



Measurement Social Capital: Analysis Productivity, Equity, Sustainability of Community Based Forest Management in Indonesia

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Abstract – Community-Based Forest Management developed fifteen years ago and became the trendsetter of forest management model in Java. The primary condition which operates well done of Community Based Forest Management (CBFM) has been stakeholders readiness included of Forest Farmer Group as known LMDH (Lembaga Masyarakat Desa Hutan). This research was aimed to discover the stock social capital of LMDH will be implemented CBFM in a field with productivity, equity and sustainability indicators. The method used in this study was descriptive analysis for estimating stock social capital by the survey, and focus group discusses and observation. The result showed that LMDH with bridging social capital type could operate CBFM better than LMDH with bonding social capital type. The capacity of LMDH with bridging social capital to well-done CBFM cause trust, norms and networkings grew and developed in the community.

Keywords – CBFM, Social Capital, Productivity, Equity, Sustainability.

I. INTRODUCTION

Forest resource management in some developing countries has changed of a pattern because of increasing more and more issues of CBFM (Community Based Forest Management). Indicators can be seen increasing of supporting to involve community club in forest resource management. A lot of community organization in the village a promoted to take responsibility in forest resource management as part of development reconstruction of areas. In some cases, a lot of public institutions in communities guided by either government or NGOs which can develop ability independence of system in managing forest resources around them in norm scale as a result of limitation their mandate and authority.

The capacity of village institution in supporting collective action constitute crucial of successfulness in forest resource in social interaction level, emerging of collective action depend so much on social structure type, social relation, resources, etc. All of them categorized as public capability.

Cooperative interaction is one of an aspect of social or public economic activity wick is based on trust, norm, and network issue. It is called social capital (Coleman, 1988; Putnam, 1993) [1]. Although social hierarchy form and the political relation considered as part of social capital, for measuring social capital and public capacity, need to do collective action wick means primarily open horizontal connection (Fukuyama, 2003). [1]

The social capital rule is critical in forest resource management because forest resource regarded as common property and collective so it is needed trust, norm, and network in the law. The relation with increasing institution rule in the mass in forest resource management. Refers that social capital form bases on the cooperation of trust norm and responsibility it has the connection with the participation of local community as essential element unsure of the successfulness of resource management included forest resource management in it (World Bank, 1998; Uphoff, 2000). [1]

Government rule has dominated the forest management in Java since colonial era up to now. Authority trans and forest resource management competence are always signed state hegemony (stakeholder) since Kingdom period in Java, VOC, Boschweizen, Ringyo Tyuoo Zimusyo (RTZ), forest office until BUMN period (forest state of a company). All signed with the rules that the community around forest can not take the timber and endemics flora and fauna resource. This condition has put local community access away to the forest area around them. [2]

As a result of it, in a location practice, the functioning receiver the benefit and management of forest all of them are determined by the government in the name of a country. During the implementation of forest production, conserved forest and areas in Java given to the institution in the name of the country, thus the community importance will be put away systematically because the biggest product asset dominated by the country. [3]

Forest farmer groups as known LMDH, roles in forest resource management in Java have started to come out since being issued CBFM program by state forest company. A lot of study explains that by placing the community in forest resource management into the path position of the parties can be insurance to strengthen local participation. Uphoff, 2000 and Bebbington et al., 2004 prove successfulness in forest resource management between one community club with the others can be different. Some of them successful and the others are not, they depend on the social capital stock which is owned by the clubs so much. [4]

Concerning to Uphoff's theory, 2000 and Bebbington et al., 2004 about social capital and collective action above, this result was done to know institutional social capital stock of LMDH in community-based forest management wick seen from productivity, equity, and sustainability aspect.



II. METHODS

A. Measurement Social Capital

The peculiarity of social capital in social organization is having trust, norm and networking which give coordinating facility and cooperation for advantage and profit together. Although there is a difference in pressing to the level and purpose the digest of all understanding about social capital is in relation form, and the advantage such as cooperating each other or many kinds of other resource which produced by this relationship (Putnam, 1993). [5]

The application of social capital in the collective management study issues are useful because it becomes part of the network (formal and nonformal). User clubs structure of social capital which facilitates collective action, as well as an academic and nonformal institution (trust, norms, and reciprocity) which known as social capital where influence social clubs to work together and do the collective action (Uphoff, 2000). [5]

