle, a DAS functions to capture, store, and discharge rainwater to lakes or seas naturally (Law No. 23 of 2014 on Regional Government). In Indonesia, watershed management presents significant challenges, involving various social, economic, and environmental factors, requiring cross-sectoral and institutional collaboration.

In the province of Bengkulu, especially in the Air Bengkulu Watershed, the damage occurring in both upstream and downstream areas has severely impacted water quality,

which in turn affects local economies and community welfare. Human activities, such as open-pit mining, coal tailing waste collection, and intensive agriculture, are major contributors to the degradation of this watershed (Mopangga, 2020). Previous studies have identified that watershed management is often hindered by a lack of synergy between involved institutions, a misalignment between government policies and field practices, and insufficient active participation from the community (Yasminingrum, 2017) (Basuki et al., 2022) Despite the existence of national policies on watershed management, implementation at the local level often faces challenges in inter-institutional coordination and regulatory inconsistencies.

Previous studies indicate that watershed management in Indonesia is frequently obstructed by differing institutional interests and unclear coordination mechanisms. Research by Narendra et al. (2021) identified weak collaboration among institutions responsible for managing watersheds, negatively affecting the effectiveness of conservation and environmental maintenance efforts. Basuki et al., (2022) further emphasized the need for strengthening coordination between government agencies and climate change mitigation bodies to improve watershed management outcomes. Although various policies exist, studies by Voets et al. (2025) highlight that these policies are often poorly translated into action at the ground level, particularly in regions with diverse social, cultural, and economic contexts.

Research by Bianchi et al. (2021) also demonstrated that the ecosystem quality of the Air Bengkulu Watershed is significantly affected by unsustainable agricultural practices. In addition, Yasminingrum (2017) noted the low level of community participation in watershed management, which impedes the achievement of sustainable management goals. Thus, while many studies have addressed watershed management in general, few have focused on institutional collaboration, particularly at the local level.

This study fills a gap in the literature by exploring institutional collaboration in the management of the Air Bengkulu Watershed, specifically in Desa Rindu Hati, Taba Penanjung Subdistrict, Bengkulu Tengah District. This study differs from previous studies that mainly focus on the technical aspects of watershed management by providing a specific focus on institutional interactions and coordination, as well as the role of the local community in the management of water resources. This research contributes to the development of the Collaborative Governance theory, which emphasizes the importance of active participation from various stakeholders, including government, civil society, and private sectors, in managing natural resources.

This study adopts the Collaborative Governance framework, which has been developed in public governance research. This model involves various non-governmental stakeholders in decision-making processes related to public policy and natural resource management (Runya et al, 2015) (Voets et al, 2025). Given the complexity of the challenges faced in watershed management, such as inter-institutional conflicts and misalignment between policy and implementation, this approach is highly relevant. The study also integrates Institutional Theory, which explores how organizations and institutions interact within a broader system and how this interaction impacts policy effectiveness (Zahara, 2018).

Based on the background above, the main research question addressed in this study is: How is institutional collaboration evaluated in the management of the Air Bengkulu Watershed in Desa Rindu Hati, Taba Penanjung Subdistrict, Bengkulu Tengah District? This study aims to evaluate the mechanisms of collaboration between institutions involved in watershed management in the area and to identify factors influencing the effectiveness of collaboration. The study also seeks to provide recommendations for improving integrated and sustainable watershed management.

## **Methodology**

### **Research Design**

This study adopts a qualitative descriptive approach, using a case study method, to evaluate institutional collaboration in the management of the Air Bengkulu Watershed (DAS). A case study was chosen because it allows for an in-depth, contextualized understanding of the phenomena within its real-life context (Yin, 2018). Data collection was conducted through three primary techniques: in-depth interviews, participant observation, and focus group discussions (Creswell, 2016).

The study was conducted in Desa Rindu Hati, Taba Penanjung Subdistrict, Bengkulu Tengah District, Bengkulu Province. This location was chosen for its relevance to the ongoing program and the active involvement of key stakeholders in the watershed management process. Moreover, the program is still in progress, which provides a valuable opportunity to assess the effectiveness of institutional collaboration in real time. The site's strategic importance makes it an ideal setting to explore the dynamics of collaborative governance in the context of watershed management.

