

Social capital of community forest management on Nusapati Village, Mempawah District, West Kalimantan, Indonesia

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Abstract. Roslinda E, Ekyastuti E, Kartikawati SM. 2017. *Social capital of community forest management on Nusapati Village, Mempawah District, West Kalimantan, Indonesia. Biodiversitas 18: 548-554.* Community forest management has been recognized over the past two decades as a potential approach for achieving forest sustainability. In Indonesia, community forestry was developed by a government program with limited funds. Community forestry in Nusapati village was one of many successful community forest programs. The aim of this study was to explore how social capital developed in Nusapati community relating to community forest management was developed and reinforced. The survey method was used in this research. Data collection was undertaken through general field observation, key informant interviews, and semi-structured respondent interviews with a questionnaire. The results show that social capital was significantly correlated to trust, social norms, and social networks in the development of community forestry. This study concludes that social capital of Nusapati community is strong, which suggest that government intervention through development programs should take social capital into consideration.

Keywords: Community forest, networks, norms, social capital, trust

INTRODUCTION

Community forest management has been recognized over the past two decades as a potential approach for achieving forest sustainability (Little 1996; Klooster and Masera 2000). In Indonesia, community forest is called *Hutan Rakyat*. According to the Indonesian Law No.41/1999, the *hutan rakyat* is defined as a forest that allocates land ownership rights. Furthermore, *hutan rakyat* is a forest resource consisting of home garden (*pekarangan*), dry land (*tegalan*), and forest (*alas* or *wono*) fully owned by a community (Awang et al. 2007). The term of *hutan rakyat* is relatively new. Simon 2008 states, in Java, *hutan rakyat* existed as *pekarangan*, having been developed by the Netherland colonial government in the 1930s. In the 1950s, the Indonesian government undertook an afforestation program. Nationwide efforts continued under the umbrella of a greening program from the 1960s to early 2000. In the 1996 Indonesian government launched a model for partnership between entrepreneurs and farmers organizations facilitated by the business loan fund for *hutan rakyat*. After 2003, the National Movement for Forest and Land Rehabilitation (*Gerakan Nasional Rehabilitasi Hutan dan Lahan*) was implemented, which encouraged the planting of trees on both state and private land (Awang et al. 2007; Simon 2008).

Communities develop community forests with different models. Awang et al. (2007) noted that management of community forest is still very simple, namely planting their owned land with woody plants and let the plants grow without intensive management. On the other hand,

Hardjanto (2000) said community forest management had not exhibited business and sustainability principle, and that the forest had not become the reliable source of income, and the harvesting was still based on the need for cash. The model selection was based on the experience of farmers based on the suitability of species and place to grow, custom of farmers and timber markets. Different locations will have different characteristics of community forests to be built and developed as well, both in terms of cultivation and ownership status. Management of community forest in Java are more intensive and better than outside Java (Darusman and Hardjanto 2006).

Hutan rakyat is one of the community forestry schemes in Indonesia. Community forestry is normally seen or defined as involvement of local communities in the protection and/or management of public forests (Rath 2010). On the other hand, Carter and Voloshyna (2010) has defined community forestry as an approach to forest management that actively promotes the rights of the people living in and around the forest to both participate in forest management decisions and to benefit (financially and in kind) from the results of the management. The forest management should provide optimal benefits to society, the forest and the surrounding stakeholders (Birgantoro and Nurrochmat 2007). Furthermore, community-based management can turn unsustainable practices into more sustainable ones through a number of ways, such as self-organization, institutional development, experiment, knowledge elaboration, and social learning (Marschke and Berkes 2005).

Social capital explains that social bonds and norms are important for people and communities (Coleman 1998). Social capital is often suggested as having a beneficial effect on the capacity of individuals to organize themselves effectively (Coleman 1990; Fukuyama 1995). Most experts agree that social capital consists of three important dimensions: trust, social norms, and membership of social networks (Putnam 1995; Portes 1998). Social capital refers to an attribute of individuals in the form of networks such as groups, cooperatives, etc. Social capital thus comprises both networks and the assets that could be mobilized to achieve a specific goal of a project or program. Trust is the central element in developing sustainable social capital. Trust building is an important component of success in collective resource management. The concept of social capital has multiple roots and varying definitions and usages, and has been applied to a range of social issues in a number of fields, including participatory and rural development (Uphoff 2000; Uphoff and Wijayaratna 2000) and to problems of collective action (Ostrom and Ahn 2008). Pretty and Ward (2001) state the concept draws attention to the value of social ties and bonds through its recurring themes, which include norms, rule, trust, and networks (Putnam 1993; Pretty and Smith 2004; Ostrom and Ahn 2008).

