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# Strategy of agrarian-forestry crisis management: Participation, collaboration, and conflict

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**Abstract.** The presence of communities in conservation areas provides chronic and systemic problems on land and biological resources and potential to become agrarian-forestry conflicts. The existence is often interpreted as a threat that will impact on the occurrence of ecosystem crisis with the increasing intensity and scale of natural disasters that led to social-economic and environmental catastrophe. This paper deals with dilemma questions from the Dongi-dongi community, Sigi Regency, Indonesia on social justice or conservation, human or environment? The research employed a qualitative descriptive method to decompose the source and root of the conflict, while the Analytical Hierarchy Process (AHP) was used to examine the implications of land conflict on socio-economic and environmental aspects. SWOT analysis directly directed to determine a strategy for reducing conflict and agrarian-forestry crisis. The results show that agrarian-forestry disputes can be reduced by prioritizing community-based forest management regarding participation and collaboration (socio-economic and ecological aspects) through clarity of forest management structures and institutions, land tenure and utilization systems. Also, avoiding conflicts through border setting and legitimacy. In this case, there should be a clear understanding that conversion of forest land to economic and environmentally insecure causes not only forest destruction but also natural disasters such as floods, drought, land erosion and socio-economic problems (declining quality of life, destruction local cultural arrangements and the loss of endemic flora and fauna species).

## 1. Introduction

The escalation of the agrarian conflict over the past three years has increased from the total number of agrarian disputes by 143 cases in 2014, rising to 231 cases by 2015 and 450 cases by 2016. In 2017, agrarian conflicts do not diminish despite the downward trend with a total of 125 cases of agrarian conflicts occurring in 17 districts throughout the year with a total area of agrarian conflict of 400.430 Ha. The most widespread conflict areas occurred in the plantation and forestry sectors of 302.526 and 52.176 Ha. The next position was occupied by 21.127 Ha of mining, 11.231 Ha of marine, 10.603 Ha of infrastructure, 1.827 Ha of other sectors and 940 Ha of agricultural sector. On average there is an agrarian conflict, and 7.756 Ha of land are involved in the battle each day. After 57 years the Undang-undang Pokok Agraria/UUPA (The Basic Agrarian Law) is enacted, structural inequality and conflict of agrarian-forestry continue, with 71% of agrarian-forestry resources controlled by forestry companies and the rest by the poor. The land became the object of investment, resulting in average land ownership of less than 0.3 Ha and as many as 17.1 million poor people living in the village [1].



The settlement of agrarian conflict is urgent because the conflicting land becomes the target of Tanah Objek Reforma Agraria/TORA (Land Reform Object of Agraria). The agrarian reforms listed in the Nawacita and the National Medium-Term Development Plan 2014-2019, as a solution to overcome inequalities, poverty, and agrarian-forestry conflicts by targeting 9 million Ha of land will be redistributed and legalized. Since 2015, the redistribution of land originating from Hak Guna Usaha/HGU (Cultivation Rights) and through transmigration is only 182.750 Ha and 32.146 Ha during redistribution from forest clearance of 0 Ha. Meanwhile, the legalization of assets since 2015 recorded an area of 609.349 Ha. This development is seen as an attempt to encourage certification rather than land redistribution [2]. Government policy through Keputusan Presiden (Presidential Decree) No. 88 in 2017 about Penyelesaian Penguasaan Tanah Dalam Kawasan Hutan (Completion of Land Tenure in Forest Area), although considered as a legal breakthrough, this policy has not been able to answer the problems in the field. The Government should evaluate and clarify the forest area based on its control, utilization, and appropriation [3].

Natural disasters are an essential issue in the goals of sustainable development caused by environmental degradation and climate change. No country is immune to disaster, but the ability of the population and a region to withstand the effects of disasters and to recover quickly and persist, closely related to social and economic development. The agrarian-forestry dynamics of Central Sulawesi continue to encourage the birth of new forms of poverty and social conflict among farmers. In addition to the inconsistent management of farmers' farming around the forest, the massive concentration of land tenure further worsens the livelihood of farmers if the government perspective still views the forest as an object of protection from the objective of agrarian change by closing farmers' access [4]. This can lead to a politically motivated peasant movement by certain parties. A new awareness is needed in the peasants' movement on the importance of organizing and strengthening themselves of farmer groups to develop alternative production systems, which can be a bright spot toward effective institutional formation in addressing the crises of management and utilization of agrarian-forestry resources [5]. This institution is developed to fulfill the feasibility of economy scale and business efficiency so that it functions as a unit of the provider of production facilities and infrastructure, farm/production unit, processing business unit, marketing business unit and microfinance/savings and loan business unit [8].

