Social capital of forest management: A case study of village forest in North Luwu, South Sulawesi

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Abstract. The research explores the linkages between social capital and community forest management. We used participatory action research (PAR) method to observe the daily community life intensively every day for a month and semi-structured interviews to deepen our knowledge about their forest management activities related to their silvicultural prescriptions linkage with the social capital. We found that social capital, such as norms and trust inter-individual in community, trigger their preference to protect the forest. Meanwhile, a horizontal network applied within this community and bonding its social capital.

1. Introduction

Many forestry and environmental problems and activities require some type of collective action, usually on common-pool resources, but also on public and private lands [1]. Collective action can be very difficult where levels of social capital are low, and capacity is weak or lacking [1-3].

Social capital can be defined as a set of informal values and norms that are shared between members of a group of people that enable cooperation between them [4]. It is a very important factor because individuals’ management preferences can be influenced by their stocks of social capital as well as the meanings which they ascribe to the forest [5].

The same case provides in Hutan Desa (the forest that managed by the village enterprise institution), and in this case, we study in Sepakat Village, Luwu Utara Regency. In 2015, the community agreed with the government and provided a decree issued by the Governor of South Sulawesi No.1520/VI/2015 concerning Village Forest Management Rights to the Village Forest Management Institution located in the administrative area of Sepakat Village, Masamba District, North Luwu Regency with an area of 765 Ha. Until now, the forest still exists, and the community utilizes its forest for mainly non-timber products. They use their social capital to perform their forest.

This research will explore the linkages between social capital and community forest management. It will show what kind of social capital impacts the preferences of the community to protect their forest.

2. Methods

The primary objective of this research is to explore how social capital attach to forest management by the forest community. We used Participatory Action Research (PAR), such as transect walk and semi-structured interviews to collect empirical data [6].

We used transect walk to observe the daily community life intensively and semi-structured interview to deepen our knowledge about their forest management activities related to their silvicultural prescriptions linkage with the social capital. Silvicultural prescriptions in this study are
more focused on the management at the site level in the form of scheduling silvicultural activities such as planting, maintaining, harvesting, and other necessary actions [7,8].

3. Results
In general, all the forest community bonding their activities through community deliberation. Community ties their forest management to social capital in the form of norms, beliefs, and networks. There are several norms applied by the community in their activities, managing forest, and it can be seen in Table 1.

Table 1. Linkages between silvicultural prescription and social capital

| Silvicultural Act | Norms | Social Capital | Network |
|-------------------|-------|----------------|---------|
| Land preparation  | Discussion, Ritual Ceremony | Social Ties | Horizontal Network |
| Planting          | Mutual Cooperation | Social Ties | Horizontal Network |
| Controlling       | Mutual Cooperation | Social Ties | Horizontal Network |
| Harvesting        | Prohibited Timber Harvesting, Applied Non-Timber Harvesting | Solidarity | Horizontal Network |
| Marketing         | Sharing profit | Authorization | Horizontal Network |

3.1. Land Preparation
Through land preparation, community-made informal discussion to take a joint decision about how to manage their forest for the long term (35 years), mid-term (10 years) and short term (each year). The informal discussion carried out by following the local culture called Tudang Sipulung. It is a space for the community to voice its interests in finding solutions to the problems faced [9].

The discussion above held each year in this community and one of the primary sessions is to prepare the ritual ceremony. The ritual directly led by the community customary leader to ask God to protect them from natural disasters, crop failure, and disturbance spirits.

All the norms above are followed by the individual in the community, and they believe the norms as the way of life. It made strong social ties too, but unfortunately, they just provide a horizontal network. The community did not prepare for bridging their social capital, in the term of land preparation context, into another network such as other community or formal institution.

3.2. Planting and Controlling
They were planting and controlling processes in the community forest management system led by the deal from the Tudang Sipulung process. They chose mutual cooperation as their norm to protect the forest. This norm leads to strong social ties between the individual in the community. The impact of the norm and trust above lead to bonding strong horizontal network. The community did not prepare for bridging their social capital, in the term of planting and controlling context, into another network such as other communities or formal institutions.

3.3. Harvesting
The community still respect the customary law. They believe that the forest is a sacred place and should maintain its existence. In accordance with that, the community prohibits to harvest timber. It is slightly different from an elder; right now, there is an exception in need to build or repair houses.

Even though the community does not harvest timber for commercialization, their livelihood is still very dependent on the existence of the forest. The non-timber harvesting is allowed and become the primary commodity in this area. The main product that produces by the community can be seen
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### Table 2. Productivity and Intensity Harvesting Product in Forest Area

| Natural resources | Productivity | Harvest Intensity |
|-------------------|--------------|-------------------|
| Bamboo            | All-season   | High              |
| Rattan            | All-season   | High              |
| Honey             | Seasonal     | High              |
| Coffee            | Seasonal     | High              |
| Fish              | All-season   | Medium            |
| Shrimp            | All-season   | Medium            |
| Resin             | All-season   | Medium            |
| Firewood*         | All-season   | Medium            |
| Durian            | Seasonal     | Medium            |
| Mushroom          | Seasonal     | Low               |
| Medicinal plants  | Seasonal     | Low               |

The primary product used by the community is Coffee, Bamboo, and Rattan. They commercialize that product intensively because the market is easily available. Middleman often comes to the village to collect it. It was slightly different from the honey product. Even though intensively harvests, the community finds it hard to sell it, and the main factor there is no middleman wants to collect it. It is very interesting to see the phenomenon, much academic research, said negative view of the middleman in the supply chain of forest product [10,11], but in this case, the community has a mutually beneficial relationship with the middleman.

Another non-timber product available and used by the community is Fish, Shrimp, Resin, Firewood, and Medicinal Plants. Fish, Shrimp, and Medicinal Plants dominantly used by the community as their food or medicine and rarely to sell it. On the other hand, resin sold directly to the local market to get money for their savings.

Although the community cannot cut the trees, they allowed to pick up the fallen tree trunks as the firewood. It is important to the community because most people in the community still use firewood as fuel for cooking.

The unique thing in the harvesting process, the community, carried out the process of harvesting in mutual cooperation based on individual awareness (different from the mutual cooperation based on the norms). This mutual cooperation leads to strengthening solidarity between the teammate of the harvesting team and usually formed by the family ties. The norms and solidarity as trust still cannot be bridged network to the other network.

### 3.4. Marketing

The community trust the customary leader and institutional leader to authorize their administration system. They conclude the best way to make sustainable management is to authorize the marketing system by sharing profit policy.

### Table 3. Sharing Profit Policy in Forest Area

| No. | Type         | Description |
|-----|--------------|-------------|

3
Cultivated land
1. Farmer groups are required to share 20% of their product to the village management institution called Lembaga Pengelola Hutan Desa (LPHD).
2. The remaining 80% of the productivity are shared equally among each member of farmers.

Uncultivated land
1. It is prohibited to take a non-timber product without LPHD permission.
2. Fine will be applied if any individual takes non-timber products without permission. The value of fine equal to 100% + 50% of the product value
3. Farmer groups are required to share 20% of their product to the village management institution called Lembaga Pengelola Hutan Desa (LPHD).
4. The remaining 80% of the productivity are shared equally among each member of farmers.

The community delegates product sales authority and revenue sharing through LPHD. With this norm and trust, they create horizontal networks because they cannot open their network sales widely.

4. Conclusion
Social capital, such as norms and trust inter-individual in community, triggers the community preference to protect the forest. Meanwhile, a horizontal network applied within this community and bonding its social capital.

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