Community forest management in Nepal is one of the globally successful models of the community forestry programs. In Nepal, community forest comprises 96 percent of the total forest under different community forestry programs (Poudel et al. 2014). Their social capital helps households better cope with income fluctuations and manage risk because activities undertaken for social purposes spill over into the economic arena (World Bank 2000). Nepal et al. (2007) found that social networks that are directly related to the conservation activity have a positive and significant impact on the number of trees planted. Thus, networks and affiliation were found to be important. Trust is an important factor, lack of trust was identified as a factor that inhibits the exercise of power in community forests user groups and hinders the sustainability (Lachapelle et al. 2004).

It is argued here that social capital is determined especially by trust, social norms and social networks, in addition to endowments and attributes of those affected. Taking the above broad definition, we consider the social capital concept by Putnam (1993): "the features of social organization, such as trust, norms, and networks can improve the efficiency of society by facilitating coordinated actions." In this term, social capital focus on it as a resource that may embody in or held by groups, others expand to include social capital as a resource held by individuals. This study aimed to describe the social capital that is owned and implemented by the community in the management of community forests. The regulations in the community are rules produced by the community itself, inherited and learned from the previous generation, taught and passed on to the next generation, and not produced by the government. The concrete or real examples in community group can help clarify the concept of social capital.

MATERIALS AND METHODS

Study area

Data of this study was collected in May-September 2015, in Nusapati Village, Sungai Pinyuh Sub-district, Mempawah District, West Kalimantan, Indonesia. Geographically, N109°04'30''-00°15'30'' and 109°09'00'-E00° 17' 12'', covering a total area of 2460 hectares. (Nusapati Village Monograph 2014). Figure 1 shows a map of the study area.

Data collection

The research adopted the survey method (Nazir 2009). Surveys were done in the areas that were chosen based on the availability of a community forest. The surveys were done to gain information about the social capital in community for management of the community forest. It was conducted through semi-structured interviews using a questionnaire and in-depth interviews with key informants. The interviews were conducted with 30 forest farmers and 5 ethnic/religious leaders respectively. Field observation was done to complete/confirm the information.

This study is intended to illustrate concrete or real examples of social capital in the community forest management. The elements of social capital that will be described are trust, social norms, and networks. The level of trust of respondents was measured by the proportion of respondents to the category of trust, doubt, and disbelief. The social norms described in the aspects of the regulated and measured level of understanding and violation of respondent against the rules. The level of understanding of respondents to the rule is measured by the proportion of respondents with a familiar category, please understand and do not understand the rules. Social networking is described by its base, intensity and extent, and pattern.

Data analysis

Data were analyzed using qualitative methods. The qualitative narrative was done by describing the social capital of community in managing community forest. The focus was on networks, norms and trust, as describe by Putnam: social capital is often defined as features of social organization such as networks, norms and trust that facilitate coordination and cooperation for mutual benefit (Putnam 1993).

RESULTS AND DISCUSSION

Forests in Nusapati Village

There are several types of forests in Nusapati Village; there was home garden (*pekarangan*), forest garden (*kebun hutan*), secondary forest and mangrove forest. In this paper, we just identified the forest that was managed by the community. The Identification of the forest in Nusapati is described in Table 1 and Figure 2.

Forest in Nusapati village is a secondary forest. Secondary forest is a forest that has been degraded due to human activity and others. The tropical forest degradation was not only clearing a large area of forests (i.e. with

selective logging), but the altering and replacing of old growth forest also happened speedily (Foley et al. 2007). The topography was slope to steep. The type of land was peatland. Main vegetation in the secondary forest was dominated by a few tree, pole, and sapling level tree growth and shrubs fern, grasses were found scattered. Some prominent species found were mangium (*Acacia mangium*), empahong (*Adenanthera pavonina*), terentang putih (*Camposperma squamatum*), gerunggang (*Cratoxylum glaucum*), rubber tree (*Hevea brasiliensis*), mensire (*Ilex cymosa*), mahang (*Macaranga pruinosa*), jonger (*Ploiarium alternifolium*), and ubah jambu (*Syzygium zollingerianum*). The composition of species in secondary forest in Nusapati village are similar with species diversity on peatland degraded forest (Astiani 2016).