## 2. Methods

### 2.1. Site Determination and Respondents

The determination of the research location was done by purposive method in Dongi-dongi enclave area, Taman Nasional Lore Lindu/TNLL (Lore Lindu National Park) of Sigi Regency, Central Sulawesi Province in 2017, while the respondent determination with snowball technique to key informant consisting of Dongi-dongi community leaders (both traditional and religious leaders) and purposive technique to determine other informants consisting of Government (village, district, regency, province, state) and farmers around the forest with total respondents as many as 10 people.

### 2.2. Method of collecting data

Initial materials and data were obtained using the site survey method and observation of socio-economic dynamics of the Dongi-dongi community, followed by exclusive interviews with key informants and other informants. Survey results and special meetings are brought to the Focus Group Discussion (FGD) level which is a systematic process of gathering data and information on a particular problem through group discussion [9].

### 2.3. Data analysis method

This research uses descriptive qualitative analysis method with a conceptual approach and case approach by deductive and inductive reasoning to gain and find the objective truth to explain the source and root of agrarian-forestry conflict problem. While AHP is used to test the implications of

land conflicts on socio-economic and environmental aspects to establish conflict management priorities and SWOTs to determine strategies to reduce conflicts and agrarian-forestry crises.

### 3. Results and Discussion

#### 3.1. History and Dynamics of Conflict

The history of the Dongi-dongi community is from the Kaili Daa tribe and originated from Kamarora Village, Rahmat Village and Kadidia Village beginning in the 1970s is a relocation of the Kamalisi Mountains and Kulawi Highlands by the Ministry of Social with a land area of 0.7 Ha and directly adjacent with forest area. In 2001, with the aim of improving living standards and the consequences of crop failure they were forced to enter Dongi-dongi area by working on by cultivating short-term crops (rice and tubers) and long-term crops (chocolate, cloves, coffee) also seeking additional family income by searching for rattan and resin in the forest. Based on the customary law, people feel they have rights over natural resources around the forest. The customary law stipulates that indigenous peoples have rights over their surrounding forests in the right to live and utilize forest resources.

Based on data collected in 2009 when the division of Donggala Regency into Sigi Regency was registered about 720 families inhabiting Dongi-dongi area with 1.500 Ha for palawija crop 900 Ha and 2.600 Ha for reserve forest and rain catchment forest with Alokasi Penggunaan Lain/APL (Allocation of Other Use) land status and the settlement of the 11 km residents on the Palu-Napu trans road. The Dongi-dongi community inhabits 6 villages consisting of Boya Tapura, Boya Lentora, Ngata Katupua, Boya Singgani I, Boya Singgani II, and Boya Tora Ranga which is managed through a peasant organization Forum Petani Merdeka/FPM (Independent Farmers Forum). Society administers population administration in Tongoa Village, such as a family card, birth certificate, identity card and others [8].

Dongi-dongi area is used as an enclave area of 1.531 Ha and was released from TNLL area in 2013 as an implication of Rancangan Tata Ruang dan Wilayah/RTRW (Spatial and Regional Design) Central Sulawesi. But until now, the boundary that became the dividing line between TNLL and Dongi-Dongi enclave areas has not been agreed. On the contrary, the Balai TNLL/BNLLas central government representative specializing in TNLL has made a boundary line and considers the community/farmers who violate the boundaries are illegal settlers. Meanwhile, there were conflicts of government recognition, territorial recognition by Poso Regency and the identification of the population by Sigi Regency. Currently, the Dongi-dongi community represented by FPM requires the settlement of 2 (two) things, namely 1) the boundary between Dongi-dongi and TNLL and 2) the demands of 4.000 Ha enclave area, with the allocation of 1.500 Ha of plantation, the cultivation of 900 Ha and 2.600 Ha for reserve and rainforest reserves and development of educational and health facilities [10]. Farmers and the most rural community have difficulty in meeting the educational and health needs of their families [11].

