

Environmental Governance for Sustainable Natural Resource Management in Indonesia

Darmanto and Heri Wahyudi*

Graduate School, Universitas Terbuka, Tangerang Selatan 51418, Indonesia

ABSTRACT

This research explores environmental governance and natural resource management in Indonesia, emphasizing its sustainability impacts. We identify key environmental issues, including deforestation, land degradation, and biodiversity loss, and assess government strategies and policies aimed at addressing these challenges effectively. Using public policy analysis, literature review, and stakeholder interviews, this study evaluates the current policy landscape and its implementation in the field of environmental and natural resource management. Despite efforts to improve environmental governance, challenges remain in the implementation of policies and oversight mechanisms. The results of this study highlight the need for further steps to strengthen environmental governance, support sustainability initiatives, and preserve Indonesia's valuable natural assets. The recommendations include active engagement with various stakeholders, refinement of regulations, and enhancement of the capacities of relevant institutions, all aimed at achieving the goal of sustainable environmental preservation in Indonesia.

Keyword: Environmental governance/ Sustainability impact/ Policy analysis/ Stakeholder engagement

1. INTRODUCTION

As a country with abundant natural resources, Indonesia faces various critical environmental issues, including deforestation, pollution, and a decline in biodiversity [1]. The expansion of agricultural land and industrial activities, largely responsible for deforestation, has emerged as a major challenge to maintaining environmental sustainability in Indonesia. In the past two decades, concerns about the harmful effects of severe climate change on the environment have grown among policymakers, regulators, environmentalists, governments, supranational organizations, and civil society [2]. Natural resources are fundamental to human well-being. They provide clean air, food, water, shelter, and energy, all of which are critical for human survival and quality of life. Natural resources are essential for human well-being, as we depend on clean air, food, water, shelter, and energy for survival and quality of life [3].

Indonesia's geographical and demographic conditions present various significant challenges that must be managed comprehensively, including the development of maritime infrastructure such as ports, regional development and increased economic activities, the sustainable management of marine biodiversity such as fisheries, and the utilization of oil, gas, minerals, currents, and waves for future energy and mineral needs [4]. In addition, sustainable management of natural resources requires a holistic approach that involves all stakeholders, including the government, local communities, and the private sector. Sustainable development must be a prerequisite in all policies related to the exploitation of natural resources. Strict regulations and consistent law enforcement are necessary to minimize destructive practices like illegal logging and mining. Indonesia's current laws tend to prioritize the principles of the Unitary State of the Republic of Indonesia (NKRI) and legal certainty over democracy, sustainability, and social justice. They also put the state's institutional strength ahead of community access to natural resources, which leads to sectoralism and corruption. To make the regulatory process more effective and coherent, it is important to continue harmonizing regulations at both the national and local levels, involving state institutions in both the executive and legislative branches [5].

The government also needs to invest in forest rehabilitation programs and community development that empower local communities to become forest guardians. Involving the community in

*Corresponding Author: Darmanto
E-mail address: dardardarmanto@gmail.com

the management of natural resources can reduce deforestation, preserve biodiversity, and support the community's economic well-being. All parties' involvement and a deep understanding of the importance of environmental sustainability can be the keys to facing existing challenges and realizing a greener and more sustainable Indonesia. In addition, environmental governance is increasingly adopting the expanded role of private actors and market mechanisms, reflecting neo-liberal trends characterized by the privatization of environmental resources, the implementation of programs such as payments for ecosystem services, and the establishment of carbon markets. This shift highlights the growing importance of private sector rulemaking, such as certification processes, which have now become integral to the management of many environmental resources. Public regulations rooted in legal and economic instruments have historically shaped environmental policy; however, emerging trends indicate a significant shift towards more private regulation, thereby altering the institutional landscape of environmental management [6].

To enhance the effectiveness of this policy, a community-based approach is essential. Local communities are often the best guardians of their environment, and their knowledge of managing natural resources is invaluable. Therefore, involving the community in the planning and implementation of policies can create a greater sense of ownership and responsibility towards natural resources. The integration and synergy between policies, as well as the strengthening of community roles, will contribute to the success of efforts to protect the environment and ensure the sustainability of natural resources in Indonesia. Participation influences governance outcomes through three dimensions: the extent of stakeholder involvement, the nature and intensity of communication among participants, and the level of decision-making authority granted to participants [7].