Community forests are planted mostly on land with clear proofs of ownership in some form (Nugroho et al. 2013). Community forests in Nusapati village was funded by the government. In this land use, forest farmers commonly planted agarwood (*Aquilaria malaccensis*), jabon (*Anthocephalus cadamba*), mahogany (*Swietenia mahagoni*) and a small number of fast-growing trees such

as mangium (*Acacia mangium*). Beside the trees that are made available by the government, the forest farmer also planted banana (*Musa paradisiaca*), sawo kecil (*Manilkara kauki*), durian (*Durio zibethinus*), petai (*Parkia speciosa*), kedondong (*Spondias dulcis*) and rubber tree (*Hevea brasiliensis*).

The 15 most common plants are planted in people’s forest gardens. Pineapple (*Ananas comosus*), coconut (*Cocos nucifera*), and banana (*Musa paradisiaca*) are present in all forest farmer’s gardens. Nangka (*Artocarpus teysmannii*), durian (*Durio zibethinus*), manggis (*Garcinia mangostana*), mango (*Mangifera indica*), langsung (*Lansium parasiticum*), rambutan (*Nephelium lappaceum*), petai (*Parkia speciosa*), rubber tree (*Hevea brasiliensis*) and sawo kecil (*Manilkara kauki*) are other common plants which are recorded from more than 90% of the gardens. While starfruit (*Averrhoa carambola*), cocoa tree (*Theobroma cacao*), sweet potato (*Ipomoea batatas*), and cassava (*Manihot utilissima*) are the other common plants found in one’s garden. Pineapple, coconut, and banana are the most dominant and important species in the gardens of Nusapati community.

