Participatory Forest Management

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Participatory forest management has been considered as a practical and effective strategy for sustainable forest management, especially in situations where land tenure is not securely settled. For effective restoration projects, local communities, as the cornerstone of participatory management, should be provided with incentives to facilitate their participation and active role. We postulate that participation in mangrove restoration projects can not only provide financial rewards but also yield intangible benefits for communities, i.e., social capital upgraded. Our study with the case of coastal mangrove restoration in the Philippines concluded that local people's participation is a viable option for natural resource management that can create benefits and favorable conditions to communities.

mangrove restoration social capital community participation

1. Introduction

Participatory management is a key strategy for natural resource conservation and management that has been adopted in many countries. It recognizes the need to address social and environmental concerns collectively, as one affects the other [1][2]. Theoretically, the participatory approach would lead to a "win-win" result: environmental sustainability and social development. However, its on-site implementation encounters constraints and yields unsuccessful outcomes [2][3][4][5]. Providing benefits and incentives for local communities is also problematic and calls for improvement [6][7].

Worldwide forest governance has adopted participatory approaches in the belief that this strategy would lead to environmental sustainability while also accounting for social concerns [4][5][7][8]. Previous studies concluded that long-standing strict and exclusionary conservation caused pressure on local communities such as displacement and restrictions on the use of resources [7][9][10]. Meanwhile, participatory management, a more people-centered approach, would, in theory, produce "win-win" results: a strategy for resource protection and conservation and for delivering benefits to local communities [1][2].

Local communities, as the cornerstone of the participatory approach, play a vital role in the success of this management strategy, hence strengthening their participation is highly important. However, local people's participation is contingent on the incentives and benefits they will receive [6][11][12][13]. In contrast, receiving no benefits means the social objective of participatory forest management is neglected, consequently discouraging local people from participating. The studies of Cao et al. [14] stressed that sudden and untimely discontinuation of benefits could cause local people to revert to their former unsustainable practices in forest resource utilization. However, it is important to understand that a perpetual supply of benefits for people is irrational and inefficient. The

outcome of participation should function as a means to improve people's capabilities to achieve self-reliance and self-governance and thus, realize sustainability.

2. Social Capital in Natural Resources Management

Social capital was conceptually defined as a productive resource inherent in the relations among persons of less tangible nature than human capital [15]. The forms of social capital consist of trust, norms, and networks which facilitate coordinated actions [16]. The notion of social capital, although centers on actor's relationships with and between actors, covers more than just social networks (Table 1). These definitions focus more on assets than social relations and highlight two main points. First, social capital is created by building social relationships. Social capital is instantiated in an actual human relationship and leads to cooperation in groups [17][18]. The connections and relationships are driven by interests [19]. Therefore, social capital formed in the relations of actors is characterized by the norm of reciprocity [18]. Second, social capital functions as investments in order to acquire more resources that can further people's opportunities. Thus, social capital is a resource embedded in social networks accessed and used by actors for their actions [20].

Table 1. Definitions of social capital.

Definitions of Social Capital	References
"An entity, consisting of all expected future benefits derived, not from one's own labor, but from connections with other persons"	[19]
"The connections and relationships between individuals and/or groups that leads to aggregation of capitals"	[17]
"Features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated actions"	[16]
"Assets gained through membership in networks"	[21]
"Capital captured through social relations" "Resources embedded in social networks accessed and used by actors for actions"	[20]

