

Social capital of the community in the management of Danau Sentarum National Park, West Kalimantan, Indonesia

EMI ROSLINDA

Faculty of Forestry, Universitas Tanjungpura. Jl. Imam Bonjol, Pontianak 78124, West Kalimantan, Indonesia. Tel.: +62-561-767673, Fax.: +62-561-767673, email: eroslinda71@gmail.com.

Manuscript received: 24 April 2018. Revision accepted: 6 June 2018.

Abstract. Roslinda E. 2018. *Social capital of the community in the management of Danau Sentarum National Park, West Kalimantan, Indonesia. Biodiversitas 19: 1249-1257.* Many studies on the management of National Park have been conducted in various countries. This research highlights the management of Danau Sentarum National Park which is administratively located in West Kalimantan Province precisely in Kapuas Hulu District, from the view of social capital. The research method was surveyed using a quantitative approach. Social capital of the community in the area of Danau Sentarum National Park is still high/strong. Based on this fact, the management of the National Park that has been conducted by the government alone can collaborate with the management by community and collaborative management that pays a good attention to the minimum resistance and maximum synergy.

Keywords: Management, network, norms, social capital, trust

INTRODUCTION

Many studies on the management of National Park have been conducted in various countries with diverse topics (Chapman 2003; Dressler et al. 2006; Zhou and Grumbine 2011). In many cases, the presence of national parks raises several social problems (Kadir et al. 2013; Nastran and Istenic 2015). Community around the park assumes that they have lost access to natural resources to the presence of national parks. Actually, they had already inhabited the area for a hundred of years before the national parks were established. This condition leads to a social conflict between the local people (community who lives around the parks) and the national parks authority. Of the reality, community has many experiences to manage the natural resource. They have traditionally managed the area where their lives, that is strongly based on traditional ecological knowledge and embedded by belief (Berkes 2008; Iskandar and Iskandar 2011). Of the knowledge, community is expected to be involved and to be acknowledged its ability to participate in the management of the national park, which has been often neglected. This is because the concept of management of National Park is highly centralized and often ignores the existence of indigenous/local community whom actually has to live in this region is hereditary, from generation to generation.

Natural resources management, include National Park management is not only influenced by physical and economic capital but also social capital. Social capital is a non-material form of capital (Szulecka et al. 2014). Social capital explains that social bonds and norms are important for the people and communities (Coleman 1998). Social capital is an essential aspect of community forest management implementation (Guillen et al. 2015). The strong social capital can be a consideration of the

government to support development program (Roslinda et al. 2017).

Currently, management of the National park held by the government with zoning system has not yet provided optimal result. In order to support sustainable park management and the stakeholders are to develop the management of national park by community, a consideration is needed not only based on biophysical functions but also by the aspects of economy, social and culture of the community living in the area of National Park. It underlies the need to include the social capital as a readiness factor involved in order to participate in the management of National Park. This study intended to describe how social capital built by community in the area of Danau Sentarum National Park (DSNP) which related to natural resources management (fishery, forestry, and agriculture) have been implemented and enforced. This research highlights the management of natural resources by the local community from the view of their social capital. The result of this study is expected to contribute to the knowledge about capacity of the community and its dynamic in managing the natural resources, in particular, the management of the National Park. The objective of this study is to identify and to assess social capital of the community; as well as the role of social capital in the community with the institutional model of national park management that may be applied optimally.

MATERIALS AND METHODS

Study area

This study was conducted in Danau Sentarum National Park (DSNP). DSNP is the 2nd Ramsar Site in Kapuas Hulu District, West Kalimantan Province, Indonesia. DSNP is

area of freshwater lakes and lowland swamp forest. DSNP was established in 1985 as the Danau Sentarum Wildlife Reserve (Giesen and Aglionby 2000) and became to a national park in 1995 (Wadley et al. 2010), and on 4 February 1999 by decree of the Minister of Forestry Number 34/Kpts-II/1999 includes the 132,000 ha. DSNP has natural beauty, high biodiversity, traditional fishery and local people's culture are property that can be managed sustainably for the benefit of community.

The administration of this region covered the district of Kapuas Hulu District and included within seven sub-districts Batang Lupar, Badau, Embau, Bunut Hulu, Suhaid, Selimbau, and Semitau. As for management activities, DSNP is divided into three Management Section National Park (MSNP) namely MSNP I Lanjak, MSNP IISemitau and MSNP III Selimbau, which can be seen in Figure 1.

Conceptual framework

The main concept raised in this paper is social capital. The concept of social capital is a developmental theory and research which is relatively new; however, this concept has

been largely used in various fields (Ha 2010). According to Liu et al. (2014), the concept of social capital has been taken into consideration in various areas of research (multidisciplinary) in recent decades. The earliest and famous formulation of the concept of social capital was made by Coleman (1988) and Putnam et al. (1993). Coleman defined the social capital based on the function: "they all consist of some aspects of social structures, and they facilitate certain actions of actors-whether persons or corporate actors-within the structure." Here, social capital is not a single entity but consists of a number of entities with the same two elements, namely (i) all consist of the aspects of social structures and (ii) facilitate the actions of the individual in the structures. As physical capital and human capital, social capital also productively enables the achievement of certain goals which in its absence would be impossible to achieve (Coleman 1988).