As environmental issues evolve, it is important to update and refine existing regulations. The government needs to carry out bureaucratic reform to be more responsive to environmental challenges and capable of adapting to constantly changing conditions. Formulating more inclusive and data-driven policies can enable all stakeholders to participate in decision-making. Success in achieving effective environmental governance relies not only on policies and regulations but also on the awareness and active participation of the community. Therefore, strengthening environmental education and outreach becomes crucial.

Conducting this study is crucial in addressing these challenges, as it aims to offer profound understanding of the dynamics of natural resource and environmental management, while also formulating practical and relevant suggestions to improve the efficiency of environmental governance and sustainable conservation efforts of natural resources.

2. METHODOLOGY

This study adopts a literature review methodology. Literature research aims to assess, criticize and synthesize literature related to research topics regarding environmental governance and sustainable natural resource management in Indonesia, so that it can generate new, constructive perspectives. We carry out the review process through several phases: 1) planning, 2) analysis, and 3) compiling and writing the review. In the first phase: planning, the focus of the review is to understand why this review is needed and how it contributes to the development of environmental governance in Indonesia. At this stage, we develop a practical plan for selecting articles, elucidate the search process, and choose sources for documentation. We will also establish criteria for evaluating the relevance and quality of the selected literature. In the second phase: analysis, we will analyze various types of information in accordance with the research objectives, including the type of information needed to carry out specific analyzes related to the sustainability of natural resource management. We will also engage in discussions about how to report and discuss the information within the framework of environmental governance's challenges and opportunities.

In the third phase, focused on drafting and discussing, we will prioritize reporting standards to ensure clarity in presenting information on environmental governance and related policies. We hope that the research results will offer tangible suggestions to enhance the efficiency of environmental

governance and sustainable natural resource conservation initiatives in Indonesia. In this research, literature sources covering public policy, environmental policy analysis, and case studies related to natural resource management in Indonesia will be systematically searched from library sources available online and offline. This data will be used to provide deeper insight into the dynamics of natural resource management in Indonesia and the challenges faced in achieving harmony between economic development and environmental protection.

3. RESULTS AND DISCUSSION

3.1 *Environmental challenges and natural resource degradation*

The accelerated pace of global environmental change, particularly evident through climate change and rapid biodiversity loss, has ushered in the Anthropocene—a new era characterized by significant human impacts on biogeochemical cycles and ecosystems. This situation underscores the necessity for focused governance discussions regarding resource scarcity, ecosystem service degradation, and shifts in land use, while highlighting the importance of adaptive and collaborative approaches to effectively address these complex challenges [8]. Indonesia, an archipelagic country rich in natural resources, faces very serious environmental challenges. Unsustainable management of natural resources has led to environmental degradation that has profound impacts on economic, social, and ecosystem aspects. The implementation of sustainability policies has contributed to the failure to halt the overall decline in environmental quality [9].

Issues such as deforestation, pollution, and the decline of biodiversity are major concerns that require attention from various parties, including the government, society, and the private sector. The latest report shows that the deforestation rate in Indonesia reaches 3.5 million hectares per year. This figure clearly reflects a concerning situation, where many lands experiencing degradation could negatively impact the well-being of communities and the overall stability of ecosystems. Possibly nothing is more important today for business and society than the management of local and global environmental changes that are degrading every dimension of life—a trend that risks worsening for future generations [10].

The impact of this environmental degradation is not only limited to the immediately visible economic losses but also includes broader long-term consequences, such as the loss of biodiversity that is critical for the survival of ecosystems. Many species of flora and fauna are losing their habitats due to irresponsible human activities, which in turn can disrupt the food chain and the balance of ecosystems. In addition, the loss of forests also contributes to the increase in greenhouse gas emissions, which could potentially worsen global climate change. To improve this situation, the implementation of more sustainable natural resource management policies is crucial. A country has undergone significant economic transformation through mass production, often at the expense of environmental concerns, resulting in serious issues such as poor air, water, and soil quality, along with negative health effects on its population [11]. The collaborative governance approach underscores that environmental protection is a shared responsibility, requiring the involvement of all relevant stakeholders [12].