The concept of social capital has been applied to broad fields—in economics, sociology, political science, and anthropology, among others—that have led to the development of its diverse theoretical conceptualizations [22]. Social capital is used for interpreting social phenomena in the sector of natural resource management. Several studies revealed a positive correlation between social capital and people's participation in resources management [22][23][24]. Social capital can contribute to developing co-management of natural resources through enhanced community member's participation [25]. The results of these empirical studies follow the concept of social capital by [26] as a "feature of social organizations" that "facilitate[s] action and cooperation for mutual benefit" in natural resource management. Social capital, applied in natural resources management with community participation, can benefit people in two ways: (1) by having connections with people who are "prepared and obliged to provide help and support" [19], and (2) by having access to embedded resources owned by the people within their networks [20][21][27][28]. Through social relations, people can gain control over embedded resources that they did not own previously [20][21]. Lin's [20] theory of social capital elucidates that each member of a group is recognized as a "custodian of the limits of the group" and each has influence in the decision-making process. Accordingly, by being a member of a group, a person can influence how the resources can be used to her or his advantage. In particular, from the perspective of poor people, the function of social capital can improve one's status in the society, as they contribute to the person's improved recognition and increased assets [29][30].

3. The social capital concept applied to a study of mangrove restoration in the Philippines

Social capital theory argues that resources are contributed and shared, and become accessible through the establishment of social relations [17][20][31]. Our study follows the definition of social capital by Lin [20] as "the capital captured through social relations… with expected returns in the marketplace" with its concept understood by its functions [15]. Several scholars (e.g., [17][19][32]) also take this view and regard social capital as a productive asset that facilitates social and economic improvement. People and communities with better networks and higher social capital have a higher possibility of achieving better outcomes [19][26][33][34]. Furthermore, the author of [19] emphasized that an investment in social capital must also be seen as an investment in other assets, since social capital packages other forms of capital.

Social capital is the resource captured from social relations [21][31]. In this regard, the number of ties and networks a person has is a major factor that determines his social capital. However, increased social relations may not always increase one's social capital, as several factors may affect the number of resources a person can access through his social relations. This study focused on three factors that can affect social capital: (a) diversity of social relations, (b) resource accessibility and social capacity, and (c) trust.

3.1. Social Relations and Diversity

Theoretically, having more social relations corresponds to having higher social capital, as these relations function as sources of embedded resources [19][28][34]. However, Teilmann [28] elaborated that "not all ties are similar." Each tie has different amounts of resources and information. The nature and type of the social relations a person is

associated with also affect the quantity and diversity of resources he can access. Two of the most common dichotomies of social relations were described by Granovetter [35] and Putnam [36]. Granovetter [35] differentiated strong ties from weak ties. Strong ties are relations that are readily available and can be easily established [35] and require little maintenance [28] while weak ties are the more distanced connections [35][37]. Putnam [36], on the other hand, differentiated social relations between bonding and bridging. Bonding social relationships are those with homogeneous groups, while bridging relations are the connections with other social classes [27][38][39]. Despite the stronger relationships with strong ties and bonding social capital, it may not be enough to produce sufficient benefits, opportunities, and impacts to improve one's condition; for this purpose, establishing weak ties and bridging social capital are necessary. The work of Woolcock and Narayan [34] also explained that for the poor, bridging social capital is more important since it allows them to "get ahead" by accumulating more resources and better opportunities. Although bonding social capital is also relevant, it can only help the poor to "get by".

3.2. Resource Accessibility and Social Capacity

Social relations are sources of information and resources, and having social relations benefits people as it increases their assets [17][20]. However, social relationships alone may not be sufficient to advance a person's condition and status. Utilization of social relations is required for them to be impactful. Everyone has their own capacity to utilize their social relations and the attached embedded resources, or social capacity. It is the "ability of rural people to organize and use their social capital and other assets through various social structures and processes to achieve valued economic objectives" [32]. Lin [20] elaborated this in his theory of social capital, that access to and use of social resources are dependent on the ability of the individual. Those people who can use their social relations more effectively are expected to have higher incomes [32].

3.3. Trust

Trust is "a basic element of the relational dimension" [40] and the most essential element of social capital [35]. It is requisite to build and maintain social relations [26] and functions as a lubricant for interactions and cooperation between actors [28]. Groups exhibiting trust in their members can accomplish more compared to those without trust [15][41][42]. Furthermore, utilizing social relations requires trust; in contrast, having no trust depletes the purpose of social capital and undermines the contribution and sharing of embedded resources [21][39].