To base on relation or connection among the does who placed in the different level, social capital is presented as bonding, bridging and linking. Bonding social capital refers the relationship of the known people (family members, relatives). Bridging social capital shows the connection of the unknown people in a demography area. Linking social capital touches the relationships with the individuals who have authority where they have the position to influence either politically or financially. The vertical connections between formal institutions also included in Linking social capital. Bonding and Bridging Social Capital own authority to the ideas of strong ties and weak ties (Woolcock, 2001). Some studies about indigenous organization often show a relation between social capital and the eternity of the organization (Garfoth and Munro, 2005). Traditional organizations have the root to the culture and tradition as the motor of social norm resource. Tradition is not and has never been static, but it survived because of the close fit to the needs, values, and interest of the people who uphold it which stated by Uphoff, 2000. [6]

The experience with traditional organization gave an impression that social capital is known as *norms*, the roles and the responsibility based on the trust collective action which have produced, contributed to maintain the organization. It also indicates that confession and accountability of leadership, members loyalty and the ready of consensus have a contribution to prevent the mitigation of conflict and a form the more conducive environment for the institution of organization informally (Adhikari, et al., 2008). [7]

Even though generally, indigenous groups have the high natural characteristic, some studies, however, have proved they have failures which referred to the implication of relation between external factors and organization (Adhikari, et al., 2008). Empirical facts show that social capital formation in an indigenous group is imperative for natural resource conservation or management. And social

capital constitutes the best conception as input into the processes which are done by the institution to create the models of development (Chopra, 2002). [8]

A lot of methods can be used to measure social capital stock in the public, one of them is SOCAT (Social Analysis Capital Tools) method. The method, however, is often used to measure social capital stock to see relation pattern and social hierarchy in the people who have relationship with public service such as education, health, transportation, social insurance and security (ABS¹, 2008; OECD², 2001; Hasbullah, 2006). [9]

To measure social capital in natural resource management frame especially in forest resource must use the different approach. The approach has to consider three basic criterions; they are productivity, equity, and sustainability. The method measures the social capital in the forest resource management frame to be developed by Uphoff (2000), Mukherjee (2002), D'Silva and Pai (2003), Bebbington, et al. (2004) and Adhikari, et al., (2008). [10]

Three basic criterions are explained into some indicators in a row, as follow: (a) Productivity described into six indicators; (b) Equity is clarified into seven signs and (c) Sustainability is spelled out into five indicators. Productivity criterion measured by five indicators, they are: (a) Social structure; (b) Leadership; (c) The roles of club members and responsibility; (d) The club capacity and the trust level; (e) The external relation and (f) The ability of technology usage.

The equity criterion measured in 4 indicators, they are: (a) The club's activity based on the understanding and tolerant of large meaning; (b) The club participation in taking the club's decision; (c) The equity in sharing of the product as well as (d) Decreasing of the impact and sensitivity to the living resource.

The sustainability criterion in 5 indicators, i.e., (a) The collective action in order to forest resource regeneration or conservation; (b) The trust together and internal norms; (c) The group's the completing rules; (d) The ability comes the issues out and the conflict solving; (e) The ability in the group asset management.

B. Analysis

The study was done by taking some location samples in 6 Forest Farmer Group which represent in state forest area in Ngawi Regency, East Jawa, Indonesia. Primary data taking was done by survey method through intensely interviewing technique, FGD, and field observation. Secondary data linked with the researching material which taken from some documents of stakeholders respondent.

The analysis used in the study is a descriptive analyzing method, i.e., the analyzed process which is not only collecting and arranging data but also analyzing data to explain the problem. The respondents' answers of the questioners were asked and done scoring to determined the reality and validity levels by using Spearman and Brown formulas, as follow:

¹ Australian Bureau of Statistic

² Organisation for Economic Cooperation and Development), Australia



$$S-B = r_{x,x'} = \frac{2(r_{1.2})}{1 + r_{1.2}}$$

$r_{xx'}$ = Spearman-Brown reality coefficient.
 $r_{1.2}$ = both of correlation coefficient.

Analyzed sample approach is an institutional unit, it watches the phenomenon, how big the social capital stock of LMDH institution guarantees productivity, equity, and sustainability in implementing CBFM.

III. RESULTS

A. Social Capital and Productivity

The result of research gives an illustration that LMDH productivity level in forest resource management and PHBM can see in the following table 1.

