



Munich Personal RePEc Archive

Heterogeneity in Common Property Resource Management and its Implications

Tewathia, Nidhi

Department of Economics, School of Social Sciences, IGNOU

24 January 2011

Online at <https://mpra.ub.uni-muenchen.de/64010/>

MPRA Paper No. 64010, posted 18 May 2015 13:44 UTC

Heterogeneity in Common Property Resource Management and its Implications

Nidhi Tewathia

Ph.D Scholar, Department of Economics,
School of Social Sciences, IGNOU,
New Delhi.
E-mail id: tewathian@gmail.com

***Abstract:** Different types of heterogeneities are prevalent in the Common Property Resources (CPRs) usage and management. They generally arise from the differences in endowments, objectives and cultural background of the users. This paper aims to identify such heterogeneities and possibly try to discuss their implications. The leaders in CPR management (CPRM) are those who are rich or hold large number of livestock. Gender inequality also plays a major role in terms of extended benefits of CPRs. It is found that women are generally at loss in terms of unequal benefits received by them. The interesting irony is that the females are major players in the collection of CPR but they are not involved in the decision making for CPRM. They make up a nearly non-existent section for this purpose.*

Key words: Common, CPRs, heterogeneity, management, village, women

JEL Classification: Q23, Q24, Q40

1. Introduction

There are different types of heterogeneity arising from the differences in endowments, objectives and cultural background of the users of CPRs. A considerable amount of theoretical and empirical research has focused on the heterogeneity of assets. Theoretical arguments have been made for the relationship between asset heterogeneity and successful efforts in the context of regulating the use of CPR.

Olson (1965) hypothesized that the probability of collective action is greater given that the wealth inequality amongst the members of the group is large. As developing societies are highly stratified, they are also characterized by deep divisions or inequalities in status,

power, income, gender, caste, assets and race. These differences can structure the user behaviour which may reinforce socio-cultural and economic differences. For example, they can affect user perceptions of the forest management, influence attitudes of trust and determine their level of shared interest. Much community based forest management (CBFM) literature has implicitly criticized this idea, arguing that the presence of social heterogeneity makes it difficult for users to come together, agree and commit themselves to common goals. Even if it is not an initial obstacle to organisation, high levels of social heterogeneity may adversely affect the outcome of CBFM. Heterogeneity may determine which group or groups ultimately benefit from CBFM. A lack of income and power generally leads to greater discrimination, low levels of participation, and conflicts over resources and ultimately exclusion from the benefits of CBFM.

The result of the efforts put by the CPRM members is affected by the culture, conventions, the institutional arrangements, and the attributes of people's behaviour in terms of work ethics in a given society. Orientation towards group action, motivation of the group members, sharing systems also affect the output of the efforts for social capital formation.

According to Varughese and Ostrom (2001), forest product preferences are dependent on the economic as well as the social and cultural conditions of a community. As communities pass through different stages of economic growth, product preferences of people move from unprocessed raw products, such as NTFPs, fuel wood, and poles for house construction, to quality products such as furniture and paper products, and finally to outdoor recreation and environmental values. Hence, even in small traditional communities, differential impacts of economic growth will increase product preference heterogeneity.

A study by Kant (1999) shows that the members of the user group will often have somewhat different preferences regarding resource management or assign different priorities to the various objectives of resource management. This can be either because of differing

personal interests in the resource or different levels of involvement in the social group. People think of themselves both as separate ‘individuals’ and as ‘members of a social group’. In traditional societies, where people see themselves first as members of the group first and afterwards as independent individuals, an inherent spirit of co-operation is generally present in the presence of large economic differences and social stratification.

Bista (1991) finds that the prevailing heterogeneity has created deep inequities within the society that are manifested in unequal power relations, which are defined by caste, class, gender and regional settlement. These inequities are further enhanced by the inadequate support of government, gap in policy implementation and poor governance at the community level.

2. Types of Heterogeneity

Kant (2000) proposes that heterogeneity with regard to CPR management is at three different levels. Economic, socio-cultural, and other social differences form a basic level of heterogeneity. Due to this basic heterogeneity, members of the user group may have diverse preferences for timber and NTFPs and hence prefer to harvest different mixtures of products. Further, preference over diversified forest products often leads to different preferences for resource management regimes. The preference for different resource management regimes forms the third-level heterogeneity. Findings of studies on heterogeneity with respect to caste, wealth and location are given below.

2.1 Caste Heterogeneity

Among the local factors of socio-economic conditions, heterogeneity of community groups or social factionalism has pronounced influence on the effectiveness of community institutions. Due to the presence of different caste groups, it is difficult to bring the

community members to a common agreement for resource use. This may give birth to conflicts. It is then important to initiate activities of common interest in these communities. This will require more rigorous efforts to sensitise them for the common good to initiate sustainable collective action. It becomes difficult to co-operate and come to common agreement for people and hence it is more important to generate a feeling of cooperation and foster social capital. The local conditions of scarcity of forest resource can also become a motivating factor if the people are sensitised about the hardships caused to them due to scarcity.

Kafle (2008) finds that there is less probability for households belonging to lower castes being elected as a member of a decision-making unit within local forest management institutions (e.g. executive committee of a CFUG). Instead local elites, often from upper caste backgrounds, are found to be advantaged in accessing the decision-making unit of the community forest management institutions.

The extent to which enterprise activities need to explicitly target the poor may depend upon the level of internal heterogeneity in a community. “Even if a person from the lower caste group is represented on the committee, their views are often disregarded and have less bargaining power at community meetings and assemblies” [Thapa et al. (1998)]. “In terms of resource exploitation, it is observed that lower caste households are benefiting less from community forests than households belonging to higher caste groups” [Adhikari et al. (2004)].

