

Change to a Cooperative Management Approach to Forest Erosion: Based on a Study in Lore Lindu National Park

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ABSTRACT

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Indonesia was faced with cases of forest encroachment or deforestation. The protected forest of Lore Lindu National Park in Central Sulawesi was inseparable from cases of deforestation. This research aimed to analyze the role of collaborative governance in controlling forest deforestation in Lore Lindu National Park (LLNP), located in Central Sulawesi. This research was completed in Poso Regency and Sigi Regency. To analyze collaborative governance, we applied the eight indicators of collaboration success developed by DeSeve (2007). The sources of data in this research include both primary and secondary data. Based on the analysis of eight factors measuring the success of collaboration in governance, it was found that government collaboration in controlling forest encroachment in Lore Lindu National Park in Central Sulawesi was still not maximized.

1. INTRODUCTION

Indonesia has the largest tropical forest in the world with a total area of $\pm 137,090,468.18$ hectares [1]. Indonesia was expected to become a balance for the survival of existing living species, in addition to the existence of other natural forests in the Amazon region, located in Brazil [2].

However, Indonesia encountered various problems, including cases of forest encroachment or deforestation. Deforestation can be defined as forest destruction or forest function conversion from what should provide a buffer for the world's lungs to conventional land [3]. Cases of deforestation in Indonesia have occurred since 1970. From 2000 to 2005, Indonesia experienced a forest loss of 0.31 million hectares; from 2005 to 2010, this figure increased to 0.69 million hectares [4]. Economic factors were one of the causes of this deforestation.

Likewise, the protected forest of Lore Lindu National Park (LLNP) in Central Sulawesi was not immune to cases of deforestation. LLNP is natural resource conservation area in Central Sulawesi with an area of 217,991.18 hectares [5]. This area serves an important role as a buffer zone, especially for the cities of Palu, Donggala, and Poso [6]. Forest encroachment in this area has been ongoing since 1999, particularly in the Dongi-Dongi area [7]. It was feared to have caused a decrease in the hydrological function, an increase in the rate of erosion, and potentially flash floods resulting in loss of life.

If this was permitted to continue, it would indirectly disrupt the survival of the living species that inhabit this area [8]. Excessive deforestation resulted from the expansion of cocoa plantations, oil palm, illegal logging, and land clearing for conventional mining activities.

Preventing or reducing deforestation in LLNP should immediately become a top priority for the regional

government because of its widespread impact on the sustainability of life in this region. Law Number 23 of 2014 indicated that forest authority was the responsibility of the central government. Land clearing for economic reasons—such as plantations, mining, and other commercial lands—often did not reveal the long-term adverse impacts, for example, causing erosion and flooding. As a result, not only were the central government's early prevention efforts required, but it was also necessary to revise the law to provide regional governments the right to regulate forests [9]. Therefore, collaboration between stakeholders was required in an effort to prevent the widespread deforestation that occurred in LLNP Central Sulawesi, one instance of which was collaborative governance. Collaborative governance was viewed as a method to solve problems that implicated numerous stakeholders in an effort to restore the function of the LLNP forest as a source of oxygen, prevent flooding and erosion, and preserve the survival of its living species. Collaborative governance was an alternative to sustainable governance that was used by regional governments, the private sector, and the community to engage in joint discussions about deforestation cases, especially in LLNP [10, 11]. This research aimed to analyze the role of collaborative governance in controlling forest encroachment in LLNP in Central Sulawesi.

2. LITERATURE REVIEW

Collaborative governance comprised of a form of governance involving various stakeholders engaging simultaneously in a forum with government officials to make joint decisions [10]. Collaborative governance was a government arrangement in which one or more public institutions directly involved non-governmental stakeholders in a formal, consensus-oriented, deliberate collective decision-

making process that aimed to develop and implement public policies and manage programs or public assets [12]. Collaborative governance was a collaboration between actors from the government, the private sector, and the community. The government formulated a policy that became the solution for every existing problem, which enabled the full involvement of actors, use of local resources, community participation, institutional strengthening, and synergy between the levels of related actors [13, 14].