Table 1. Social capital and productivity

Productivity indicators	Average Score					
	A	B	C	D	E	F
Community social structure						
1. Social cohesion	5	5	2	2	4	5
2. Select group (endemic)	2	2	4	3	2	2
Forest Farmer (LMDH) leadership						
1. Leader election	5	5	1	1	5	5
2. The manager's responsibility in running the Duty	5	5	2	1	5	5
3. The leader's local political relation with the forest officers	5	5	2	1	5	5
4. The manager's accountability and presence in meeting	5	5	2	2	4	4
The role and responsibility of the members						
1. The members' role and responsibility	4	4	1	1	4	4
2. The women's role	5	4	1	1	2	2
The group capacity and the trust level						
1. The member's education level	3	3	2	2	2	2
2. Norms, culture, and tradition	4	4	4	4	4	4
3. The faith in the community	4	4	2	2	4	4
4. Accountability and the transparency	5	5	1	1	5	4
The relation with the external						
1. The supporting of the officers' active role	2	3	3	3	2	2
2. The economic program based the group	4	3	1	1	4	4
Technology using	4	2	1	1	4	4
Score total	62	59	28	26	56	56

Ad.: A-F Forest Farmer Group (LMDH) sample. Score qualification 1: little; 2: middle; 3: high 4: very high; 5: perfect

Table 1 gives an illustration that productivity level of LMDH in village forest area. Management through CBFM determined by the community social structural indicators, LMDH leadership, the members' role and responsibility and the group capacity as well as the trust level so much.

The difference can see when the community social structure has the features bridging social, and it will be easier to accept the new values in forest resource management. Beside it, The height of the members' role and responsibility in running all working programs of LMDH will strengthen the institutional capacity, in the same time, it can increase the people trust to the organization. Four LMDH have the features which close the bridging social capital, so they have capacity in creating the linking social capital and make the external supporting to use technology and innovation in forest resource management which has the impact to the forest land productivity straightly. High and weakness condition of social capital of LMDH with forest productivity can see in figure 1.



Fig. 1. Productivity with high and weakness social capital condition

On the other side, two LMGH founded in the community who has bonding social capital feature, their productivity is lower relatively. Though they have good norms, culture, and tradition in daily life when the founding of the LMDH institutions dominated by the individual groups which have the propinquity with the forestry affair the leadership and the management didn't run well, and it influenced to the members' role and responsibility. Finally, the institutional capacity and the community trust level to LMDH are small.

B. Social Capital and Equity

The interpretation of equity in the villagers and the forestry officers can be different. The forest villagers and LMDH think equity is the CBFM implementation is widely open and facilitated by the forestry office. The understanding comes out and develops to base on the experiences that the forestry department's activities have been done by the Forest office itself not to contribute the reasonable advantages for the forest villagers. They just feel like part of the resource which exploited as human resources for the particular forestry activity. On the other side the forestry affairs equity according to the forest villagers and LMDH's contribution base on the role sharing principle which decided in CBFM policy.

The research result gives the illustration of the equity principle in forest resource management, and PHBM can see in the following table 2.

Table 2. Social capital linked with equity principle.

Equity indicators	Average Score					
	A	B	C	D	E	F
The activities have a base on the understanding and tolerance each other						
1. The weak group's participation	4	3	2	2	4	4
2. Collective action	5	3	1	1	4	5
3. The members' willingness in keeping the institution's importance in the long term	5	3	1	1	5	5
4. The tolerance in different opinion	5	4	2	2	4	5
The members' participation in taking decision together through LMDH	5	3	1	1	4	5
The equity in profit sharing	5	4	1	2	5	5
The decreasing of sensitivity and impact on the existing resource.	5	4	1	1	5	5
Score total	34	24	29	10	31	34

Ad.: A-F Forest Farmer Group (LMDH) sample. Score qualification 1: little; 2: middle; 3: high 4: very high; 5: perfect

The result of Table 2 is not so different from table 1. Four LMDH which of bridging social capital type can be said fairest relatively of the groups in getting the opportunity and the average access proportionally. The members' controlling to all decisions will be taken by LMDH perfunctorily. As a result, the board cannot make the decision which is considered unfair for all members. High and weakness condition of social capital of LMDH with equity principles can see in figure 2.



Fig. 2. Equity principles with high and weakness social capital state.