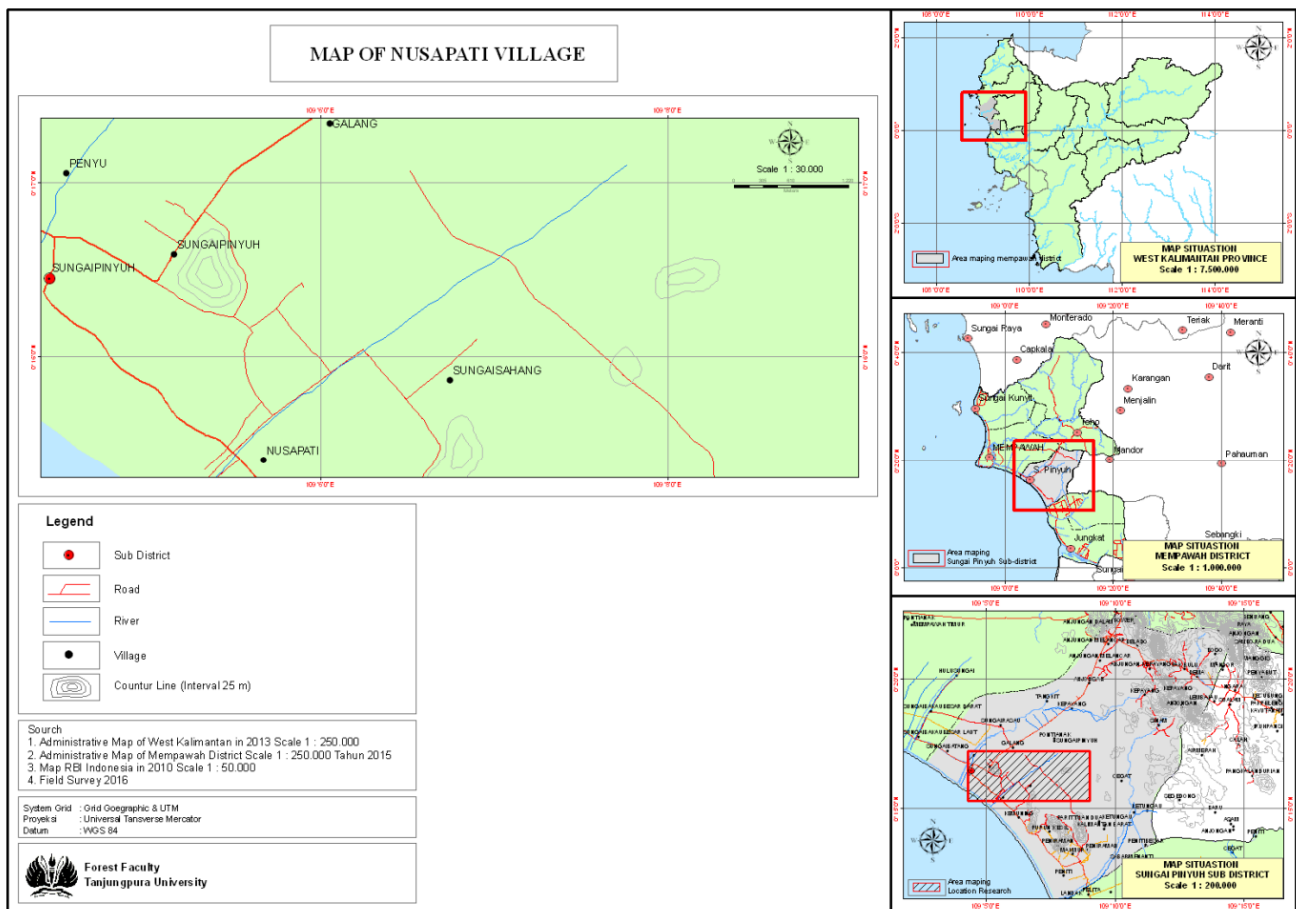


Figure 1. Location of Nusapati Village, Sungai Pinyuh Sub-district, Mempawah, West Kalimantan, Indonesia

Table 1. The identification of the forest that is managed by community of Nusapati Village, Sungai Pinyuh Sub-district, Mempawah, West Kalimantan, Indonesia

Land type	Characteristics		
	Topography	Patterns	Main vegetation
Forest	Slope-steep	Heterogenous	<i>Acacia mangium</i> Willd, <i>Adenantha pavonina</i> Lam <i>Camposperma squamatum</i> Ridl <i>Cratoxylum glaucum</i> Korth. <i>Hevea brasiliensis</i> Will ex a.Juss, <i>Ilex cymosa</i> Blume <i>Macaranga pruinosa</i> (Miq.) Muell. arg <i>Ploiarium alternifolium</i> (vahl) Melch. <i>Syzygium zollingerianum</i> (miq.) Ams.
Community forest	Flat-slope	Agroforestry	<i>Acacia mangium</i> Willd, <i>Aquilaria malaccensis</i> Lamk, <i>Anthocephalus cadamba</i> Miq, <i>Swietenia mahagoni</i> (L.) Jacq., <i>Hevea brasiliensis</i> Will ex a.Juss <i>Musa paradisiaca</i> (L.) Kuntze, <i>Manilkara kauki</i> (L.) Dubard, <i>Durio zibethinus</i> Murr, <i>Parkia speciosa</i> Hassk <i>Spondias dulcis</i> Forst.
Forest garden	Flat-steep	Agroforestry	<i>Ananas comosus</i> (L.) Merr. <i>Artocarpus teysmannii</i> Miq. <i>Averrhoa carambola</i> L. <i>Cocos nucifera</i> L. <i>Durio zibethinus</i> Murr. <i>Garcinia mangostana</i> L. <i>Ipomoea batatas</i> L. (Lam) <i>Lansium parasiticum</i> (Osbeck) K.C. Sahni & Bennet <i>Musa paradisiaca</i> L. <i>Manilkara kauki</i> (L.) Dubard <i>Mangifera indica</i> L. <i>Manihot utilissima</i> Pohl. <i>Nephelium lappaceum</i> L. <i>Parkia speciosa</i> Hassk. <i>Theobroma cacao</i> L.

**Figure 2.** The community forest management on Nusapati Village, Mempawah District, West Kalimantan, Indonesia. A. Secondary forest, B. Community forest, and C. Forest gardens

Social capital on community forest management

Networks

Nusapati community network is based on kinship. This is because almost all people in the village of Nusapati come from one tribe or the same lineage, the Malays and

Buginese people. In terms of the daily life, the villagers of Nusapati live in grouping settlement patterns. People live in group, within one house to another rather far apart that it does not relieve the concern among them, because the people next to the house or the neighbors also play a role in

protecting and overseeing all things around the house. The activities of community forest management also got the participation of several people as neighbors and brothers in the form of supervision in maintaining the forests that they manage. Based on the level of participation of friends and family in the management of public forests, the result is said to be quite high.