Meanwhile, Putnam et al. (1993) formulated the concept of social capital as refers to features of social organization such as trust, norms, and networks that can improve the efficiency of society by facilitating coordinated actions.

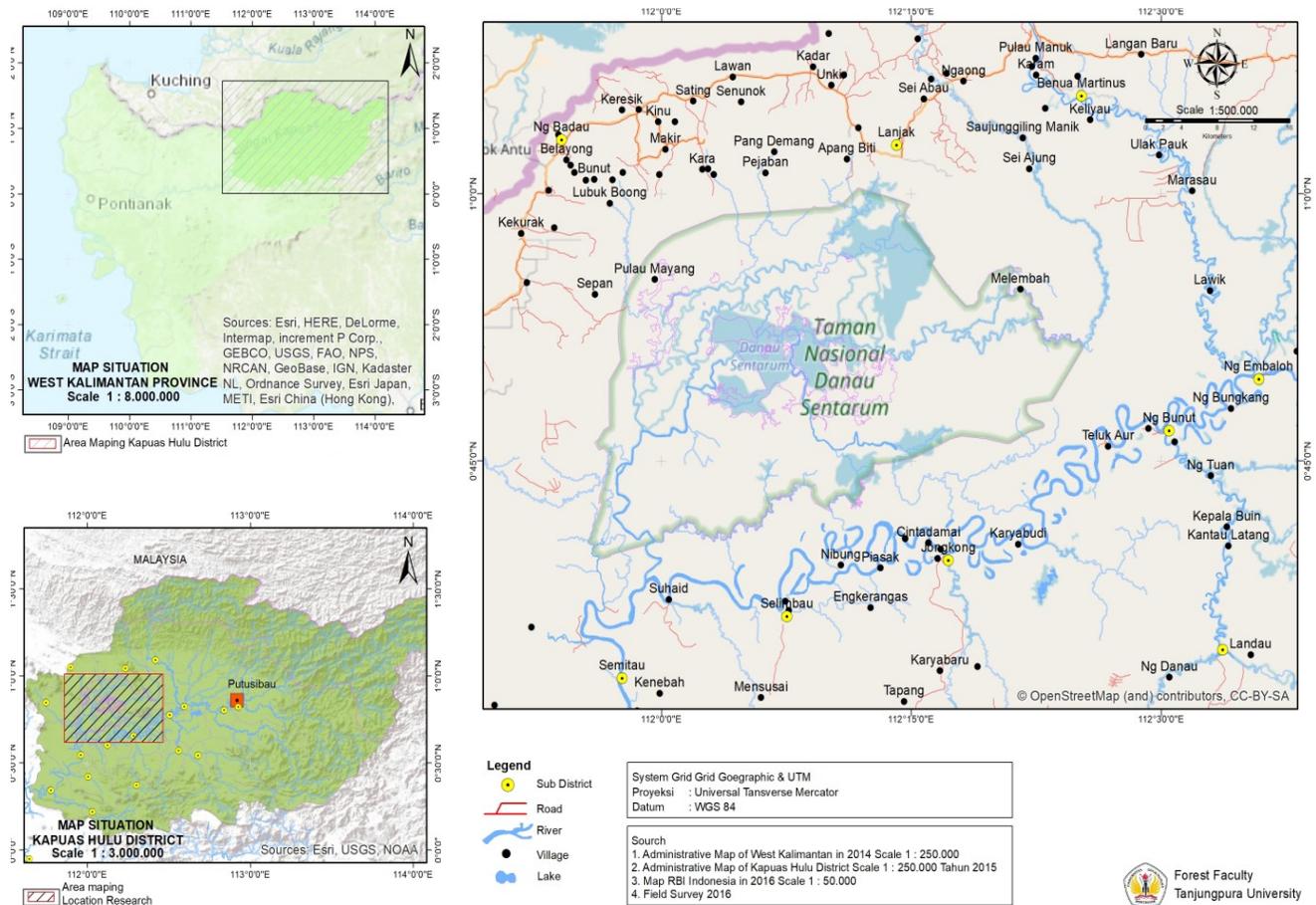


Figure 1. Map of management section of Danau Sentarum National Park, Kapuas Hulu District, West Kalimantan Province, Indonesia (DSNP 2011)

Broadly speaking, Putnam's social capital refers to the parts of social organization such as networks, norms, and trust. The *social capital* plays role in facilitating the cooperation and mutual coordination for the mutual benefits of the members of organization. The networks and norms are empirically interrelated and have important economic consequences. The author will use operationalization formula of the concept of social capital from Putnam et al. (1993). The concept of Putnam's social capital consists of three elements: trust, norms, and networks. Putnam (1993) mentioned that trust has the power of affecting the underlying principles of social prosperity and economic progress achieved by a community (nation) and is the spirit of the social institution.

Norms are a set of rules expected to be obeyed by the members of specific entity (group) (Putnam 1993). These norms are institutionalized and contained social sanction that may prevent individual to do something aberrant. The rules are usually unwritten but understood by every member of the community as well as to determine the pattern of expected behavior in the context of social relations. Norms cannot be separated from trust on the reason that norms are devices used to maintain the consistency between status and role in maintaining social structures.