It can see the early process in sharing of the contributed working land, and it will begin the planting activity in the ex-cutting land through either the natural intercropping or growing plant. Some considered factors are the priority for the farmers who live nearest the location of the forest partition, the farmers who don't have working land (poor landless) or the farmers who have the small working area (landless). Beside it, the determination of the contributed size bases on the number of available man powers in a family and the farmers' capital ability (money and infrastructure for rice production) as the early capital in

working contributed land with cultivating the same season agricultural plants.

The other form of equity is an agreement in accepted distribution sharing³. From the forestry, affairs cut product from the available partition in LMDH forest areas. The priority is given to the LMDH's active member in security activity to uphold in doing patrol with the forestry officers because no all members like to do this, then for the board's operationalizing and LMDH institution. The rest, when the sharing fund which given up is reasonable, it is also allocated for LMDH's other members, the village government and social equipment in the community. If the sharing fund is little relatively, the priority is for supporting the security activity and LMDH operationalizing.

The different condition can see in two other LMDH's with capital, social bonding, LMDH's ability in doing the equity distribution has the different meaning. The processes happened to four LMDH not to be able to do fully here. The different capacity and individual characteristics which are owned by LMDH to cause the fail distribution doesn't run reasonably. The most critical point emerges when the distribution of fund sharing has given to LMDH which has potential to come out the conflict between an internal board of LMDH, between village government and LMDH board, between the board and LMDH members. Even though it occurs conflict as if there is neglecting from the NGO party as the colleague, the forestry affairs, and forest office. All of them have the arguments that The problem of the distributing mechanism of sharing fund depends on the device which ruled in LMDH's rules of the association. There is no obligation for out party interfere in this problem.

A form of neglecting come out the conflict like this, actually one of the ways creates a justification for the failure of LMDH institution in doing the village forest area management through PHBM. The beginning assumption built is if CBFM implemented before, the conflicted border would happen between forest villagers and forest party, but, after there has been CBFM, the conflicted border occurs between forest villagers and LMDH versus village government. It can say as a passing out way for forest party in implementing its responsibility to do LMDH guidance. In the cases like these, it's a little bit suitable if claimed that CBFM does push down and drag above politic. Namely, the way is to raise an individual benefit issue such as involving the forest villagers in forest resource management participated, on the other side, weakening the capacity of LMDH institution.

C. Social Capital and Sustainability

The research's result gives an illustration about the sustainability in village forest area management with PHBM can be seen in the following table 3.

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³Sharing is the village which is received by LMDH as consequence of CBFM policy from the result of the cutting A

(cutting trees down) at the end of a cycle of partition in the forest area.

Table 3. Social capital with sustainability

Sustainability indicators	Average Score					
	A	B	C	D	E	F
The group's collective action in						
1. Struggling forest land conservation	5	5	3	4	5	5
2. Fighting plant reforestation	5	5	3	4	5	5
Togetherness in trust to						
1. The group managerial plan which arranged with forest party.	4	4	3	3	4	4
2. The implementation of the group managerial plan	5	4	2	2	5	3
The obeying to the rules about:						
LMDH roles	5	4	2	2	5	5
1. The certainty of product sharing	4	3	1	2	4	4
2. Taking of nonwooden forest product	4	4	2	2	4	4
The ability in emerging of sustainable issue and conflict solving.						
1. The ability in developing of a sustainably issue in the every meeting.	5	5	1	1	5	5
2. The ability in conflict solving.	5	4	1	2	5	5
The asset management related with:						
1. LMDH asset management	4	3	1	1	4	4
2. Training of asset management for the board and members	3	3	1	1	3	3
3. Investment with the planting.	5	3	1	1	3	5
Total Score	54	47	21	25	52	54

Ad.: A-F Forest Farmer Group (LMDH) sample. Score qualification 1: little; 2: middle; 3: high 4: very high; 5: perfect

The result in Table 3 affirms that four LMDH have the ability for keeping the forest resource productivity which managed, it must be able to maintain the sustainability too. Because forest resource sustainability linked with the productivity, the more sustained forest is more productivity, and it's reverse too. High and weakness condition of social capital of LMDH with sustainability can see in figure 3.



Fig. 3. Sustainability with high and weakness social capital state.

The ability in keeping the sustainability can see how LMDH supports to emerge the collective action in struggling conservation and reforestation of forest land and capacity for coming out the sustainability issues in every group meetings. The important one is the ability of LMDH in coming over the conflict either among the LMDH members themselves or between LMDH members and the other parties who can guarantee the forest sustainability.