### **Informants**

The research relies on both primary and secondary informants. Primary informants are those who have direct knowledge and involvement in the management of the Air Bengkulu Watershed and are able to provide comprehensive insights into the collaborative processes. These key informants include government officials from the relevant environmental and water management agencies, local community leaders, and representatives from non-governmental organizations (NGOs) involved in the project. Secondary informants consist of individuals with indirect involvement, such as community members, local stakeholders, and academic experts in watershed management. This dual approach allows for triangulation of data, providing a more robust and comprehensive understanding of the research topic (Abdullah, 2015) (Herdyansah, 2019).

Key informants were selected based on their direct involvement in the management and decision-making processes related to the watershed, ensuring that they could offer informed perspectives on the institutional collaboration process. These informants include senior officials from the Ministry of Environment and Forestry (KLHK), provincial environmental agencies, local government representatives, as well as local NGOs actively engaged in environmental conservation efforts within the watershed.

## Data Collection Techniques

1. **In-depth Interviews:** Semi-structured interviews were conducted with key informants to gain a detailed understanding of the challenges and successes of institutional collaboration. The interviews allowed for flexibility, enabling the researcher to explore emerging themes while keeping the interview focused on the core aspects of collaboration (Creswell & Poth, 2016).. Each interview lasted approximately 60-90 minutes and was recorded with the consent of the informant.
2. **Participant Observation:** The researcher also participated in several field visits and meetings involving stakeholders in the watershed management process. This direct observation provided valuable insights into the practical dynamics of institutional collaboration, decision-making, and problem-solving. Observations focused on interactions between stakeholders, communication patterns, and coordination mechanisms during collaborative activities (Darlington & Scott, 2020).
3. **Focus Group Discussions (FGDs):** FGDs were conducted with groups of local community members and other stakeholders to explore their perceptions of the institutional collaboration efforts. These discussions provided a platform for participants to share their views on how effectively the collaboration addresses local issues and how the various institutions involved are perceived by the community. FGDs were particularly useful in capturing the community's attitudes and concerns, which are often overlooked in formal interviews (Kitzinger, 1995).

## Data Analysis

The data analysis followed a systematic process outlined by Creswell & Poth (2016), involving three main stages:

1. **Data Reduction:** Raw data from interviews, observations, and FGDs were transcribed and coded. The initial step involved identifying recurring themes and patterns in the responses related to institutional collaboration, decision-making processes, and conflict resolution strategies.
2. **Data Display:** A thematic matrix was used to display the key themes emerging from the data, categorized into areas such as communication, coordination, decision-making, and conflict resolution. This stage allowed for a visual representation of the relationships between the various stakeholders and their roles in the collaboration process.
3. **Conclusion Drawing/Verification:** In this final stage, the data were analyzed to draw conclusions about the effectiveness of institutional collaboration in managing the Air Bengkulu Watershed. Patterns and trends were verified through member checking and peer debriefing to ensure the reliability and validity of the findings (Lincoln & Guba, 1985)

## Ethical Considerations

Ethical approval for the research was obtained from the relevant ethical review board. All informants were fully informed about the purpose of the study, and written consent was obtained prior to participation. Confidentiality was maintained, and data were anonymized to protect the identities of all participants. Additionally, the researcher ensured

transparency in data collection and analysis to avoid any biases in the interpretation of the findings.

## Result and Discussion

The study area of this research is the Rindu Hati Sub-watershed (Sub DAS Rindu Hati), located in the central part of Bengkulu Tengah District. The Air Bengkulu Watershed (DAS Air Bengkulu) spans across two administrative regions: Bengkulu Tengah District and the City of Bengkulu, with Sub DAS Rindu Hati positioned at the headwaters. This particular area was selected for its strategic importance as it directly borders a protected forest, making it an ideal site for studying the dynamics of water inflow and outflow over a specific time period. With an area of 191,460,000 m<sup>2</sup>, Sub DAS Rindu Hati plays a significant role in contributing to the water potential within the larger Air Bengkulu Watershed. The region's location at the headwaters, as well as its proximity to the forest, emphasizes its importance in understanding the hydrological dynamics and the challenges of sustainable water management.