Meanwhile, the networks relate to distinctive typology in line with the characteristics and orientation of community groups (Putnam 1993). Usually, social groups are formed traditionally on an equal basis of hereditary line (repeated social experiences) and equal trust in the dimensional requirement (religious beliefs) tends to have a high cohesive, but the range of networks or trust built up is very narrow. On a contrary, groups that are built on the equal basis of orientation and goals with the characteristic of more modern organizational management will have a level of better participation of the members and have a wider range of networks.

Research method

The research was conducted in DSNP. The study was conducted in 3 areas of management, non-representatives of sub-district. It was based on the consideration that firstly, the social capital assessed was the social capital of the community in the National Park as a whole. Secondly, the people living in the area are generally traditional people who still have a strong social capital. Generally, social capital is stronger and more maintained in traditional community during its history of life. The villages in DSNP are famous with their fishery resources management systems, as well as their distinctive forestry and agriculture (Harwell 1997; Wadley 1997; Colfer et al. 2000; Dudley 2000; Yasmi et al. 2010).

Research method used was surveyed with a quantitative analysis. Data and information collection were conducted by interviewing respondents using structured questionnaires. The respondents were randomly selected from the residents of the three STPN with the number of respondents was 60 (180 respondents in total). Field observation was conducted for three months.

The research was intended to illustrate real, concrete examples of social capital in the resources of fishery, forestry, and agriculture in DSNP. The elements of social capital mainly discussed are trust, norms, and social networks. Assessment of the elements forming social capital of the community was done using 3 categories, namely low, medium, and high.

Assessment of the level of trust of DSNP community included trust in people around the community with the same ethnics, people around the community with different ethnics, government officials (DSNP, District Government, Sub-district Government), community/religious leaders, outsiders (NGOs), the level of trust to the benefits of natural resources, the level of trust in conserving the natural resources, the level of trust in cooperating as well as the level of trust in maintaining the relationships. Interval of the score level with $X_{max} = 27$, $X_{min} = 9$ and $N = 36$, thus the level of trust can be divided into (i) Level of low trust if the score is < 15 ; (ii) Level of medium trust if the score is between 15-21; (iii) Level of high trust if the score is between 22-27.

Assessment of the social norms can be seen from the rules governing the society formally and informally. Formal norms are sourced from public institution which is official and written, while informal norms are generally unwritten containing the rules in society. The interval of the level score of social norms with $X_{max} = 18$, $X_{min} = 6$ and $N = 36$ is 4, thus the level of social norms can be divided into (i) Level of low social norms if the score is < 10 ; (ii) Level of medium social norms if the score is between 10-14; (iii) Level of high social norms if the score is between 15-18.

Assessment of social networks can be seen from the social networks established in the society of DSNP in the form of the density of organization, the diversity of memberships, participation, willingness, teamwork both within and outside the community, and togetherness. The interval of the level score of social networks with $X_{max} = 27$, $X_{min} = 9$ and $N = 36$ is 6 thus so the level of social networks can be divided into (i) Level of low social networks if the score is < 15 ; (ii) Level of medium social networks if the score is between 15-21; (iii) Level of high social networks if the score is between 22-27.

RESULTS AND DISCUSSION

Social capital in the management of DSNP

The communities of DSNP lived and settled in this area before the government declared the area as a conservation area. However, after the government implemented the conservation program, they were considered a threat. Hence, the dependency of livelihood on the forest and lake was still high as they kept extracting forest and lake to fulfill their needs. The people living in the area are generally traditional people who still have a strong social capital. Generally, social capital is stronger and more maintained in traditional community during its history of life.

Trust

There were nine sub-elements of trust assessed. The following summary shows the assessment of sub-elements of trust (Table 1). Table 1 shows that the level of trust the people have in the community was in high category (score 22). People (94.44%) rated other people with the same ethnic trustworthy; this means that people have a high level of trust for the community members with the same ethnic. The level of public trust in daily life still shows a positive level among fellow ethnic; on the contrary, if it relates to those from different ethnic, people were very cautious in interacting so the level of trust for the people with different ethnic was included into low category (87.22%). It is consistent with a statement saying trust is formed on the basis of genealogical ties and the same identity, and social trust is arisen from the trust growing and developing among individuals (Putnam et al. 1993).

Table 1 uncovers that more residents believe in community/customary leaders and religious leaders rather

than to government officials. Under this condition, the government's effort to put a representative to manage a land will be useless since it is proven that they are not trusted by public. It also shows that government oriented management will not be effective. This finding reinforces the statement that as long as there is a state domination in the management of land, the roles and power existing between state and community will be imbalance¹⁶. The provision of opportunity to community leaders by reinforcing their capacity and capability will be able to work to manage the area as better a period both state and community can benefit from the management.

Meanwhile, the public trust to outsiders particularly NGOs working in DSNP was in the category of medium (46.67%) since the interval was different in each MSNP. It is based on the different experience they had in each MSNP. Public trust will arise if tangible results are obtained, not just mere promises. People inhabiting the DSNP need proof not just mere promises.