This includes the development of reforestation programs that involve local communities, the enhancement of sustainable agricultural practices, as well as strengthening law enforcement against activities that harm the environment. One of the biggest challenges for this vision of adaptive governance is to develop formal legal frameworks—legal principles, laws, and regulatory mechanisms—that support such adaptation without stifling stakeholders' inherent self-organizing potential or the emergent properties of adaptation itself. Through cross-sector collaboration and active community participation, Indonesia can develop a more comprehensive approach to preserving the environment while also supporting sustainable economic development for future generations. The goal of sustainable development was to justify economic expansion while preserving the environment [13].

The Sustainable Development Goals (SDGs) are greatly aided by commercial enterprises that prioritize environmental sustainability through eco-friendly practices, efficient resource management, and strong stakeholder communication. This is especially true in nations with rapid economic growth

where the adoption of Environmental, Social, and Governance (ESG) practices is more common [14]. Deforestation in Indonesia is largely caused by the expansion of agricultural land and aggressive industrial activities. This process not only eliminates the natural habitat for various species, but also impacts the global climate. The urgency of addressing global environmental issues such as climate change and biodiversity loss raises important questions about whether democratic practices can effectively drive sustainability transformation, and if so, how these practices should be reformed to ensure a livable planet, while raising concerns about the future of the earth [15].

Indonesia's tropical forests play a significant role in carbon balance worldwide, and the loss of these forests will contribute to increased carbon emissions, which could exacerbate the problem of global climate change. The impact of deforestation also has significant social implications. Deforestation increasingly marginalizes local communities that depend on forests for their livelihoods, including hunting, gardening, and raw material gathering. The loss of these resources can trigger conflicts among communities, especially when there is increasing resource pressure due to industrial and agricultural development. In addition, the migration of people from degraded areas to cities can create housing issues and broader social dissatisfaction. In governance, all images of the resource can potentially change as a consequence of the ongoing co-evolution of actors, institutions, and discourses [16].

Therefore, it is important to develop forest management policies that not only consider economic and environmental aspects but also allow for the participation of local communities. Community-based initiatives, such as community forest management, can provide effective solutions by involving local residents in efforts to preserve and sustainably utilize forest resources. In this way, not only is the environment protected, but also the culture and way of life of the community can be preserved, strengthening resilience against ongoing environmental and social changes. The link between natural resources as a bestowed condition, regional infrastructure resources serving as the formal umbrella and framework for managing those natural resources, and most importantly, human resources as the key factor for the successful implementation of natural resource and infrastructure management, is essential and a prerequisite for the success of sustainable natural resource management programs [17].

In the context of addressing this challenge, effective and sustainable government policies are essential. However, the implementation of policies often faces various obstacles, including a lack of coordination among government agencies, weak oversight, and minimal community participation. Although several regulations have been put in place, their effectiveness in the field often falls short of expectations. The need to address persistent environmental problems more effectively arises from evolving institutional and policy frameworks, highlighting a shift from traditional hierarchical interventions to new cooperative governance approaches that, while offering opportunities to fill gaps in current policies, may also weaken state authority and democratic legitimacy [18].

Institutions are described as both formal regulations (such as laws and constitutions) and informal rules (such as social norms and cultural settings) that influence human interactions and direct managerial actions. The word "structures" include both official organizations (such as boards of directors) and unofficial networks that exhibit the ability to exercise governance. The formulation of institutional mandates, negotiation, dispute resolution, and policy making are all examples of governance processes. These procedures, which can take many different forms, including bottom-up strategies led by local communities, shared authority through co-management agreements, or top-down governance by governments or commercial players, are essential for decision-making and implementation. From local to global, institutional, structural, and procedural factors interact and have a substantial impact on the effectiveness, capability, and results of environmental governance.

Aside from the aforementioned aspects, it also provides an environmental governance framework that can be used in a variety of settings with varying issues and at different scales. Our goal is to make it both practical and all-encompassing. For instance, we could modify and use it to assess or examine the management of a locally managed community forest, a transboundary fishery, a national system of

marine protected areas, or initiatives to preserve biodiversity and ecosystem services on a regional or global level.

The four key aspects of the framework for environmental governance include responsive, adaptive, robust, and polycentric governance. First, responsive environmental governance ensures that systems can adapt to changing environmental and social conditions through collective learning, communication, and reflection. Second, adaptive governance entails institutional spaces for dialogue and innovation, taking into account local contexts for policy adjustments. Third, robust governance showcases interconnected and nested legitimate institutions, underpinned by robust networks and positive social relations. Lastly, polycentric governance makes it easier to make decisions at many levels. It does this by letting semi-autonomous decision-making centers work together toward a common goal. This keeps institutions strong and running even during crises and pressures [19]. Figure 1 summarizes the explanation.