Sub DAS Rindu Hati itself consists of several villages, including Karang Tengah, Kota Niur, Detak Jantung, Taba Teret, Tanjung Heran, and Tanjung Raman, and includes a main river with a length of 19.4 kilometers. The watershed management of this area is crucial to maintaining the water quality and quantity necessary for the surrounding communities, as well as sustaining the broader ecosystem. This aligns with the general notion in watershed management that both upstream and downstream areas must be managed cohesively, through coordinated planning, implementation, and continuous monitoring (Runya et al., 2015). Recent studies, such as Wakwella et al. (2023), emphasize the need for this cohesive approach, showing that coordinated watershed management efforts, even in the U.S., are integral for improving the overall ecosystem and water security of the region.

The management of the Air Bengkulu Watershed, which is regulated through frameworks such as Regional Regulation No. 1/2017 on Watershed Management, requires the involvement of multiple stakeholders from different sectors. This includes the coordination of government bodies, non-governmental organizations (NGOs), and local communities. According to Collaborative Governance Theory (Ansell & Gash, 2007), effective governance of complex environmental issues, such as watershed management, demands collaborative efforts from multiple stakeholders. However, the findings of this study indicate that despite a concerted effort, the collaboration within the Air Bengkulu Watershed remains fragmented due to institutional silos and lack of integration between agencies. This fragmentation hinders the development of a unified strategy for watershed management, which is essential to maintaining the watershed's health and ensuring sustainable water resources for future generations. This fragmentation was also highlighted by Liu et al. (2022), who found that in Southeast Asia, similar challenges persist, as agencies often operate in isolation despite the need for unified management approaches.

In terms of the institutional collaboration in DAS Air Bengkulu, the results reveal that the roles of key institutions—such as BPDAS HL Ketahun, Dinas PUPR, and Forum DAS—are critical to maintaining oversight and coordinating efforts in the management of the

watershed. These institutions, while active, face challenges related to coordination and alignment of objectives across different levels of government and sectors. As Voets et al. (2025) emphasize, while collaborative governance models are widely recognized, effective implementation remains difficult, particularly in environments where institutional mandates and priorities often conflict. This study reaffirms these challenges, showing that although agencies are working together, they still operate within their own boundaries of authority, which prevents full integration of efforts across sectors. Similarly, Chavez et al. (2021) underline that cross-sector coordination remains an issue in many global settings, where agencies are often unable to overcome institutional boundaries that limit their collaborative capacity.

The Collaborative Evaluation Process identified in this study further supports the importance of communication, decision-making coordination, and conflict resolution in the management of DAS. Regular communication and meetings between stakeholders were found to be essential for identifying issues, discussing solutions, and ensuring ongoing coordination. However, as found by Bianchi et al. (2021), despite these efforts, the actual decision-making process remains somewhat fragmented, and the conflict resolution mechanisms, though present, often lack the teeth to bring about effective change. This points to a significant gap in the theory of collaborative governance, where effective communication and conflict resolution, while theoretically central to collaboration, are often underperforming in practice. In line with this, Taylor & Spencer (2024) observed that while communication mechanisms exist, their true effectiveness in driving change is often undermined by the lack of institutional trust and commitment from the involved parties.

In Indonesia, research by Pambudi (2024) has shown similar fragmentation issues within watershed management efforts, particularly in the Cidanau Watershed in Banten Province. His study highlighted that although multiple institutions were involved in the management of the watershed, there was a lack of synergy between government agencies and local communities. The lack of integrated decision-making frameworks and limited community involvement were found to be major obstacles to achieving sustainable water management. These findings mirror the challenges faced in DAS Bengkulu, where coordination between institutions has yet to reach its full potential.