Nusapati community network properties are identified from two factors: formal and informal factors. The Nusapati community was aware that the wider network of people involved in community forest management, the forest management will be better. The characteristics of community networks tend to be informal since the basis of the Nusapati community was farmer groups. Based on the characteristics of the network society, Nusapati village is divided into some hamlets and every hamlet have a diversity of races and cultures, but in the daily life, they live in harmony and peace.

Nusapati community, particularly, the forest farmers groups also establishes good relationships with external group. Usually, the good relationship is maintained by selling the forest products. In addition, the groups also establish good relationships with external parties such as NGO. NGO has a role in community development through supervising every activity undertaken by the people in this community and exchanging information so that the reciprocity occurred. The people of the community is fully aware of the role of the other party because their help motivates the people of the village of Nusapati community to make forest management more successful. Since the relationship has existed for a long time, the community forest management goes well and there are a lot of information exchanges for one to the other.

Norms

Social norms are a set of written and unwritten rules agreed upon by the members within a group to control the behavior of all members of the community. According to Hasbullah (2006) social norms have a consequence on behavior that the one who does not comply with the norms, it causes him/her exposed to sanctions. In this research, the understanding of the norms can be seen in Table 2.

Not all community members understand the rules. Only 83.29% respondents understand unwritten rules about the management of community forest and 16.1% did not understand. 100% respondents didnot understand about written rules because until now, all of the respondents didn't know about the written rules.

Toward the applicable rules in the management of community forest, all respondents (100%) claimed that they did not break the rules. Most of the respondents (90,3%) assumed that the members of other communities were still totally obedient to the rules, no offense has occurred, only 9,7% assumed that there were once a breach of rules by the others society but rarely. It can be seen clearly in Table 3.

Trust

There were three kinds of faith which were reviewed. First, the faith that the community forest must be

maintained. Second, the faith that the existing rules were effective to manage the community forest sustainably. Third, the faith that besides themselves, there were other communities who also abide the rules of community forest management.

Respondents have knowledge about the benefits of community forests and believe that community forests provide great benefits for them. All the respondents believe that community forests provide benefits for life. When the forest does not exist then the sustainability of their lives will be disrupted. They believe partly based on (and upheld by) their life experiences which have already made many benefits from the presence of the forest, while the others are based on expectations, parents and community leaders advice, and customs that exist in society.

The community also believes that unwritten rules can serve to preserve the community forest, with 100% level of trust. Against written and formal rules (rules of government), 100% of respondents distrusted the effectiveness of the rules written to preserve the forest. The level of faith in the function of the unwritten rules (rules, values, indigenous knowledge) to manage forest resources sustainably was higher than the written and formal rules. This is because the prevailing rules are more hereditary and internalized in society. While the written and formal rules are drawn up by the government and have not been internalized as the values needed to be recognized, respected and used as guidelines for the action of its citizens, and they have not been proven to work to manage and to conserve the forest.

Table 2. Understanding about the norms in community forestry management

Understanding for	% Understanding		
	Not understand	Please understand	Understand
Unwritten rules	16.1	83.29	
Written rules	100		

Table 3. Percentage the infringement

Infringement of	% Infringement		
	Frequent	Rare	Never
Individual			100
The others		9.7	90.3

Table 4. Level of trust

Trust for	% of Trust		
	Believe	Doubt	Disbelieve
Forest benefit	100		
Written rules			100
Unwritten rules	100		
Obedience and ability to keep the community forest	100		
Ability to work together	100		
Ability to maintain the relationship	100		
Another stakeholders	100		

In compliance with the rules, someone can be weakened or strengthened by the adherence of others to these rules. Therefore, it is important to review that individual trust others in abiding the rules. The level of faith of respondents that other community members can abide the rules and the rules are able to preserve the forest is 100%. The level of trust of respondents that other community members can comply rules and is able to conserve forests is reinforced by the level of confidence that citizens can cooperate in conserving the forest. The level of trust of respondents in all aspects is 100%, which briefly can be seen in Table 4.

Discussion

Our analysis presents some evidence that social capital influences the condition of the community forest management. Forest farmer group has the important role in forestry development in Indonesia, namely as the main actor. This was due to the situation of farmer forest group (which tended to be negative), such as: (i) mostly groups were created through bottom-up process; (ii) groups were developed based on project oriented; (iii) some groups were non-self-supporting groups; (iv) many groups were collapsed after the projects were finished; (v) there was less effort for increasing farmer forest groups' capacity. Increasing the attention to the social capital of farmer forest group will reduce the aforementioned condition and situation and transforming to increase farmers livelihood.