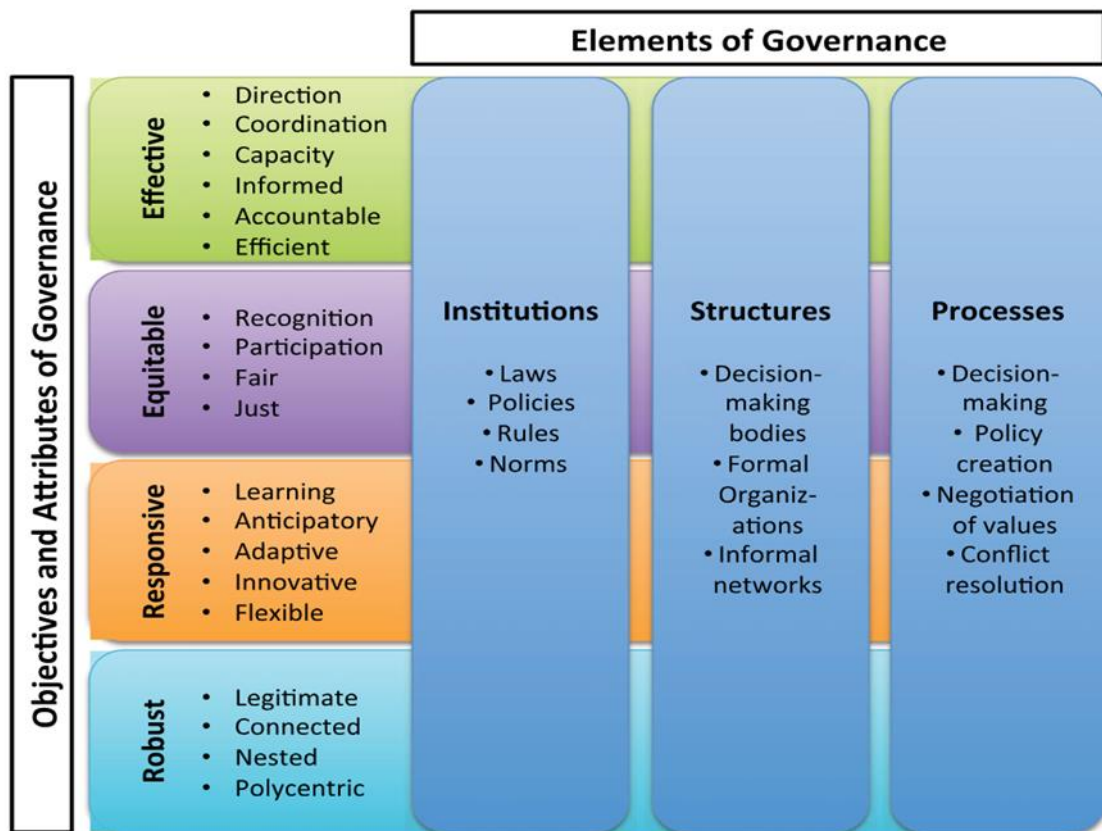


Figure 1. A practical framework for understanding the objectives, attributes, and elements of environmental governance (Source: Bennett & Satterfield, 2018)

3.2 Environmental governance policy

Various governance modes implement environmental policies to encourage desired behaviors among a range of actors, involving stakeholder inputs and collaboration between governments, the private sector, and civil society, while also integrating environmental goals into broader policy areas [20].

Policies and environmental governance implementation in Indonesia are an integral part of efforts to maintain the sustainability of abundant natural resources. An overview of Indonesia's environment, the DPSIR (Driving Forces, Pressure, State, Impact, and Response) framework based on ecoregions, and thematic environmental issues were used to do the analysis. Then, the most important concerns from past environmental issues were used to put together a list of national environmental issues. The

analysis revealed that waste management, water resources, land use, and air quality emerged as the primary environmental issues in Indonesia.