#### 3.2. Priority of Agrarian-Forestry Conflict Management

##### 3.2.1. Level of Conflict Management Hierarchy

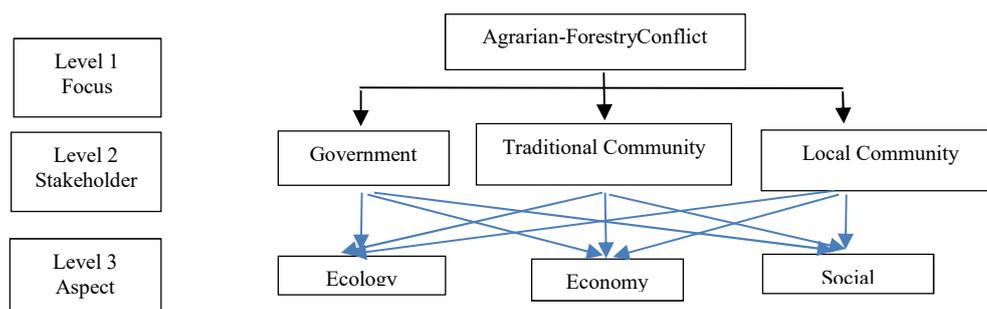


Figure 1. Level of Conflict Management Hierarchy

3.2.2. Priority of Conflict Stakeholder

**Table 1.** Priority of Conflict Stakeholder

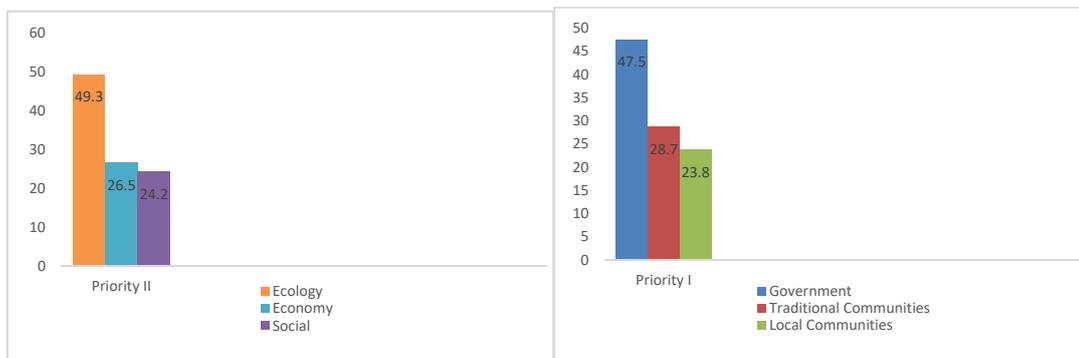
No.	Implication	Priority
1.	- Border arrangement government - Socialization of the area and the allocation - Economic empowerment - Institutional - Access to facilities and infrastructure	(47.5%)
2.	- ParticipationLocal Community - Environment-based land management - Science transfer - Forest conversion	(23.8%)
3.	- Selection of cultivated plant species - CollaborationTraditional Community -Local wisdom - Utilization of nontimber forest product - Productivity and added value of farming	(28.7%)

3.2.3. Priority of Conflict Aspect

**Table 2.** Priority of Conflict Aspect

No.	Implication	Priority
4.	- Distrust - Psychological trauma(24.2%) - Insecurity - Apathetic - Group solidarity	Social
5.	- PovertyEconomy - Unemployment - Land exploitation - Debt - Production limitation	(26.5%)
6.	- Flood - Erosion - Drought - Extinction of flora and fauna - Reduced soil fertility	Ecology (49.3%)

3.2.4. Combined Conflict Management Priorities



**Figure 2.** Combined Priority of Conflict Implications Management

The main priority of conflicting implications is related to the role of stakeholders demonstrating that the government plays an important role in the determination of agrarian-forestry conflict management strategies, both central governments as responsible for the area of TNLL and local government where the area of TNLL is located and where the conflict occurred. In general, the role of forest management for traditional communities and local communities is small, as almost all state forest areas have been allocated to state-owned enterprises, conservation areas and protected forests. The linkage of traditional societies and local communities to forests as part of socio-cultural and economic life is considered to have no legal basis. As the main actors, the government is expected to resolve agrarian-forestry conflicts related to the policy of bordering, licensing and implementation of conservation activities [12] related to the preservation of native ecosystems as well as the management and utilization of zonation systems for the benefit of research, education and science, cultivation support and tourism [13].