The leadership within key institutions plays a pivotal role in facilitating collaboration. As found in this research, the BPDAS HL Ketahun and Forum DAS have been central in driving collaborative efforts, ensuring that the Air Bengkulu Watershed management strategies are not only conceived but also actively implemented. These institutions also act as facilitators, coordinating the actions of various agencies and providing advice on strategies for enhancing the quality of water management programs. The findings from this research align with Institutional Theory (North, 1990), which asserts that effective governance requires institutions to adapt to new challenges and ensure that policies are not only created but enforced in a manner that allows for the integration of diverse organizational functions. In this context, while institutional leadership has contributed to sustaining collaborative efforts, the lack of alignment between institutional tasks and functions remains a barrier to achieving fully integrated watershed management.

Liu et al. (2022) also found that institutional leadership is key in overcoming fragmentation, but alignment across diverse agencies remains a major hurdle in many regions.

The evaluation process itself was found to follow key stages as outlined by Collaborative Governance Theory: communication, decision-making, conflict resolution, monitoring and evaluation, and procedural improvements. The role of facilitators—specifically BPDAS HL Ketahun—was integral in ensuring that communication and coordination across agencies were maintained throughout the evaluation process. This is consistent with Yasminingrum (2017), who argued that effective facilitators play a crucial role in bridging gaps between agencies and ensuring that all stakeholders are aligned toward the same goals. However, the study also found that the process of building trust and commitment between institutions remains a significant challenge. Trust, as noted by Ansell & Gash (2007), is critical in collaborative governance, and while trust was noted as present in some areas, the lack of a fully integrated process hindered deeper collaboration. Chavez et al. (2021) also emphasize the role of trust-building in fostering long-term collaboration, noting that without this foundational element, even well-coordinated efforts may falter.

Recent studies in Indonesia also emphasize the need for continuous evaluation and adaptation in the governance of DAS. Wulandari, (2024) found that in the Cidanau Watershed, the lack of clear communication channels between local governments and communities led to conflicting priorities and hindered collaborative efforts. In line with this, Amin (2021) found that institutional governance in several Indonesian DAS faced challenges due to inconsistent policies and a lack of enforcement at the local level. These studies further highlight the importance of institutional alignment, community involvement, and continuous evaluation in ensuring that watershed management is effective and sustainable.

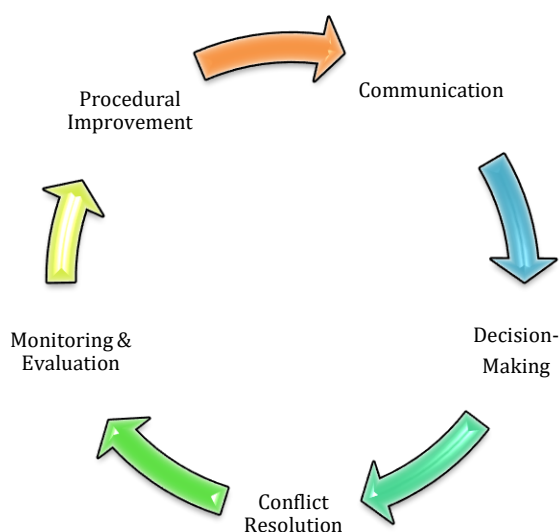
**Table 1.** Key Institutional Roles in Collaborative Evaluation of DAS Air Bengkulu

Stage	Involved Institutions	Key Activities
<b>Communication</b>	BPDAS HL Ketahun, Forum DAS, Local Government Agencies	Regular meetings, issue identification, and agenda setting.
<b>Decision-Making</b>	Dinas PUPR, BPDAS HL Ketahun, Forum DAS	Joint decision-making on watershed management strategies.
<b>Conflict Resolution</b>	All Stakeholders, Mediated by Forum DAS	Negotiation and resolution of stakeholder conflicts.
<b>Monitoring &amp; Evaluation</b>	BPDAS HL Ketahun, Dinas PUPR, Local Stakeholders	Continuous monitoring of management strategies and periodic evaluations.
<b>Procedural Improvement</b>	BPDAS HL Ketahun, Local Government, NGOs	Ongoing feedback to refine and improve collaborative processes.