Consequently, this necessitates formulating policy implications that effectively address these critical environmental challenges [21]. With increasingly complex environmental challenges, such as deforestation, pollution, and the decline of biodiversity, effective policies and consistent implementation are essential. Also, the fact that discourse approaches are used a lot in environmental policy analysis supports the idea that some discourse approaches and discursive policymaking can help us understand how policies are made [22]. Environmental policy in Indonesia has undergone significant development in recent decades. Both national and local levels have implemented various regulations to address pressing environmental issues. One of the important milestones is Environmental Law No. 32 of 2009, which emphasizes the importance of sustainability principles as well as the protection of natural resources and ecosystems.

Environmental policy encompasses governmental actions aimed at influencing environmental quality and the use of natural resources, reflecting society's collective choice to achieve specific environmental goals through various tools. Additionally, environmental policy involves both the proactive measures governments take to safeguard the environment and the conscious decisions not to act, which allow external forces to dictate environmental outcomes [23]. When private, public, and civil society actors work together to create, adopt, and implement voluntary sustainability standards, they create a complex policy ecosystem. This ecosystem challenges the idea that these standards work without government oversight, showing that these interactions often have positive effects [24].

Various factors, such as a lack of trained human resources, weak coordination among agencies, and minimal public participation in the decision-making process, have prevented the full implementation of many regulations in the field. Limited supervision and law enforcement often result in non-compliance with existing regulations. Therefore, to ensure correct implementation of these policies, it is crucial to strengthen the capacity of institutions responsible for environmental governance, which includes training and education for government employees and the development of more effective monitoring systems. Furthermore, encouraging active participation from civil society in the oversight, reporting, and implementation of sustainability projects can create a culture of greater accountability. By optimally utilizing natural resources and preserving environmental sustainability for the benefit of current and future generations, we can achieve the development of sustainable tourism areas [25].

These collective efforts will reinforce the framework of environmental governance in Indonesia, ensuring that not only existing regulations but also concrete actions on the ground can drive the achievement of improved sustainability goals for national welfare and environmental preservation. There is a greater body of research that examines place-based stewardship as an essential element and possibly a developing force in environmental governance and practice [26].

F. van der Molen provides a structured description of the elements of governance capacity involved: epistemic, normative, and social. The concept of coproduction in environmental governance has two meanings: the first refers to an interactive process where various actors, like experts and stakeholders, collaboratively create knowledge, while the second, which this paper focuses on, emphasizes the interconnection between knowledge and social order, suggesting that our understanding and representation of the world are inherently linked to the ways we choose to live in it. Recent scholarship has analyzed the interplay between knowledge and power dynamics in governance arrangements, viewing knowledge as a product of social interactions and vital for social functioning. This makes the case for thinking of governance as a process of coproduction that brings together material, cognitive, social, and normative abilities. It acknowledges that knowledge is an important part of governance while also questioning the common analytical gaps that exist between knowledge, values, and social aspects. The proposed framework highlights the interrelations among epistemic, normative, and social elements within governance capacities—such as regulatory, adaptive, and integrative capacities—acknowledging that these elements are interrelated and can overlap, thereby enhancing

analytical sensitivity to the complexities of governance practices. Table 1 summarizes the social, moral, and epistemic components of the three governing skills. These components relate to one another, imply one another, and occasionally overlap; therefore, they are not as well divided as this table would imply [27].

Table 1. Conceptual Framework of Governance Capacity Elements

		Elements of governance capacities		
		Epistemic	Normative	Social
Governance capacities	Regulatory	• Knowledge creation and mobilization as enablers or constituents of regulation	• Goals • Visions • Limits	• Rules • Power • Modes of governance
	Adaptive	• Monitoring and understanding environmental change • Learning	• Willingness and opportunity to adapt or revise decisions	• Adaptive decision-making • Flexible arrangements • Iterative processes
	Integrative	• Incorporation of a variety of knowledge forms • Incorporation of diverging knowledge systems	• Incorporation of diverging values and normative frames	• Joint knowledge creation processes • Organized reflection on normative frames and epistemological beliefs

Source: van der Molen, 2018

Weak oversight also poses a significant challenge. Despite the establishment of numerous regulations aimed at ensuring sustainability and environmental protection, their implementation frequently lacks adequate oversight. As a result, various violations, such as illegal land clearing and destructive agricultural practices, are further worsening environmental conditions. Without strict oversight, the established policies do not yield the expected positive impact and become less meaningful. In addition, the lack of community participation in the decision-making process contributes to this challenge. Many environmental policies do not involve local communities, making them feel alienated and disconnected from those policies. When communities do not feel ownership or involvement, support for the policies becomes low, even though they possess valuable local knowledge.