Table 1. Level of respondents' trust in Danau Sentarum National Park, Kapuas Hulu District, West Kalimantan, Indonesia

| Sub-elements of trust | Level | Number (person) | Percentage (%) | Score | Average of score |
|--|-------|-----------------|----------------|-------|------------------|
| Trust in the people around with the same ethnic | 1 | 0 | 0 | 530 | 2.94 ≈ 3 |
| | 2 | 10 | 5.56 | | |
| | 3 | 170 | 94.44 | | |
| Numbers | | 180 | 100.00 | | |
| Trust in the people around with different ethnic | 1 | 157 | 87.22 | 203 | 1.13 ≈ 1 |
| | 2 | 23 | 12.78 | | |
| | 3 | 0 | 0 | | |
| Numbers | | 180 | 100.00 | | |
| Trust in government officials (DSNP, District Government, Sub-district Government) | 1 | 67 | 37.22 | 323 | 1.79 ≈ 2 |
| | 2 | 83 | 46.11 | | |
| | 3 | 30 | 16.67 | | |
| Numbers | | 180 | 100.00 | | |
| Trust in community/religious leaders | 1 | 0 | 0 | 540 | 3 |
| | 2 | 0 | 0 | | |
| | 3 | 180 | 100.00 | | |
| Numbers | | 180 | 100.00 | | |
| Trust in the outsiders (NGOs) | 1 | 44 | 24.44 | 368 | 2.04 ≈ 2 |
| | 2 | 84 | 46.67 | | |
| | 3 | 52 | 28.89 | | |
| Numbers | | 180 | 100.00 | | |
| Trust in the benefits of natural resources | 1 | 0 | 0 | 535 | 2.97 ≈ 3 |
| | 2 | 5 | 2.78 | | |
| | 3 | 175 | 97.22 | | |
| Numbers | | 180 | 100.00 | | |
| Trust in conserving the natural resources | 1 | 17 | 9.44 | 475 | 2.64 ≈ 3 |
| | 2 | 31 | 17.22 | | |
| | 3 | 132 | 73.34 | | |
| Numbers | | 180 | 100.00 | | |
| Trust in cooperating | 1 | 7 | 3.89 | 508 | 2.82 ≈ 3 |
| | 2 | 18 | 10.00 | | |
| | 3 | 155 | 86.11 | | |
| Numbers | | 180 | 100.00 | | |
| Trust in maintaining the close relationships | 1 | 2 | 1.11 | 524 | 2.91 ≈ 3 |
| | 2 | 12 | 6.67 | | |
| | 3 | 166 | 92.22 | | |
| Numbers | | 180 | 100.00 | | |

Score: 4006 and average score of 22.26 ≈ 22

Note: The number of respondents is 180 with a value of 1 (low), 2 (medium) and 3 (high) by Xmax: 27, Xmin: 9 and the number of classes: 3

The trust existing in social relationship allows the community to establish harmonious relationship and social integration among them. In the context of management and conservation of natural resources and forests, the trust people have can help reduce the occurrence of serious competition in the use of natural resources and the existing forests. The use and management of natural resources particularly in the sectors of fishery and forestry are still in the corridor of rules of the management of fishery and forestry resources that they trust and run from the time of their ancestors.

The finding shows that there was a high level of trust (score 22) in the community. In the community with high capability of trust (high trust) or with broad (long) spectrum of trust, they tended to have the potential for strong social capital. On a contrary, in the community with low capability of trust (low trust) or with narrow (short) spectrum of trust, they tended to have the potential for weak social capital. Therefore, trust can be regarded as a necessary condition for the establishment of strong (or weak) social capital in a society. This can be seen from the case in DSNP. Because of the high trust between fishing and farming communities in DSNP, they can facilitate the activities of the management of natural resources (fishery and farming) together. This finding was rather different from that of Qurniaty et al. (2017) research which found that trust between farmer group member remains high, but not supported collective action since farmer group institution is weak. Trust is a fundamental component of social capital formation in rural areas, while other aspects (cooperation and networking) will not be well established if not based on mutual trust between community members (Innah et al. 2013; Cahyono 2014). When examined, all activities led to the economic ones. This is consistent with what was expressed by Putnam that trust has the power of affecting underlying principles of social prosperity and economic progress achieved by a community or nation (Putnam 1993). Therefore, trust is something very huge and very beneficial for the creation of economic order within the community.

Social norms

Social norms were described in the aspects of the regulated and measured level of understanding of respondent against the rules. There were six sub-elements studied in social norms. The summary of social norms can be seen in Table 2. Based on Table 2, it can be seen that the level of social norms in the community in DSNP was high (score 15). Not all residents understood written rules. Only 36.677% of the respondents fully understood the rules of natural resources management, 49.44% of respondents less understood, while 13.89% of respondents did not understand the applicable rules. Against the rules applicable in the management of natural resources both fishery and forestry, all respondents admitted to never violate the rule since it was collectively agreed. Most of them (85%) considered other members of the community still totally obey the rules; no violations occurred, while the

rest of the 15% said that there had been violation by the others. The potential for conflict among people of different ethnic, therefore, is apparent. It is possibly triggered by the lack of clear communication between the ethnic, so the rules within each territory are only obeyed by themselves. Internal rules are strong, but not the external ones. Norms actually cannot be separated with trust because they are the tools used to maintain consistency between status and roles in the overall function to maintain social structures in the society (Putnam 1993).