This study shows that levels of community social capital can differ, depending on which aspect is under consideration. Social network measures indicate relatively high levels of social capital. From the Nusapati examples, and many others, it can be seen how networks and organization play a vital role in helping people to improve their livelihoods, to mobilize assets, and to defend them. At the same time, they often give an idea for people to discuss, have a conversation with people, enjoy the interaction, question, etc. Thus, They add to the quality of life above and beyond their simple impact on income. Social networks help to increase the productive efficiency of society. As Arrow (2000) states, there seems to be widespread consensus on the plausibility of the hypothesis that social networks can affect economic performance. Most simply, it is argued that better-connected people enjoy higher returns. Social networks may guard against coordination failure and prevent information gaps between groups. The idea of social networks is to patch the holes between individuals or groups so that information flows smoothly and at minimum cost (Nepal et al. 2007). Furthermore, the quality of network also has a role to play. It is similar to what happened in forest management in Nepal, that social networks that are directly related to the conservation activity have a positive and significant impact on the number of trees planted, while social networks that are not directly related exhibit a kind of indifference to tree planting. It means that networks and affiliation are found to be important.

Norms, common rules, and sanctions are the mutually agreed upon or handed-down norms of behavior that ensure group interests are complementary with those of individuals. These are sometimes called the rules of the

game (Ostrom 1990) or the internal morality of a social system (Coleman 1988). Rules and sanctions give individuals the confidence to invest in the collective good, knowing that others will also do so, and sanctions ensure that those who break the rules know they will be punished.

Trust is an element of social capital which also builds solidarity. Mutual trust thus arises within a social group when a high level of subjective probability is associated with individuals. High level of mutual trust invites community members to follow the rules of the community, because everyone anticipates that the others will do the same. With the higher level of trust, the governance costs can also be lower. Sometimes, trust is a choice, in another time it reflects a necessary dependency based on established contacts or familiar networks. Trust is an instrumental idea as trust involves an expectation of 'regular, honest, and cooperative behavior, based on commonly shared norms' (Fukuyama 1995). In the case of Nusapati, the level of trust is high, it is one of the supports for the forest farmer groups to continue their private forest. As compared to the case in Nepal, the lack of trust is identified as a factor that inhibits the exercise of power in community forest user groups and hinders the sustainability (Nepal et al. 2007). However, trust is an important factor and deserves to be examined in detail in further research about community forests (Lachapelle et al. 2004). With the absence of trust, an attempt to reach a common goal may fail.

Community forest program that developed by the government is most effective in enhancing social capital when they view forest farmer groups as producers and not as clients by providing more autonomy and facilitating with the participatory framework. The forest farmer groups are the community-based civil society organizations which have been provided autonomy by the government making them responsible for protecting the forest and promoting its sustainable use.

Putnam's definition sees social capital as a distinct form of 'public good' with an effect on economic and political performance at collective level (Putnam 1993). Applying his idea to community forestry, management of forest resources would be a shared vision of the community members in a collective manner through which they expect the economic and political benefits or the common good. The shared vision is the collective goals of a group, organization or in this case, a community. The shared vision is a construction relating on how members of the group envision themselves as part, and what common goals are shared.

The significance of social capital in application to resource management, in this case community forest, should be taken that capability of social capital is not overrated. Standalone social capital is not a sufficient factor for change. Social capital helps in shaping policy but another important dimension is that the policy also helps to generate social capital. Social capital is not just shapes of policy but the relation is in both ways, because in some countries where there is a weakness in state structures politics, it naturally obstructs the productive usage of social capital (Triglia 2001). So, having an adequate government

policy in place is very important in order to benefit the most of the existing social capital in the community.