We need to take several strategic steps to enhance the effectiveness of environmental policies and governance in facing these challenges. Strengthening coordination among government agencies has become very important. In addition to those steps, optimizing education and raising public awareness about environmental issues is also crucial. Integrated environmental education programs within school curricula and communities can help build an understanding of the importance of sustainability and practical ways to protect the environment.

The regulatory harmonization process should create greater opportunities for public involvement in the formulation and critique of regulations, thereby strengthening community positions and ensuring that future regulations empower them to manage local natural resources instead of merely reinforcing state institutions [5]. Thus, the community not only becomes a recipient of policies but also an active participant in the environmental management process. Additionally, the private sector's support through investments in sustainable projects and technological innovations is crucial. We hope that these collective steps will enhance the effectiveness, sustainability, and tangible benefits of environmental governance in Indonesia for both society and the environment. The enhancement of cooperation between the government, society, and the private sector is key to achieving sustainability goals and protecting Indonesia's natural resources for future generations. Only with the right policies and

consistent implementation can Indonesia address the environmental challenges it faces and secure a sustainable future.

To measure the impact of the implemented programs and hold all parties accountable for the results, it is crucial to develop clear success indicators. By documenting and reporting on the progress and challenges faced in the implementation of sustainability policies, the parties involved can learn from experiences and make necessary adjustments in real time.

3.3 Environmental governance policy

Stakeholder engagement and collaboration are critical for achieving sustainability goals and effective environmental preservation in Indonesia. We believe that building trust is about fostering bonds and can serve as an alternative approach to encourage inter-institutional cooperation, which will foster inner incentives to increase inter-agency cooperation [28].

Recognizing the complexity of the environmental challenges we face, ranging from deforestation and pollution to the decline of biodiversity, collaboration among various parties is essential. The central government, local authorities, NGOs, and academics mainly serve as regulators, facilitators, and incubators in ecotourism, while the private sector enhances CSR efforts, and the general public supports infrastructure through environmental contributions [29]. This collaborative approach must integrate the traditional knowledge held by local communities, innovations from the business sector, as well as advocacy and support from non-governmental organizations (NGO). The Nebrodi case in Italy exemplifies the need for Environmental Governance (EG) to be adaptable and capable of comprehending and utilizing available environmental datasets. This is crucial for planning sustainable prospects, identifying interdependencies among sectors, assessing various aspects of sustainability, and generating alternative scenarios and implementation strategies. Strategic Planning (SP) serves as an instrument for strategic decision-making, facilitating the achievement of a new form of EG on a local scale, with all environmental aspects considered central to local development [30].

One way to implement this collaboration is by forming multifaceted partnerships that focus on specific projects, such as forest rehabilitation, waste reduction programs, or the conservation of endangered species. This partnership must empower local communities to become active agents of change, involving them in all stages of project development, from planning to evaluation. In this context, communities possess traditional knowledge that not only relates to sustainable resource management practices, but also to cultural values and local wisdom that require preservation. Environmental governance recognizes reflexivity as a core virtue, with ecological reflexivity emphasizing the capacity of social-ecological systems to adapt and reorganize through performance reflections [31]. Their experiences and insights about the local ecosystem enable them to contribute to formulating more relevant policies, leading to more sustainable solutions. On the other hand, the business sector has the potential to contribute through technological innovation and environmentally friendly practices that can enhance efficiency and reduce negative impacts on the environment. As more companies recognize the importance of sustainability, collaboration with the business sector can create better management system models.

NGOs, as representatives of community interests and advocates, play a crucial role in championing the needs of society and the environment at the policy level. They can serve as a bridge between the community, government, and the private sector, facilitating dialogue and creating platforms for sharing information as well as engaging community participation. Through educational and outreach programs, NGOs have the ability to raise public awareness about environmental issues, thereby strengthening the collective commitment to conservation. We must comprehend the collaborative network structures that shape the outcomes of environmental governance. Currently, knowledge about how various collaborative network structures interact with institutions and leadership is limited. We need to conduct further research to explore the adaptation of cooperative governance arrangements to diverse ecosystem characteristics and its impact on governance outcomes. Specifically, the relationship between adaptation to the ecological environment and specific collective action problems remains

unclear. In addition, many environmental problems consist of multiple, interconnected collective action challenges. We must investigate whether we can effectively build and maintain collaborative networks with complementary ideal structural features to tackle these issues. These networks must strike a balance between various “ideal” but often conflicting structural properties to ensure that they are socially and ecologically suitable to address current environmental problems. A shift toward innovative public and private leadership models that focus on “networking” and facilitation rather than traditional command and control is critical to developing effective collaborative governance strategies [32]. Table 2 illustrates the management challenges in collaborative environmental governance.