In the fishing community in 3 MSNP, there were values, norms, and pattern of behavior that acted as guidance for its people. Pattern of behavior described in this study is limited to the rules of natural resources. As for the farming community, there were values, norms, and rules of the management of forest resources. Each fishing community has rules that are the results of a joint agreement governing the use of fishing gear, on certain type of fish, on matters related to human, and so forth. In general, the fishing activity in DSNP has rules of *jala zakat*, *kerinan*, and ownership of the river. The rules on the river are the clarity of property right regarding the work area tenure to avoid conflicts among the people in their respective work area. In the context of environmental policy, this kind of rules may affect attitudes towards the environment to a certain extent even cause behavior towards the environment (Miller and Buys 2008).

Farming community also has the rules of farming management compiled in the book of *Tusun Tunggu Adat Iban of West Kalimantan Border*. In addition to the rules of the employment of fishermen and natural resources and forest, in DSNP there was also a rule of the management of forest honey resources from *periau*. The rule of forest honey management from traditional *periau* community is concerning the regulations and management areas as follows: (i) Management area of certain *periau*. (ii) Type of wood to be used as *tikung* (*tikung* cannot be made of Medang wood (*Litsea* sp.)). (iii) Rules of installation and design of *tikung* (distance between the *tikung* cannot be too close; It is not allowed to install the *tikung* on the track and outside the *periau*; The installation of the *tikung* is between two branches that are sturdy enough with the slope of 30-40 degrees). (iv) Members of *periau* are obliged to preserve environment (swamp forest habitats as feeding sources for bees). (v) Recruitment/member registration and member code in each *tikung*. (vi) The minimum number of *tikung* a member should have (a resident of the village can be a member of *periau* under the condition that he/she is capable to install more than 25 *tikung*). (vii) Harvesting should be done together at a specific time set by the chairman of *periau* and taking honey in others' *tikung* is not allowed.

From this fact, it is concluded that each group/ethnic has a close relationship and strong bonding so they can solve the problems in the environment. The condition reinforces the statement that indigenus/traditional community has a close social capital amongst them (Pranadji 2006; Suharjito et al. 2006; Rinawati 2012).

Table 2. Level of respondents' social norms in Danau Sentarum National Park, Kapuas Hulu District, West Kalimantan, Indonesia

| Sub-elements of social norms | Level | Number (person) | Percentage (%) | Score | Average of score |
|--|-------|-----------------|----------------|-------|------------------|
| Understanding the unwritten rules (norms/customs) | 1 | 18 | 10.00 | 393 | 2.18 \approx 2 |
| | 2 | 111 | 61.67 | | |
| | 3 | 51 | 28.33 | | |
| Numbers | | 180 | 100.00 | | |
| Understanding of the written rules | 1 | 25 | 13.89 | 401 | 2.23 \approx 2 |
| | 2 | 89 | 49.44 | | |
| | 3 | 66 | 36.67 | | |
| Numbers | | 180 | 100.00 | | |
| Understanding of habits in society (honesty, decency, harmony in daily life) | 1 | 0 | 0.00 | 434 | 2.41 \approx 2 |
| | 2 | 106 | 58.89 | | |
| | 3 | 74 | 41.11 | | |
| Numbers | | 180 | 100.00 | | |
| Violation by individual | 1 | 0 | 0.00 | 513 | 2.85 \approx 3 |
| | 2 | 27 | 15.00 | | |
| | 3 | 153 | 85.00 | | |
| Numbers | | 180 | 100.00 | | |
| Violation by other members of the community in the same ethnic | 1 | 0 | 0.00 | 522 | 2.90 \approx 3 |
| | 2 | 18 | 10.00 | | |
| | 3 | 162 | 90.00 | | |
| Numbers | | 180 | 100.00 | | |
| Violation by other members of the community in different ethnic | 1 | 41 | 22.78 | 415 | 2.31 \approx 2 |
| | 2 | 43 | 23.89 | | |
| | 3 | 96 | 53.33 | | |
| Numbers | | 180 | 100.00 | | |

Score: 2678 and average score: 14.87 \approx 15

Note: Number of respondents is 180 persons with the value of 1 (low), 2 (medium) and 3 (high) by Xmax: 18, Xmin: 6 and number of classes: 3

Social norms with various internal rules have significantly bound the residents in each fishing community and citizens to maintain and preserve the aquatic and forestry resources. Fishing rules in the form of work area division, fishing gear setting, labors from outside setting, type of bait setting and so forth have directly contributed to the preservation of aquatic resources. The rules of *periau* in the form of *periau* work area, type of wood used as *tikung*, rules of installation, the number and the design of *tikung*, the obligation of *periau* members to preserve environment, recruitment/member registration and member code in each *tikung*, as well as the rules of harvesting have contributed in the preservation of forest honey resources. Rules in the Iban community in forest zoning, logging banning, rules of customary forest, deposit forest and farming management have directly contributed to forest preservation. The result of the research showed the level of compliance with the rules of society is quite high particularly on the unwritten rules that have positive implications to all kinds of natural resources existing in the area of utilization and management. This is because the prevailing rules are more hereditary and internalized in society (Roslinda et al. 2017). This is the power to help the preservation of their natural resources today.