Collaborative governance was fulfilled by the government in conjunction with stakeholders in a collective decision-making process that was completed collectively according to a formal agreement, oriented to consensus with the aim of managing public programs or vital assets which, in the context of this research, was focused directly on the problem of deforestation [15, 16]. Collaborative governance arose due to indications of failure of the downstream implementation program of a policy that caused losses to the state [17]. As a result, a mechanism was developed between actors to answer these failures [17]. Institutional strengthening became the most important component in the implementation of collaborative governance to successfully work together to address deforestation cases that occurred in LLNP [17]. Numerous researchers have studied the importance of collaboration, including Shrestha [18]. Shrestha [18] explained that governing bodies in modern cities that prioritized connection and integration between regions and stakeholders have adopted collaborative governance. This approach resulted in the achievement of goals and produced shared values among stakeholders without creating any new conflicts in the region or territory of each respective stakeholder. This researcher identified ongoing cases of deforestation in LLNP and concluded that policies related to forest prevention and management were still not maximally achieved despite a collaborative governance approach that embraced the involvement of all stakeholders to address existing problems. According to Ansell and Gash [10], there were at least six models developed from this collaborative governance: it provided a forum to the public that could be recognized or public institutions, participation in the forum was filled by actors who were not members of the government, members in this forum could make decisions directly on the basis of collective decisions, the forum is held formally and meets collectively, decision making could be accomplished through consensus, and the focus of this collective effort was public policy and public management.

According to Ansell and Gash [10], collaborative governance had four variables, namely: initial conditions, institutional design, leadership, and collaborative processes. In addition, collaborative governance was also developed by Emerson et al. [19]. These authors posited that collaborative governance consisted of at least three dimensions, including: system context, drivers, and dynamics of collaboration. Collaborative governance was employed in an effort to identify a consensus that aligned with the existing problems. Internal organizations adamantly supported cooperation with stakeholders, as institutional strengthening was critical in collaborative governance – it was one of the capitals in completing this collaboration. Institutional strengthening did not only occur within the internal government, but also resulted in other stakeholders—both private and public—so that collaborative governance could function most optimally.

The problem of deforestation in LLNP required institutional strengthening from the community. The institutional

proportion of the community as one of these stakeholders was a bottom-up approach [20]. Suhendri and Purnomo [21] reaffirmed that institutional strengthening had to be provided both individually and in groups so that they could produce performance from the implementation of various activities for the direction of achieving goals and responding to sustainable development needs. The institutional impact had to provide innovation, inter-institutional relations, the strengthening of local government, the existence of leadership, and the achievement of progress in the smallest scope of the institution [22, 23]. According to Lee [24], the existence of institutions was certainly expected by all people. However, the existence of institutions also needed to be observed starting from the financial aspects and regulatory policies that protected the rights of the institution, then subsequently from general factors outside the institution [24]. For example, regarding politics, politics in this context was the existence of institutions that were required to create a positive impact wherever they existed and successfully read the opportunities from politics to support the course of development.

3. RESEARCH METHOD

This research used a qualitative descriptive research design, based from a research site in LLNP Central Sulawesi. LLNP is located about 60 km south of Palu city and is located between 119°90' – 120°16'BT and 1°8' – 1°3'LS. We completed a description based on data in the field regarding the collaboration between the government and relevant stakeholders in controlling forest encroachment in LLNP Central Sulawesi. This research was done in Poso Regency and Sigi Regency. The sources of data in this research are: 1) primary data: namely data obtained from informant interviews and 2) secondary data: namely data obtained from documents or various literature sources relevant to the research objectives. The interviewees were communities around LLNP who used the forest to fulfill their needs, so the sampling technique chosen was snowball sampling. Secondary data taken from sources [5-7, 25-27]. To analyze collaborative governance, we used the eight indicators of collaboration success developed by DeSeve [28].

4. RESULTS AND DISCUSSION

4.1 Forest use

The management situation of Lore Lindu National Park (LLNP) consisted of an interdependence between local communities and LLNP managers. There were approximately 75 villages from 11 sub-districts in Poso Regency and Sigi Regency which were directly adjacent to the LLNP area [25]. The interdependence between local communities and LLNP managers sourced from the characteristics of the national park resources as Common Pool Resources (CPR). According to Schmid [29], the nature of this CPR resource made it challenging to exclude other parties and also resulted in incompatibility in the use of resources (see Table 1).

Table 1 shows how the individuals living adjacent to LLNP viewed the importance of forest resources in the LLNP area. Individuals' assessment of forests varied depending on the capacity of the forests to meet their needs; their views did not always align with forest use as determined by the state. The

distinctive characteristic of forest resources was that they provided various benefits—both direct and indirect—to the community. Forests not only provided material goods for individuals in rural areas, but also contributed to improving quality of life [30].

Table 1. Forest use in LLNP

Category	Impact
Garden or farm	Surface Erosion-Flood
Wood for buildings and tools	Surface Erosion-Flood
Firewood	Surface Erosion-Flood
Rattan	Surface Erosion-Flood
Hunt	The extinction of rare animals
Mining	Floods and landslides

Source: literature study

Most individuals who lived around the forest were direct beneficiaries of forest resources. Several community groups who lived around LLNP chose forest resources in LLNP to meet direct material needs. For example, they sourced from LLNP for firewood and building materials. Moreover, some individuals even viewed the forest as a land source for gardening or farming.