Each of conflicts will always emerge, the destructive actions done by the parties which have conflict.

IV. DISCUSSION

Based on the results of a comprehensive assessment it was found that the social capital is assurance for productivity, equity and sustainability for implementations of the Community Based Forest Management in state forest area.

Productivity rising done by applying improvement to the ways of the forest land management to the product of it can be over than doing practice before; it includes the environment service which felt in the long term. The profit economically, however, is obtained from the increasing of the product in short time which often becomes the determining factor whether the people will accept and adopt the new management ways or not. The ability and the willingness of the people in taking the new values in land management in forest area depend on the productivity indicators. And, of course, it is linked to the social capital stock they have closed.

In social capital context, equity must touch all of the community members egalitarian without discriminated insulator which caused by the social structure and hierarchy. Specifically, equity in forest resource management must be given shape in the activities which have a base on the understanding each other and tolerance widely, participation in taking the decision and determining of profit sharing which all of them can impact to the decreasing of sensitivity in living resource of the community. [11]

The goal of the sustainability of forest resource management cannot be put off from either productivity considering or the facility of forest professional practices for being adopted and applied [12]. Forest system which orients economy aspect and forest resource conservation with long-term productivity is one of the attractive powers for the forest villagers. There are some things which can be considered by forest villagers when they do managerial planning which will apply in forest land management, for example, the certainty of the village forest area status, the kind of plants and commodities which have potential to give the profit, income in the short term, etc.

The primary criterion is to measure the social capital seen from the collective action in struggling forest land conservation and reforestation, togetherness in trust for the managerial plan which has arranged with forest party, the obeying to the rules, the ability in conflict solving and the ability in institutional asset management.

V. CONCLUSION

The study result shows that LMDH which have bridging capital feature to own better social capital stock than LMDH which have bonding capital function. With enough social capital stock, an LMDH will be able to run their role in forest resource management with CBFM. This ability grows as a result of the height of the members' trust and community to the LMDH board which support the



emerging of collective action in running the group managerial planning in the planting field, landing conservation, and forest security. The obedience of members in obeying the rules and forms which have been determined by LMDH as other indicators of the height of the trust so that it can emerge the members' loyalty to LMDH. Beside it, with the cognitive capacity, LMDH can hold linking with an external party to find facility help to rise LMDH working spirit and open productive struggling vacancy which can be developed by LMDH members. Thus social capital parameters are trust, norms, and networking which can found in LMDH with bridging social capital type.

On the other hand, the same thing is hard to found in LMDH with bonding social capital. It's because bonding social capital characteristics based on the height of loyalty and trust in the homogenous social group. This form is usually in micro-level of social groups such as family, neighbor or the same tribe. Bonding social capital enables internal organization in a social group to protect their members' importance against the other team and help to escape from the difficulty they face. Beside of positive impact (like family and friends help someone to get the job, local patriotism, businessman mental), there is also negative one which emerges (like special family members or relatives and environment damage competitively). The power of bonding social capital can be equipped to do antagonized action with other social groups and drop bridging social capital role in the wider public.

The ability of LMDH in keeping forest resource sustainability and productivity doesn't neglect sustainability principles in distributing economic and social access which is caused by growing trust, norms and networkings in forest villagers and LMDH. It will give the assurance of forest resource management in the forest area with CBFM program.