Table 2. Management challenges in collaborative environmental governance

<ul style="list-style-type: none"> • How to create and maintain collaborative networks that are able to address tough problems involving deep-rooted conflicts of interests while simultaneously being conducive to the efficient coordination of relatively simple tasks?
<ul style="list-style-type: none"> • How to facilitate social tie formation processes in the local context in such ways that the evolving collaborative network develops desirable global structural properties, including a good fit to the biophysical context?
<ul style="list-style-type: none"> • How to best engage actors in collaborative networks even though some of them are not interested, or are interested for the ‘wrong’ reasons, or use the collaborative venue only as a way of obstructing any changes to status quo?
<ul style="list-style-type: none"> • How to create and maintain collaborative networks that are flexible and adaptable to changes, yet stable enough to facilitate the development of mutual trust and shared commitment?

Source: Bodin, 2017.

In this context, it is important to create effective communication mechanisms so that all stakeholders can share information and perspectives with one another. Various methods such as discussion forums, workshops, and regular meetings can guarantee the inclusion of everyone’s voice. In addition, by improving access to information and education about environmental issues, the community will be better prepared to engage in discussions and decisions related to their environment. The use of technology to facilitate dialogue, such as online platforms and mobile applications, can also broaden the community’s reach and participation. Thus, it will not only enhance the legitimacy of policies but also produce more innovative and adaptive solutions to increasingly complex environmental challenges, strengthening the sustainability and resilience of ecosystems for the future.

By taking these steps, Indonesia can address the environmental challenges it faces and achieve the desired sustainability goals.

Management that involves all stakeholders can not only create more effective and sustainable solutions, but also strengthen social bonds and the community’s sense of ownership over their environment. Thus, a collaborative approach becomes a crucial strategy to carry out comprehensive environmental conservation efforts in Indonesia, sustain them over time, and pass them on to future generations. Furthermore, to ensure the sustainability of this collaborative approach, there needs to be a strong commitment from all parties to continue working together despite changes in political, social, and economic conditions. Cooperation agreements that delineate the roles and responsibilities of each stakeholder, along with a system for regular monitoring and evaluation to gauge the performance and impact of implemented policies, can actualize this long-term commitment. In addition, it is also important to identify sustainable funding sources, whether from the government, the private sector, or external donations, to support sustainability and environmental preservation programs. Adequate financial support will provide incentives for communities and businesses to actively participate in environmental initiatives. The awareness that sustainability is not only the responsibility of the government but also a shared responsibility of all elements of society will further strengthen and enrich efforts to protect the environment. Indonesia will be better prepared to face future environmental

challenges and secure a healthy and sustainable ecological legacy for future generations by creating a strong and sustainable collaborative ecosystem.

4. CONCLUSIONS

Here are three concise conclusions based on the discussed aspects of environmental governance and sustainable natural resource management in Indonesia:

a) Environmental Challenges and Governance: Indonesia faces critical environmental challenges, such as deforestation, pollution, and biodiversity loss, requiring immediate action from various stakeholders. Effective governance must evolve from traditional hierarchical approaches to collaborative models that genuinely engage local communities, incorporate traditional knowledge, and align with the country's environmental sustainability goals.

b) Policy Implementation and Stakeholder Engagement: Weak implementation, a lack of trained personnel, and insufficient community involvement often hinder the effectiveness of environmental policies in Indonesia. To enhance governance outcomes, it is essential to strengthen inter-agency coordination, encourage public participation, and develop robust monitoring mechanisms to ensure accountability and transparency in natural resource management.

c) Collaborative Framework for Sustainability: Creating a comprehensive and adaptive environmental governance framework, centered on multi-stakeholder collaboration, is critical to achieving sustainable natural resource management in Indonesia. Collaboration between the government, private sector, civil society, and local communities can create innovative, equitable solutions that not only address immediate environmental concerns but also preserve ecological and cultural heritage for future generations.

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