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REFERENCES

- Arrow KJ. 2000. Observation on social capital. In: Dasgupta P, Stiglitz J (eds.) *Social Capital: A Multifaceted Perspective*. World Bank, Washington, DC.
- Astiani D. 2016. Tropical peatland tree-species diversity altered by forest degradation. *Biodiversitas* 17 (1): 102-109.
- Awang SA, Wiyono EB, Sadiyo S. 2007. *Private Forest Management Unit: Construction Processes of Local Knowledge*. Banyumili Art Network, Yogyakarta. [Indonesian]
- Birgantoro BA, Nurrochmat DR. 2007. Forest resource utilization by people in KPH Banyuwangi Utara. *Jurnal Manajemen Hutan Tropika* 13 (3): 172-181. [Indonesian]
- Carter J, Voloshyna N (eds.). 2010. *How Communities Manage Forests: Selected Examples from around the World*. FORZA, Swiss-Ukrainian Forest Development Project in Transcarpathia, L'viv, Ukraine.
- Coleman JS. 1990. *Foundation of Social Theory*. Harvard University Press, Cambridge, MA.
- Coleman JS. 1998. Social capital and the creation of human capital. *Amer J Soc* 94 (Suppl): S95-S120.
- Darusman D, Hardjanto. 2006. Overview of Private Forest Economy. In: *Contributions of Community Forests in Forest Industry Sustainability*. Proceeding Seminar Hasil Litbang Hasil Hutan 2006. Pusat Penelitian dan Pengembangan Hasil Hutan, Bogor. [Indonesian]
- Foley JA, Asner GP, Costa MH, Coc MT, De Fries R, Gibbs HK, Howard EA, Olson S, Patz J, Ramankutty N, Snyder P. 2007. Forest degradation and loss of ecosystem goods and services in the Amazon Basin. *Ecol Environ* 5 (1): 25-32.
- Fukuyama F. 1995. *Trust: The social virtues and the creation of prosperity*. Hamish Hamilton, London.
- Hardjanto. 2000. The characteristics of community forest management in Java. In: Suharjo D (eds). *Community Forest in Java, Its Role in Rural Economic*. Program Penelitian dan Pengembangan Kehutanan Masyarakat Fakultas Kehutanan IPB, Bogor. [Indonesian]
- Klooster D, Masera O. 2000. Community forest management in Mexico: Carbon mitigation and biodiversity conservation through rural development. *Global Environ Change* 10: 259-272.
- Lachapelle PR, Smith PD, McCool SF. 2004. Access to power or genuine empowerment? An analysis of three community forest groups in Nepal. *Human Ecol Rev* (11 (1): 1-12.
- Little BJ. 1996. Forest communities become partners in management. *Am For* 102 (3): 17.
- Marschke M, Berkes F. 2005. Local level sustainability planning for livelihoods: a Cambodian experience. *Intl J Sustain Dev World Ecol* 12: 21-33.
- Nazir M. 2009. *Research Methods*. Ghalia Indonesia, Bogor. [Indonesian].
- Nepal M, Bohara AK, Berrens RP. 2007. The impacts of social networks and household forest conservation efforts in rural Nepal. *Land Econ* 83 (2): 174-191.
- Nugroho B, Tiryana T. 2013. Implication of the private property right to the community forest businesses formalization through the certification policy. *J Trop For Manag* 19 (3): 178-186.
- Ostrom E and Ahn TK. 2008. The meaning of social capital and its link to collective action. In: Svendsen GT and Svendsen GL (eds). *Handbooks of Social Capital: the Troika of Sociology, Political Science and Economics*. Edwar Elgar, Massachusetts, USA.
- Ostrom E. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press, New York.
- Portes A. 1998. Social capital: Its origin and application in modern sociology. *Ann Rev Sociol* 24: 1-24.
- Poudel KL, Johnson TG, Mishra B. 2014. Social capital and collective management of natural resources in Nepal: A case study of community forestry. *Agrarian Frontiers* 2 (1): 21-34.
- Putnam RD. 1993. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton University Press, Princeton NJ.
- Putnam RD. 1995. Bowling alone: America's declining social capital. *J Democracy* 6 (1): 65-78.
- Pretty J and Smith D. 2004. Social capital in biodiversity conservation and management. *Conserv Biol* 18 (3): 631-638.
- Pretty J and Ward H. 2001. Social capital and the environment. *World Dev* 29 (2): 209-227.
- Rath B. 2010. *Redefining Community Forestry: For a Better Approach and Better World*. IUFRO, Copenhagen.
- Simon M. 2008. *Forest Management Together with People (Cooperative Forest Management)*. Pustaka Pelajar, Yogyakarta. [Indonesian]
- Triglia C. 2001. Social capital and local development. *Eur J Social Theor* 4 (4): 464-476.