Forest use was predominantly motivated by economic reasons and the desire to increase living standards. On the other hand, due to this deforestation activity, forests also required the government to respond wisely to ensure their preservation. In addition, stakeholders should also understand the importance of forest areas for the survival of living species. It would not have been feasible to address the problem of deforestation if the government did not invite other stakeholders to jointly discuss this issue. In general, the individuals in Indonesia (particularly those who lived in proximity to LLNP) would be harmed by deforestation. They would lose their natural forest, which would cause a disruption in the continuity of fulfilling nutrition. Moreover, the world's climate was changing since the climate was dependent on forests, especially forests in Indonesia.

Apart from economic activities from plantations and tree cutting, there were other ventures that could threaten deforestation, namely mining. In this case, the government should implement proportional policies to reduce the rate of deforestation and apply collaborative governance as an alternative in tackling deforestation problems in the LLNP area of Central Sulawesi.

4.2 Collaborative governance in controlling forest encroachment in LLNP

From a social perspective, sustainable forest management was defined as forest management that provided great welfare for the community [31]. Forest management that ignored communities in conservation areas faced many obstacles [32]. Kijazi and Kant [33] argued that conservation policies had to consider the needs of local communities. The underlying message was that there was a strong interdependence between the community with the forest and the parties with an interest in the forest resources. This condition demanded a paradigm shift from conservation area management which previously ignored the interests of the community to the involvement of local communities in the management of conservation areas [34]. This researcher used eight indicators of collaboration success [28].

4.2.1 Networked structure

Networked Structure explained the conceptual description of a relationship between two elements that united together which reflected the physical elements of the handled network. Milward and Provan [35] categorized the form of networked structure into three varieties: Self Governance, Lead Organization, and Network Administrative Organization.

In general, collaborations that occurred in LLNP were semi-formal (there was no written agreement/contract) such that there was no administrative entity. However, each stakeholder was involved and actively participated in the network. The network was not hierarchical, but tended to be flat; there was no monopoly present. All parties were equal both in carrying out their rights and obligations as well as in terms of accessibility opportunities. Thus, it could be concluded that the networked structures in collaboration at LLNP were Self-Governance types. However, the mining operation in Dongi-Dongi hamlet in Poso Regency was categorized as a Network Administrative Organization. This enterprise had an administrative entity that explicitly managed the network and did not participate as a service provider, and the manager was paid. The conservation of the Lore Lindu National Park forest area and the cessation of mining around the Dongi-Dongi hamlet area was one of the six points of agreement between the Lore Lindu National Park Center (LLNPC) and the Independent Farmers Forum (IFF) in a meeting held in the Dongi-Dongi area on Friday August 2, 2019 [27]. Dongi-Dongi was the local residents' pocket within the Lore Lindu National Park area. With an area of 1,531 hectares, Dongi-Dongi was designated as an Other Use Area in 2014. This policy reduced the Lore Lindu area by 0.98 percent from 217,991.18 to 215,773.7 hectares. Data from the National Park Center in 2019 stated that the location was inhabited by 800 household heads or 3,194 people, who built 1,420 semi-permanent and permanent houses.

4.2.2 Commitment to a common purpose

Commitment to a common purpose referred to the reason for a network's necessary existence, namely due to the attention and commitment to achieve positive goals. The collaboration that has been established thus far has been based on concordant goals, vision and mission. Regarding the commitment of each stakeholder, the researcher obtained data that indicated that all stakeholders possessed a full commitment to achieve common goals. This was evidenced by the sense of mutual need and complement with one another to achieve these goals. The findings of Massiri et al. [27] indicate that non-consumptive forest use options such as water protection and regulation, erosion and landslide protection, climate control, and cool air generally had high values. This was in agreement with Kijazi and Kant's [33] finding that the choice of non-consumptive forest use for stakeholders in the Kilimanjaro mountains Tanzania had a high value. Local communities around LLNP truly understand that forest functions such as regulating water management, erosion and landslide protection, and climate control were highly supportive of their needs. The choice of forest use for water protection and regulation was a critical choice for individuals residing in the LLNP area.