Table 3. Descriptive statistics of social capital variables of the sampled households.

Variable	Total Samples (*n* = 314)	Non-PO Members (*n* = 226)				PO Members (*n* = 88)				Kruskal–Wallis
		Mean	SD	Min	Max	Mean	SD	Min	Max	(*p*-Value)

Social capital value	0.11	0.06	0.0673	0	0.3119	0.26	0.0148	0.0337	0.6464	2.2×10^{-16} ***
[a] Ties value	0.22	0.11	0.1135	0	0.4679	0.5	0.1798	0.1321	0.8917	2.2×10^{-16} ***
[a] Embedded resources value	0.46	0.38	0.3442	0	1	0.67	0.1316	0.3667	1	1.15×10^{-11} ***
[a] Trust value	0.53	0.46	0.4115	0	1	0.72	0.1246	0.425	1	3.72×10^{-5} ***
Access to services	18.09	16.77	6.2709	7	31	21.47	5.8545	3	31	2.2×10^{-16} ***
Access to information	8.34	7.32	3.0532	3	13	10.97	1.9325	5	13	2.2×10^{-16} ***
[b] Number of ties	0.22	0.13	0.1021	0	0.375	0.52	0.2217	0.125	1	2.2×10^{-16} ***
[b] Diversity of ties	0.24	0.2	0.1417	0	0.6	0.47	0.1380	0.2	0.8	2.2×10^{-16} ***
[c] General economic status of members	0.45	0.37	0.3451	0	1	0.67	0.1627	0.2	1	4.47×10^{-12} ***
[c] Access to embedded resources	0.47	0.39	0.3561	0	1	0.68	0.1459	0.4	1	9.04×10^{-10} ***

[d] Trust in ties	0.53	0.45	0.4087	0	1	0.73	0.1397	0.4	1	1.44×10^{-6} ***
[d] Participation in social ties	0.54	0.47	0.4265	0	1	0.72	0.1650	0.0714	1	0.0011 ***

* Statistical differences (Kruskal–Wallis) Significance level: *** $p < 0.001$. [a] Variables used for computation of social capital value. [b] Variables used for computation of ties value. [c] Variables used for computation of embedded resources value. [d] Variables used for computation of trust value.

The most perceivable impact of local participation can be observed in the difference in the amount of external social relationships, presented by number of the ties, between the members of the People' Organization (PO) and nonmembers which is an important determinant of social capital. Members of POs have established connections and partnered with different government organizations. The networks with external organization have also improved the PO members' access to diverse and more resources, mainly provided through government programs, that made more embedded resources available to the PO members compared to the nonmembers. Dasgupta et al. [37] described this as the utilization of indirect links, in which people can establish networks by means of their existing ties.

It was also determined, through the interviews and consultation, that nonmembers respect those who are members of the PO and recognize their accomplishments. Nonmember residents, as well as the village councils and the local government, have acknowledged both POs for their role in the protection and conservation of the environment. Residents of the two barangays generally trust the POs not only as environmental stewards but also as conflict managers and credible sources of information.

References

1. Adams, W.M.; Hutton, J. People , Parks and Poverty : Political Ecology and Biodiversity Conservation. 2007, 5, 147–183.
2. Porter-Bolland, L.; Ellis, E.A.; Guariguata, M.R.; Ruiz-mallén, I.; Negrete-yankelevich, S.; Reyes-garcía, V. Forest Ecology and Management Community managed forests and forest protected areas : An assessment of their conservation effectiveness across the tropics. 2012, 268, 6–17.
3. Maria Elena Méndez-Lopez; Eduardo García-Frapolli; Isabel Ruiz-Mallén; Luciana Porter-Bolland; Eduardo García-Frapolli; From Paper to Forest: Local Motives for Participation in Different

Conservation Initiatives. Case Studies in Southeastern Mexico. *Environmental Management* **2015**, *56*, 695-708, 10.1007/s00267-015-0522-0.