REFERENCES

- [1] K. Iftekharul Haque, Alia Ahmad, "Better Relationships, Enhanced Development: The Role of Social Capital and Community Based Organizations in Development for Rural Bangladesh," Centre for East and South-East Asian Studies, Lund University. 2007. Available: <http://lup.lub.lu.se/luur/download?func=downloadFile&recordId=1320368&fileId=1320369>
- [2] Nancy Lee Peluso, "Rich Forests, Poor People: Resource Control and Resistance in Java". The University of California. Translated: Hutan Kaya, Rakyat Melarat: Penguasaan Sumber Daya dan Perlawanan di Jawa," Konphalindo, Jakarta, 2006.
- [3] San Afri Awang, "Knowledge Sociology of Deforestation: Social Construction and Resistance", Debut Pers, 2010, Jogjakarta.
- [4] Debnarayan Sarker, Nimai Das, "Social Capital and Joint Forest Management Programme: A Comparative Study on Female and Joint Forest Protection Committees in West Bengal", Centre for Economic Studies, Presidency College, 2004, Kolkata. Available: <http://mpr.ub.uni-muenchen.de/147801>
- [5] Caterina Gouvis Roman, Gretchen E. Moore, "Measuring Local Institution and Organizations: The Role of Community Institutional Capacity in Social Capital", Urban Institute, Justice Policy Center, 2004. Available https://www.neighborhoodinfocd.org/pdfs/410998_Local_Institutions.pdf
- [6] Karel Babina, "The Role Social Capital for Community Forestry Governance in Nepal", 2013, IYPE. Available: <http://iippe.org/wp-content/uploads/2013/06/Kharel-Babina-Social-Capital.pdf>
- [7] Krishna Prasad Adhikari, Ganga Ram Dahal, "Bridging, Linking, and Bonding Social Capital in Collective Action – The Case of Kalahan Forest Resource in the Philippines", 2008. Available: www.capri.cgiar.org
- [8] Carol Warren, Greg Acciaioli, Dick Steenbergen, John McCarthy, "Social Capital Formation in Community Development and Conservation. Interventions: Comparative Research in Indonesia", 2015. Available: https://www.researchgate.net/publication/301359318_Brief_for_GSDR_2015_Social_Capital_Formation_in_Community_Development_and_Conservation_Interventions_Comparative_Research_in_Indonesia
- [9] Yiheyis T Maru, Ryan R.J. McAllister, Mark Stafford Smith, "Modelling community interactions and social capital dynamics: The case of regional and rural communities of Australia", Journal Agricultural System 92 (2007), p 179-200, 2007. Available: www.elsevier.com/locate/agsy
- [10] Rahmanta Setiahad, "CBFM (Community Based Forest Management) Implementation: Collaborative Management to Cooptation Management", Jurnal Wacana Edisi 25 Tahun XI, June 2011, Insist Press. Jogjakarta.
- [11] Yurdi Yasmi, Heiner Schanz, Agus Salim, "Manifestation of conflict escalation in natural resource management", Journal Environmental Science & Policy 9 (6): 538-546, 2007. Wageningen University.
- [12] Kimihiko Hyakumura, Makoko Inoue, "The significance of social capital in local forest management in Laos: Overcoming latent conflict between local people and local forest officials", 2010. Available: International Journal of Sustainable Development and World Ecology, Vol 13, 2006.
- [13] Cheryl L. Wagner and Maria E. Fernandez-Gimenez, "Does Community-Based Collaborative Resource Management Increase Social Capital", 2008. Available: Journal Society and Natural Resources. Vol. 21, 2008 – Issue 4. Pages 324-344. Published online: 19 Mar 2008.
- [14] R. John Petheram, Peter Stephen and Don Gilmour, "Collaborative forest management: a review", 2013. Available: Journal Australian Forestry. Vol. 67 – Issue 2. Pages 137-146. Published online: 15 Apr 2013.
- [15] Rashid Hasan and Patrick Birungi, "Social Capital and Poverty in Uganda", 2011. Available: Journal Development Southern Africa. Vol 28, 2011-Issue1. Pages 19-37. Published: 18 Feb 2011.
- [16] Victoria Sturtevant. "Reciprocity of Social Capital and Collective Action", 2009. Available: Journal Community Development. Vol 37, 2006-Issue 1. Pages 52-64. Published online: 4 Dec 2009.
- [17] Trevor Webb and John Cary. "Social Capital and Natural Resource Management: An Application to Landcare", 2014. Available: Journal Rural Society. Vol 15, 2005 – Issue 2. Pages 119-131. Published online: 18 Dec 2014.
- [18] Stewart Lockie. "Conditions for building social capital and community well-being through plantation forestry", 2013. Available: Journal Australian Forestry. Vol. 66, 2003 – Issue 1. Pages 24-29. Published online: 15 April 2013.
- [19] K.F. Wiersum, R. Singhal and C. Benneker. "Common Property and Collaborative Forest Management: Rural Dynamics and Evolution in Community Forestry Regimes", 2012. Available: Journal Forests, Trees and Livelihoods. Vol 14, 2004 – Issue 2-4. Pages 281-293. Published online: 4 Apr 2012.
- [20] Ram Ranjan. "Social Norms, Social Capital and the Sustainability of Small Scale Economies", 2010. Available: Journal of Natural Resources Policy Research. Vol. 2, 2010 – Issue 3. Pages 213-228. Published online: 15 Jul 2010.

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