4.2.3 Trust among the participants

Trust among the participants was based on professional or social relationships, namely the belief that participants entrusted information or the efforts from other stakeholders in

a network to achieve common goals. With regard to trust in information or data from each stakeholder in the collaboration in handling LLNP in Central Sulawesi, trust was already previously established. Stakeholders had strong professional and social relationships since they were aware of the importance of their respective interrelated roles in the pursuit of a common goal. This is in accordance with the findings of Massiri et al. [27], who found that the value of the preference for forest use as the highest protection and regulator of water management was in Bobo Village. The individuals of this village understood the function of the forest as a protector and regulator of water management. Previously, some individuals in Bobo Village had engaged in logging and land clearing for gardening or farming purposes in the forest area of LLNP. Correspondingly, they felt that the water supply from the forest was decreasing. In 2005, a flood hit this village and washed away several houses. This event resulted in increased community awareness of the importance of forest functions and created collective action to protect forests in their area. Collective action arose secondary to common interests [36]. The interest in water and fear of the flooding disaster became self-motivation which led to the creation of collective actions among the individuals of Bobo village to always protect the forest.

4.2.4 Governance

Governance included: a) Boundary and exclusivity: confirmed who was or was not a member in the network/collaboration and b) Rules: defined a number of restrictions on the behavior of members with threats that they would be expelled if their behavior deviated (was not in accordance with or contrary to the mutually agreed agreement). There were clear rules about what was or was not permissible, namely: c) Self-determination: the freedom to determine how the network or collaboration would be run and who was allowed to run it and d) Network management: which concerned the resolution of rejection/challenges, resource allocation, quality control, and organizational maintenance. Additionally, there were human resources who had competencies that met the requirements and there were adequate and sustainable financial resources. The firmness of who was or was not a member has not been clearly defined. This is due to the fact that there was no agreement/cooperation contract or written regulation that specifically established a membership that handled LLNP issues. Furthermore, there were no rules that defined a number of restrictions on the behavior of community members with the threat that they would be expelled if their behavior deviated. However, all elements worked in unison as it was in accordance with the portion of their respective duties and roles. The only information found regarding the existence of a code of ethics related to the principles of mentoring, wherein grant funds could not be run by the government. Instead, they were required to be given directly to the community, managed by the community and implemented by the community. Self-determination or the freedom to determine how collaboration would be executed and who was allowed here to flow as it was, but still referred to mutual agreement. Network management or support for all members without conflict in achieving goals has not been maximized (marked by sector ego, a limited number of Human Resource personnel, lack of public awareness, and lack of financial resources). Thus, the collaboration that occurred has not fulfilled the aspect of governance clarity.

4.2.5 Access to authority

Access to authority referred to the availability of provisions standards (measures) of clear procedures that were widely accepted. In this collaboration, all stakeholders have clearly understood the procedure flow, and also understand their respective duties and responsibilities.

4.2.6 Distributive accountability / responsibility

Distributive accountability referred to shared governance (collaborative organization and management) and a shared number of decisions amongst all network members, who shared responsibility for achieving the desired results or goals. The distribution of governance to all stakeholders already existed. Meanwhile, the accountability report was completed differently for each stakeholder; it largely depended on the party in charge. However, there were still weaknesses in its implementation, namely the high level of community dependence on the government.

4.2.7 Information sharing

Information sharing was the ease of access for members, protection of privacy (confidentiality of one's personal identity) and limited access for non-members as long as it could be accepted by all parties. Here, information sharing was executed in actuality between stakeholders. All stakeholders filled and complemented others' information. All processes of implementing the activity program could be accessed by all stakeholders. Each stakeholder expressed their trust regarding the information provided by other stakeholders and they also helped one another.

4.2.8 Access to resources

Access to resources was the availability of financial, technical, human and other resources required to achieve network goals. In order to achieve the primary goal of collaboration, stakeholders have made efforts to provide the necessary resources, namely: financial, human and technical resources related to the improvement of the LLNP infrastructure. However, the available resources were still weak, as evidenced by the limited amount of financial resources, human resources personnel, and technical personnel or experts.

5. CONCLUSIONS

The collaborative governance that occurred in controlling the forest encroachment of Lore Lindu National Park in Central Sulawesi, as executed by the Director General of Natural Resources and Ecosystem Conservation and the Independent Farmers Forum, was not maximized. In addition to completing collaborative activities with other stakeholders, each stakeholder also executed their respective roles and program activities in order to make the LLNP infrastructure improvement program successful. The collaboration that has occurred was already formal in the sense that there was a written agreement. However, in practice illegal encroachment was still implemented by local communities in collaboration with migrant communities. Based on the analysis of eight factors measuring the success of collaboration in governance by DeSeve, it can be concluded that the collaboration involved in controlling forest encroachment in Lore Lindu National Park in Central Sulawesi was still not maximal. This is evidenced by the lack of clarity in governance, the imbalance

in the distribution of accountability and responsibility, and the lack of access to resources.

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