4. Mannigel, E. Integrating Parks and People : How Does Participation Work in Protected Area Management ? Integrating Parks and People : How Does Participation Work in Protected Area Management ? 2008, 1920.
5. Shova Thapa Karki; Do protected areas and conservation incentives contribute to sustainable livelihoods? A case study of Bardia National Park, Nepal. *Journal of Environmental Management* **2013**, *128*, 988-999, 10.1016/j.jenvman.2013.06.054.
6. Agrawal, A.; Gupta, K. Decentralization and Participation : The Governance of Common Pool Resources in Nepal ' s Terai. 2005, 33, 1101–1114.
7. Helen Fox; Georgina Cundill; Towards Increased Community-Engaged Ecological Restoration: A Review of Current Practice and Future Directions. *Ecological Restoration* **2018**, *36*, 208-218, 10.3368/er.36.3.208.
8. Agarwal, B. Participatory Exclusions, Community Forestry, and Gender: An Analysis for South Asia and a Conceptual Framework: Erratum. World Dev. 2001, 29, 1623–1648.
9. Sharachchandra Lele; Peter Wilshusen; Dan Brockington; Reinmar Seidler; Kamal Bawa; Beyond exclusion: alternative approaches to biodiversity conservation in the developing tropics. *Current Opinion in Environmental Sustainability* **2010**, *2*, 94-100, 10.1016/j.cosust.2010.03.006.
10. Björn Eriksson; Frank Johansson; Malgorzata Blicharska; Socio-economic impacts of marine conservation efforts in three Indonesian fishing communities. *Marine Policy* **2019**, *103*, 59-67, 10.1016/j.marpol.2019.02.007.
11. Cuenca, P.; Robalino, J.; Arriagada, R.; Echeverrı, C. Are government incentives effective for avoided deforestation in the tropical Andean. 2018, 1–15.
12. Said Moukrim; Said Lahssini; Mustapha Naggar; Hicham Lahlaoi; Nabil Rifai; Moustapha Arahou; Laïla Rhazi; Local community involvement in forest rangeland management: case study of compensation on forest area closed to grazing in Morocco. *The Rangeland Journal* **2019**, *41*, 43, 10.1071/rj17119.
13. Ramesh Paudyal; Brijesh Thapa; Suman Shree Neupane; Birendra Kc; Factors Associated with Conservation Participation by Local Communities in Gaurishankar Conservation Area Project, Nepal. *Sustainability* **2018**, *10*, 3488, 10.3390/su10103488.
14. Cao, S.; Wang, X.; Wang, G. Lessons learned from China ' s fall into the poverty trap. 2009.
15. Coleman, J.S. Social Capital in the Creation of Human Capital. Am. J. Sociol. 1988, 94.
16. Putnam, R. Making Democracy Work: Civic Traditions in Modern Italy; Princeton University Press: Princeton, New Jersey, 1993; ISBN 0691078890.