Social networks

DSNP community network is based on kinship. This is because almost all people in this area come from one tribe or the same lineage, the Malays people for fisherman and the Dayaks people for farmers. Social networks established

in the community of DSNP were in the form of the density of organization, diversity of membership, participation, willingness, teamwork both inside and outside the community as well as togetherness. The density of organization consisted of the number of family members involved in an organization and the number of organizations followed. The summary of the level of social networks can be seen in Table 4.

Stated by respondents 98.33% only 1 person involved in organization, i.e., the head of family, 2 families (1.11%) did not join and 1 family claimed that their 2 members of the family involved in organization namely the head of the family and an adult but single child. The density of organization followed by respondents ranged between 0-5 organizations in one family. Average number of respondents following organizations was at the level of medium category (52.22%), i.e., 2 organizations followed in one family. Types of organization followed were such as fishermen groups, *periau* association, youth clubs, private security, and fire-care forces. In addition, there was also DSNP Community Working Group and Annual Meeting of DSNP community. The organizations considered as the most important were fishermen group and *periau* association of Lake Sentarum, since they are business groups that can support the economy. Meanwhile, other organizations were formed not by the initiative of the community itself but by the outside parties. Therefore, they are not operating without support from the government or Office of DSNP or NGOs.

Table 3. Level of respondents' social networks in Danau Sentarum National Park, Kapuas Hulu District, West Kalimantan, Indonesia

| Sub-elements of social networks | Level | Number (person) | Percentage (%) | Score | Average of score |
|---|-------|-----------------|----------------|-------|------------------|
| Density of organization (the number of family members involved) | 1 | 2 | 1.11 | 359 | 1.99 ≈ 2 |
| | 2 | 177 | 98.33 | | |
| | 3 | 1 | 0.56 | | |
| Numbers | | 180 | 100.00 | | |
| Density of organization (the number of organizations followed) | 1 | 82 | 45.55 | 282 | 1.56 ≈ 2 |
| | 2 | 94 | 52.22 | | |
| | 3 | 4 | 2.22 | | |
| Numbers | | 180 | 100.00 | | |
| Diversity of organization members | 1 | 0 | 0.00 | 360 | 2.00 ≈ 2 |
| | 2 | 180 | 100.00 | | |
| | 3 | 0 | 0.00 | | |
| Numbers | | 180 | 100.00 | | |
| Participation in groups | 1 | 55 | 30.56 | 352 | 1.96 ≈ 2 |
| | 2 | 78 | 43.33 | | |
| | 3 | 47 | 26.11 | | |
| Numbers | | 180 | 100.00 | | |
| Willingness of building the networks | 1 | 48 | 26.67 | 348 | 1.93 ≈ 2 |
| | 2 | 96 | 53.33 | | |
| | 3 | 36 | 20.00 | | |
| Numbers | | 180 | 100.00 | | |
| Teamwork with other groups inside the community | 1 | 28 | 15.56 | 369 | 2.05 ≈ 2 |
| | 2 | 115 | 63.89 | | |
| | 3 | 37 | 20.56 | | |
| Numbers | | 180 | 100.00 | | |
| Teamwork with other groups outside the community | 1 | 78 | 43.33 | 295 | 1.64 ≈ 2 |
| | 2 | 89 | 49.44 | | |
| | 3 | 13 | 7.22 | | |
| Numbers | | 180 | 100.00 | | |
| Togetherness in the organization (member initiative to be temporary chairman) | 1 | 105 | 58.33 | 265 | 1.47 ≈ 1 |
| | 2 | 65 | 36.11 | | |
| | 3 | 10 | 5.56 | | |
| Numbers | | 180 | 100.00 | | |
| Togetherness in the organization (cooperation amongst the community members if there is a problem shared) | 1 | 78 | 43.33 | 303 | 1.68 ≈ 2 |
| | 2 | 81 | 45.00 | | |
| | 3 | 21 | 11.67 | | |
| Numbers | | 180 | 100.00 | | |

Score: 2933 and average score: 16.29 ≈ 16

Note: The number of respondents is 180 persons with the value of 1 (low), 2 (medium), and 3 (high) by Xmax: 27, Xmin: 9 and the number of classes: 3

The diversity of memberships in organizations was at the level of medium. The fishermen groups, APDS, youth clubs generally have diversity for the ties of kinship, age, employment, income, political and social status. Meanwhile, the similarity shared by the members of organization is to stay in the neighborhood, employment, ethnicity/tribe/race, language, and religion.

Public participation in existing group was at the level of medium category (43.33%). The participation is shown by attending meetings conducted by organizations. There were 53.33% of respondents whom willing to build social networks in DSNP. It is because they joined the organizations voluntarily and without any coercion.