Source : Analysis Results, 2025

The collaborative governance process in DAS Air Bengkulu was found to follow a typical cycle of engagement, with stages of communication, decision-making, conflict resolution, and ongoing monitoring. However, while progress has been made, the fragmentation of institutional efforts continues to be a barrier. The leadership provided by BPDAS HL Ketahun and Forum DAS has been central in organizing these efforts, but further integration of institutional roles and clearer lines of responsibility are required for sustained collaboration.

The findings from the study emphasize the dynamic relationships between key institutions involved in the collaborative governance of DAS. Figure 1 below illustrates how these institutions interact, with feedback loops that contribute to the ongoing process of collaboration and adjustment.



**Figure 1.** Dynamics of Institutional Collaboration in DAS Air Bengkulu

Source: Analysis Results, 2025

In conclusion, the research highlights the complexity of institutional collaboration in the management of the Air Bengkulu Watershed. While the efforts of various agencies are commendable, significant barriers to full integration remain, primarily due to the fragmented nature of institutional tasks and responsibilities. To overcome these challenges, a more coordinated approach is necessary, along with the empowerment of local communities and better integration of their needs and priorities into the management framework.

### Limitations of the Study

This study has several limitations. First, the research was focused on Sub DAS Rindu Hati, which may not fully represent the broader dynamics of the entire Air Bengkulu Watershed. Therefore, the findings should be viewed with the understanding that conditions in other areas of the watershed might differ. Second, while the study involved community stakeholders, the level of community participation was limited, which may have skewed the perspectives on the effectiveness of collaborative governance. Third, the

limited timeframe and resources for the study constrained the depth of field observations and the number of informants who could be included. Lastly, the fragmentation of data sources may have resulted in some aspects of institutional collaboration being underexplored.

### **Future Research Directions**

Future research could expand the geographical scope to include the entire Air Bengkulu Watershed, allowing for a more comprehensive comparison across different sub-watersheds. Longitudinal studies could provide insights into how institutional collaboration evolves over time, and how adaptive management strategies are developed and implemented. Furthermore, future studies could focus more on enhancing community involvement in collaborative processes, as the role of local stakeholders is critical for the sustainability of watershed management. The use of technology in managing and monitoring water resources should also be explored further, as it could enhance the effectiveness and efficiency of collaborative governance in complex environmental contexts.

### **Conclusion**

This study reveals that the management of the Rindu Hati Sub-Watershed (Sub DAS Rindu Hati) within the Air Bengkulu Watershed (DAS Air Bengkulu) is carried out in accordance with spatial planning and water resource management frameworks, as prescribed by applicable legal regulations. However, the study also found that watershed management cannot be carried out by a single institution; it requires effective collaboration between various relevant agencies. The main institutions involved, such as BPDAS HL Ketahun and Forum DAS Air Bengkulu, play a central role in evaluating institutional collaboration, but coordination among agencies remains fragmented. Each institution operates within its own scope of responsibilities, which hinders the integration needed for effective management. This fragmentation of institutional roles presents a challenge in achieving cohesive watershed management, consistent with Institutional Theory (North, 1990), which emphasizes the need for collaboration across agencies with distinct functions and mandates.

The findings have significant implications for the future of watershed management policies. First, stronger coordination between agencies is needed to reduce fragmentation and improve the overall effectiveness of management efforts. Better integration of institutional roles will enhance decision-making processes and policy implementation. Second, the participation of local communities in watershed management must be further strengthened. While agencies have involved communities to some extent, local participation in decision-making and policy evaluation remains limited. Increasing community involvement, as indicated by Bianchi et al. (2021), is essential for ensuring that management practices are responsive to local needs and priorities. Third, continuous evaluation of the policies and programs related to watershed management is crucial for improving and adapting strategies. Institutions like BPDAS HL Ketahun should ensure that evaluations are structured and based on accurate data to provide meaningful insights for future improvements.

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