17. Bourdieu, P. The forms of capital. In Handbook of Theory and Research for the Sociology of Education; Richardson, J., Ed.; Greenwood Press: Westport, Connecticut, USA, 1986; pp. 241–258 ISBN 9780429962882.
18. Fukuyama, F. Social capital, civil society and development. Third World Q. 2001, 22, 7–20.
19. Flap, H. No man is an island : The research programme of a social capital theory. In Conventions and Structures in Economic Organization; Favereau, O., Lazega, E., Eds.; Edward Elgar Publishing Limited: Northampton, Massachusetts 01060, USA, 2002; pp. 29–59.
20. Lin, N. Social Capital: A Theory of Social Structure and Action; Cambridge University Press: Cambridge, United Kingdom, 2001.
21. Portes, A. SOCIAL CAPITAL : Its Origins and Applications in Modern Sociology. 1998, 24, 1–24.
22. Mateja Nenadovic; Graham Epstein; The relationship of social capital and fishers' participation in multi-level governance arrangements. *Environmental Science & Policy* **2016**, *61*, 77-86, 10.1016/j.envsci.2016.03.023.
23. Andrés Marín; Stefan Gelcich; Juan Carlos Castilla; Fikret Berkes; Exploring Social Capital in Chile's Coastal Benthic Comanagement System Using a Network Approach. *Ecology and Society* **2012**, *17*, -, 10.5751/es-04562-170113.
24. Saptutyningsih, E.; Diswandi, D.; Jaung, W. Does social capital matter in climate change adaptation? A lesson from agricultural sector in Yogyakarta, Indonesia. Land use policy 2019, 104189.
25. Gunawan Prayitno; SOCIAL CAPITAL IN POVERTY ALLEVIATION THROUGH PRO-POOR TOURISM CONCEPT IN SLUM AREA (CASE STUDY: KELURAHAN JODIPAN, MALANG CITY). *International Journal of GEOMATE* **2019**, *16*, 131–137, 10.21660/2019.55.37152.
26. Putnam, R. The Prosperous Community. Am. Prospect 1993, 4.
27. Putnam, R. Bowling Alone: The Collapse and Revival of American Community; SIMON & SCHUSTER: New York, NY 10020, 2000; ISBN 9780684832838.
28. Kasper Teilmann; Measuring social capital accumulation in rural development. *Journal of Rural Studies* **2012**, *28*, 458-465, 10.1016/j.jrurstud.2012.10.002.
29. Sen, A. Development as Freedom; Alfred A. Knopf, Inc.: New York, 1999.
30. World Bank World Development Report 2000/2001. Attacking Poverty; Oxford University Press, Inc: 200 Madison Avenue, New York, N.Y. 10016 Oxford, 2001; ISBN 0195215982.
31. Carrillo Álvarez, E.; Riera Romaní, J. Measuring social capital: further insights. Gac. Sanit. 2017, 31, 57–61.

32. M.Geepu Nah Tiepoh; Bill Reimer; Social capital, information flows, and income creation in rural Canada: a cross-community analysis. *The Journal of Socio-Economics* **2004**, *33*, 427-448, 10.1016/j.socec.2004.04.007.
33. Jane L. Harrison; Claire A. Montgomery; P. Wilner Jeanty; A spatial, simultaneous model of social capital and poverty. *Journal of Behavioral and Experimental Economics* **2019**, *78*, 183-192, 10.1016/j.socec.2018.09.001.
34. Woolcock, M.; Narayan, D. Social Capital : Implications for Development Theory , Research , and Policy. World Bank Res. Obs. 2000, 15, . 225-49.
35. Mark S. Granovetter; The Strength of Weak Ties. *American Journal of Sociology* **1973**, *78*, 1360-1380, 10.1086/225469.
36. Putnam, R.D. Bowling Alone : America ' s Declining Social Capital. 1995, 1.
37. Dasgupta, P.; Putnam, R.; Dasgupta, P. The economics of social capital. Environ. Econ. Middle East North Africa 2005, 81, 2–21.
38. Villalonga-Olives, E.; Kawachi, I. The measurement of social capital. Gac. Sanit. 2015, 29, 62–64.
39. Kay, A. Social capital, the social economy and community development. 2005, 41, 160–173.
40. Gianluca Nardone; Roberta Sisto; Antonio Lopolito; Social Capital in the LEADER Initiative: a methodological approach. *Journal of Rural Studies* **2010**, *26*, 63-72, 10.1016/j.jrurstud.2009.09.001.
41. Sandefur, R.L.; Laumann, E.O. A Paradigm of Social Capital. Ration. Soc. 1998, 10, 481–501.
42. Coleman, J.S. Foundation of Social Theory; The Belknap Press of Harvard University Press: Massachusetts, USA, 1990; ISBN 0674312252.
43. Valenzuela, R.B.; Youn, Y.-C.; Park, M.S.; Chun, J,-N. Local People ' s Participation in Mangrove Restoration Projects and Impacts on Social Capital and Livelihood: A Case Study in the Philippines. Forests 2020, 11.