The main priority aspect for stakeholders, especially the government and traditional communities, is the ecological aspect of the area, but in reality the practice of exploiting forest resources that leads to the exploitation and conversion of forests continues due to poverty and population growth leading to demands for tenure and management of forest resources which has the potential to reduce ecological functions, as well as its social economy and result in natural disasters and prolonged conflicts. Unplanned, unintegrated and unequitable conflict management strategies not only lead to agrarian-forestry conflicts but lead to ecosystem crises. The description confirms the need for a more accommodative and non-sectoral forest management strategy in the long term that is not only based on ecological aspects but also from the socio-economic element [14]. Improving agriculture sector is a potential way to reduce rural poverty. It can enhance the rural livelihood economy and has changed the way in which the majority of the rural agrarian communities view their farming enterprise as one of the socio-economic development goals [5]. The formula contains at least the concept of efficiency, optimality, and sustainability in natural resource and environmental management [6]. Changes in land use patterns of economic adaptation must be in the framework of efficiency, optimization, and competitiveness so that sustainability can be guaranteed [15]. Institutional changes then result in the changes in agricultural production and unemployment due to decreased assets owned by farm households [16]. Decentralization of forest management in the era of regional autonomy is expected to ensure optimal utilization of ecological, social and economic functions of forest resources in support of sustainable development in every forest area function [17].

### *3.3. Strategy of Agrarian-Forestry Conflict Management*

SWOT weighted matrix indicates situations requiring management with appropriate strategies to social, economic, cultural and environmental conditions through the involvement of all parties in the form of collaboration and participation to support the settlement of agrarian-forestry conflicts that are equitable towards sustainable development shows in table 3.

The combination of SWOT elements, especially on the variables of opportunity and weakness, results in several strategies of agrarian-forestry conflict management based on stakeholder participation and collaboration related to agrarian-forestry conflicts in Dongi-dongi communities as follows:

- Socialization of the implementation of TORA, and the application of land redistribution conducted with community empowerment from the aspects of land management to increase ecological awareness and avoid deforestation.
- Socialization of legal legitimacy on land tenure by communities within the forest area as a solution to resolve disputes and conflicts within forest areas.
- Involving all stakeholder elements in support of a series of activities in synchronization and verification of data on both regional and demographic data required.
- Improving mechanisms and institutions in the context of agrarian reforms that not only solve agrarian conflicts is to satisfy the sense of justice of farmers, traditional communities and the people in general but also as a forum for socio-economic empowerment of the people.

- Improvement of facilities and infrastructure for the utilization of forest resources for ecotourism purposes as one of the business opportunities so that people are not focused on the activities of harvesting.

**Table 3.** SWOT Matrix Determination of Agrarian-Forestry Conflict Management Strategy

IFAS	Strength (S) <ul style="list-style-type: none"> <li>▪ The potential of natural resources</li> <li>▪ Work ethic</li> <li>▪ Local wisdom</li> </ul>	Weakness (W) <ul style="list-style-type: none"> <li>▪ Limited capital</li> <li>▪ Limitations of science</li> <li>▪ Lack of institutional role</li> <li>▪ Lack of ecological awareness</li> <li>▪ Unsuitable land management</li> </ul>
EFAS		
Opportunities (O) <ul style="list-style-type: none"> <li>▪ Agrarian Reform</li> <li>▪ Regional autonomy</li> <li>▪ The existence of NGOs</li> <li>▪ Access to facilities and infrastructure</li> <li>▪ The existence of BTNLL</li> </ul>	Strategy (S-O) Maximize strength by taking advantage of existing opportunities	Strategy (W-O) Minimize weaknesses by taking advantage of existing opportunities
Threats (T) <ul style="list-style-type: none"> <li>▪ Limitation of the carrying capacity of the ecosystem</li> <li>▪ Lack of boundary socialization</li> <li>▪ Ego-sectoral</li> <li>▪ Population increase</li> </ul>	Strategy (S-T) Maximize strength by avoiding the threat is there	Strategy (W-T) Minimize strength by avoiding the threat is there

#### 4. Conclusion

The Dongi-dongi Society requires a strategy of agrarian-forestry crisis management in a new democratic paradigm and recognizes a more accommodative human dimension to stakeholder engagement with key stakeholders (Government, Traditional Communities and Local Communities) as well as supporting stakeholders (LSM/NGOs, Private and Higher Education) in negotiating jointly and synergistically in accordance with applicable legislation and providing sustainable benefits. The strategy of agrarian-forestry crisis management is model of agrarian-forestry crisis management that prioritizes sustainability by involving all stakeholders and can increase self-sufficiency and internal strengths and the ability to manage forest resources, legal recognition of tenure and management rights to benefit not only from aspects ecological but also socioeconomic aspects. Recommendation of participation and collaboration policy related to area arrangement, the arrangement of the management plan and area utilization, protection and conservation of area, human resource development and development of supporting facilities and infrastructure and appreciation to local wisdom owned by the community.

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