Teamwork to achieve goals consisted of cooperation with other groups in the community and cooperation with other groups outside the community. Both cooperative actions put the respondents generally at the level of

medium namely 63.89% for inside the community and 49.44% for outside the community.

Togetherness in the organization was reflected from the desire of members to substitute the chairman if he is absent for quite a long time; it was also reflected from the way the members deal with common problems. The desire of the members to be temporary chairman was at the level of low category (58.33%). People preferred being members, and it was difficult to find someone with good leadership to substitute the chairman when absent, and to lead the organization. The level of togetherness in dealing with common problems was medium (45.00%). People were well aware of the importance of togetherness, but in daily life, they often acted individually.

The result of assessment on social networks in DSNP community was generally in the medium category. DSNP management needs strong social networks amongst people, because strong networks act as a binder and bridge in

forming social structures. In addition, networks are also needed to be the link in between. Social interaction both inside and outside the community plays an important role in supporting sustainable DSNP management. Social interaction in the community can be seen from the existence of collective actions to achieve collective goals limited by certain institutions that have clear values, norms, and relationships (Lawang 2005).

Level of social capital of the community in DSNP management

Based on the constituent elements of social capital assessed, the level of social capital of the community is summarized in Table 4.

Based on the interval equation of social capital value with $X_{max} = 72$, $X_{min} = 24$ and $N = 3$ equals 11.3, the level of social capital of the community in TNDS area can be categorized as follows: (i) Social capital of community is categorized low if the score < 35 , in terms of DSNP area management it will be difficult to be involved based on social capital owned. (ii) Social capital of the community is categorized medium if the score ranged 35-46. In terms of DSNP area management, it can be involved with the note that it needs assistance to reinforce the social capital owned. (iii) Social capital of the community is categorized high if the score > 47 . In terms of area management, it will be very helpful to be involved in the activities of DSNP area management based on the social capital owned.

Based on Table 4, people in DSNP have a high level of social capital (with an average score of 53). Judging from the forms of interrelation that happened, people tended to have a bound type (bonding) of social capital. It can be seen from the relationship that is more inward which more works is internally (intra-ethnic), more trust in the same community, and model of relationship is based on values, culture, perception, and custom respectively. It is apparent from the relationship between the Malay and Iban community inside the region. The bound social capital was strong inside the community, but it was weak when dealing with people from outside the community. In addition, this type of social capital is difficult to accept changes. However, the high social capital owned by DSNP community is one of the capitals should be used to preserve natural resources in the area of DSNP. For optimal use, reinforcement of human resources is also needed in order to further strengthen the ability to exist social capital to be engaged in sustainable management of DSNP.

Based on the institutional model management (Birner et al. 2000), with the strength of social capital in the community level, the management of natural resources can be carried out by community when the social capital of the community is high and government's capability is low; collaborative management can be done when both social capital of the community and government's capability is high. Other models of management are by government when social capital of community is low and government's capability is high, and management by the private party when both social capital and government's capability is low.

Table 4. Level of social capital of the community in DSNP area

| Elements of social capital | Score | Average | Maximum-Minimum Value |
|----------------------------|-------|---------|-----------------------|
| Trust | 4.006 | 22 | 27-9 |
| Social norms | 2.678 | 15 | 18-6 |
| Social networks | 2.933 | 16 | 27-9 |
| Numbers | 9.617 | 53 | 72-24 |

Note: The number of respondents is 180 persons with the value of 1 (low), 2 (medium), 3 (high) by X_{max} : 72, X_{min} : 38 and the number of classes: 3

This research concluded that social capital of the community in the area of DSNP is still high/strong. Based on this fact, management of the National Park that has been conducted by the government alone can be collaborated with the management by community and collaborative management that pays a good attention to the minimum resistance and maximum synergy. Considering the strength of the social capital, it is suggested that the management of National park must consider the local social capital. Social capital combined with human capital, natural resources and technology can create a productive, fair and sustainable management of natural resources (National Park). The inclusion of local community in the activity of national park management can be performed by considering local potentials namely social capital owned and implemented by community.

ACKNOWLEDGEMENTS

We would like to thank the people of DSNP Kapuas Hulu, West Kalimantan, Indonesia for their open hearts and supports on our works. Moreover, our thankfulness also goes to Directorate General of Higher Education, Indonesian Ministry of Research, Technology and Higher Education on the funding for this research through the competitive research grant scheme, Tanjungpura University, Pontianak, Indonesia, as well as Balai Taman Nasional Danau Sentarum, and local government of Kapuas Hulu District, West Kalimantan, Indonesia for facilities and works. Great thanks are also extended to other parties who cannot be mentioned personally for giving us their hands to accomplish this works.

REFERENCES

- Berkes F. 2008. Sacred Ecology. Routledge, New York.
- Birner R, Wittmer H. 2000. On the Efficient Boundary of the State. A transaction cost economic approach to the analysis of decentralization and devolution in natural resources management. The XXIV International Conference of Agricultural Economist. Berlin, Germany.
- Cahyono B. 2014. The role of social capital in improving the community welfare of tobacco in Wonosobo regency. *Ekobis* 15 (1): 1-16
- Chapman D. 2003. Management of national parks in developing countries: a proposal for an international park service. *Ecol Econ* 46: 1-7.
- Coleman JS. 1988. Social capital in creation of human capital. *Amer J Soc* 94 (3): 95-120.

- Colfer CJP, Salim A, Wadley RL. 2000. Understanding patterns of resource use and consumption: A prelude to co-management. *Borneo Res Bull* 31: 29-88.
- Dressler WH, Kull CA, Meredith TC. 2006. The politics of decentralizing national parks management in the Philippines. *Political Geography* 25: 789-816.
- DSNP. 2011. Long-term Management Plan Book of Danau Sentarum Nasional Park.
- Dudley RG. 2000. The Fishery of Danau Sentarum. *Borneo Res Bull* 31: 261-306.
- Giesen W, Aglionby. 2000. Introduction Danau Sentarum National Park, West Kalimantan. *Borneo Res Bull* 31: 5-28.
- Guillen LA, Wallin I, Brukas V. 2015. Social capital in small-scale forestry: a local case study in Southern Sweden. *For Pol Econ* 53: 21-28.
- Ha SK. 2010. Housing, social capital and community development in Seoul. *Cities* 27: S35-S42.
- Harwell E. 1997. Law and culture in resource management: An analysis of local systems for resource management in the Danau Sentarum wildlife reserve, West Kalimantan, Indonesia. Bogor: Wetlands International.
- Innah HI, Suharjo D, Dharmawan AH, Darusman D. 2013. Collective action typologies and reforestation in indigenous community of Biak, Papua. *Jurnal Manajemen Hutan Tropika* 19 (1): 11-22.
- Iskandar J, BS Iskandar. 2011. Agroecosystem of Sundanese People. Buku Kiblat Utama Press. Bandung [Indonesian].
- Kadir AW, Nurhaedah M, Purwanti R. 2013. Conflict on Bantimurung Bulusaraung National Park South of Sulawesi and settlement efforts. *Jurnal Penelitian Sosial dan Ekonomi Kehutanan* 10 (3): 86-98. [Indonesian].
- Lawang RMZ. 2005. Kapital Sosial dalam Perspektif Sosiologik. Cetakan kedua. Jakarta: FISIP UI Press.
- Liu J, Qu H, Huang D, Chen G, Yue X, Zhao X, Liang Z. 2014. The role of social capital in encouraging residents' pro-environmental behaviours in community-based ecotourism. *Tourism Manag* 41: 190-201.
- Miller E, Buys L. 2008. The impact of social capital on residential water-affecting behaviors in drought-prone Australian community. *Soc Nat Resour* 21 (3): 244-257.
- Nastran WD, Istenic MC. 2015. Who is for against the park? Factors influencing the public's perception of a regional park: A Slovenian case study. *Human Ecol Rev* 21 (2): 93-111.
- Pranadji T. 2006. Penguatan modal sosial untuk masyarakat pedesaan dalam agroekosistem lahan kering. *Jurnal Agro Ekonomi* 24: 178-206. [Indonesian]
- Putnam RD, Leonardi R, Nonetti RY. 1993. Making democracy work: civic tradition in modern Italy. Princeton University Press. Princeton, NJ.
- Putnam RD. 1993. The Prosperous Community: Social Capital and Public Life. *Amer Prospect* 13: 35-42.
- Qurniati R, Febryano IG, Zulfiani D. 2017. How trust influence social capital to support collective action in agroforestry development? *Biodiversitas* 18 (3): 1201-1206.
- Rinawati R. 2012. Social capital of community on development community forest in Sub DAS Cisadane Hulu [Thesis]. Bogor Agricultural University, Bogor. [Indonesian]
- Roslinda E, Ekyastuti W, Kartikawati SM. 2017. Social capital of community forest management on Nusapati Village, Mempawah District, West Kalimantan, Indonesia. *Biodiversitas* 18 (2): 558-564.
- Suharjo D, Saputro GE. 2006. Social capital of forest resource management on Kasepuhan community, Banten Kidul. *Jurnal Penelitian Sosial dan Ekonomi Kehutanan* 5 (4): 317-335. [Indonesian]
- Szulecka J, Secco L. 2014. Local institutions, social capital and their role in forest plantation governance: lessons from two case studies of smallholder plantation in Paraguay. *Intl For Rev* 16 (2): 180-190.
- Wadley RL, Colfer CJP, Dennis R, Aglionby J. 2010. The social life of conservation: Lesson from Danau Sentarum. *Ecol Soc* 15 (4): 39. <http://www.ecologyandsociety.org/vol15/iss4/art39/>
- Wadley RL. 1997. Circular labor migration and subsistence agriculture: a case of the Iban in West Kalimantan, Indonesia. [Dissertation]. Arizona State University, Tempe AZ.
- Yasmi Y, Colfer CJP. 2010. Forestry and fishery in Danau Sentarum: application of an impairment approach. *Borneo Research Bull* 41: 145-161.
- Zhou DQ, Grumbine RE. 2011. National parks in China: Experiments with protecting nature and human livelihoods in Yunan province, Peoples Republic of China (PRC). *Biol Conserv* 144: 1314-1321.