According to Adhikari & Lovett (2006), Nepal demonstrates a distinct social stratification based on the caste system and encompasses a wider socio-economic heterogeneity. The dogma of the caste system still is a contentious issue. So, it acts as an obstacle in the development of communities belonging to the lower social class. The lower caste people often face a multitude of disadvantages in land endowment, socio-economic

marginalisation, participation in decision-making processes and employment opportunities [Lawati (2005)]. The caste system and the practices related to it have been outlawed and declared punishable offences but these laws are difficult to implement. Untouchability still exists in the hills and mountains and in the urban areas of Nepal. *Janajatis* (various ethnic groups) and lower-caste people such as *Dalits* still live in conditions of great poverty and social disadvantage. They form the most impoverished segment of the society.

In Indian villages, access to local CPRs is often restricted to privileged caste groups. According to Beteille (1983) the outcasts or schedule castes are often among the poorest of the poor and are frequently excluded in the decision-making process. Similarly others identified that there was no role for groups belonging to the lower social status in forest management decision-making [see for example Sundar (1997)]. In JFM also, it has been observed in India that the structural dominance is enjoyed by more powerful groups.

2.2 Wealth Heterogeneity

Wealth level also plays a great role in CPRM. The right over productive resources, labour capacity, skills about forest endowment transformation, technology and equipment determine the level of use, sale and conversion of forest endowment into entitlement. The rich people have greater amount of such resource. As a result they have greater amount of entitlement. Generally it has been observed that the rich people are also rich in the private resource endowments like land, livestock, labour capacities and skill development programme. The poor section does not possess such resources. As a result they have lesser amount for use and sell after transforming. "People's interest in forest resources differs based on whether they raise cattle for milk or goats for meat, run a teashop or restaurant, weave baskets and mats, make charcoal or furniture, prepare medicine from forest products, use

oxen for draught or just cook food for the family” [Varughese & Ostrom (2001)]. Most households need the forests for almost all of the above reasons but only for subsistence.

Differences in wealth relate directly to the extent of economic stratification within the group which, in turn, partially depends upon the occupation or livelihood strategy of each household. According to Adhikari (2005), household wealth endowment is expected to affect benefits from forests directly as productive wealth creates more opportunities for better-off households to use biomass resources, while social reputation of wealthy individuals has indirect effects. In rural areas where most of the people are subsistence farmers, differences in wealth are evidenced by the extent of land and livestock holdings. Households better endowed with land and livestock holdings are expected to have greater need for animal fodder and agriculture compost [Varughese & Ostrom (2001) among others]. Hence they benefit more from forests because forests are an important source of intermediate products that serve as inputs in the farming system. The wealthy of a community may have many more alternatives to using a particular forest for their livelihood than the less endowed members of that community. This makes for an imbalance of interest in organizing governance and management of a forest.

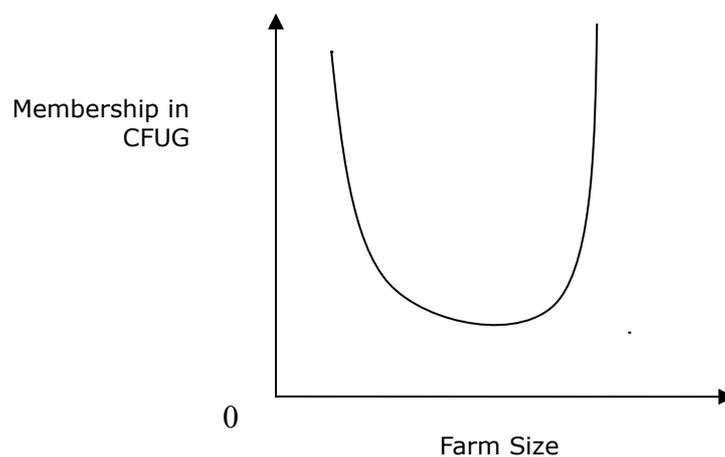
Wealthier farmers are frequently able to construct the alternative fuel sources such as methane gas producing compost pits, which supply them with cooking and lighting gas. They tend to have some surplus food and cash for modern medicine as well, and depend less than the poor do upon the forests for fuel, food and herbal cures. These differences, even among subsistence farmers, can generate different incentives among them for forest use and for devising cooperative arrangements for forest governance and management [Varughese & Ostrom (2001)].

Tole (2010) finds that despite an equal distribution of tree endowments among village users, the entitlement to use forests is unequal. Wealthier households are able to exploit

particular forest species for commercial benefits, and their greater income has allowed them to hire workers with specialized skills to remove produce. Resource-rich farmers have more trees in private lands usually sufficient to meet their forest product needs. They are interested in conserving the forests for long-term gains. This is generally in line with the interests of the DFO staff. On the contrary, the forest-dependent resource-poor farmers are found to be interested in using the forest for immediate livelihoods benefits. Elite also develop power nexus with other stakeholders at village and district levels and use the same to remain influential at the CFUG.

The impact of farm size on membership in forest user groups however follow a U shaped pattern implying that households at the two tails of the distribution of farm size are more likely to participate in collective action than those in the middle [Mariara & Gachoki (2008)]. The above mentioned relationship is depicted in Figure1.

Figure 1 Relationship between the farm size and membership in CFUG.



Mariara and Gachoki (2008) also support the fact that number of livestock units owned is positively correlated with forest participation and membership in forest user groups.

Figure 2 shows the relationship between the livestock owned by the CPR users and the membership of such people in the CFUG.

Figure 2 Relationship between the livestock ownership and membership in CFUG

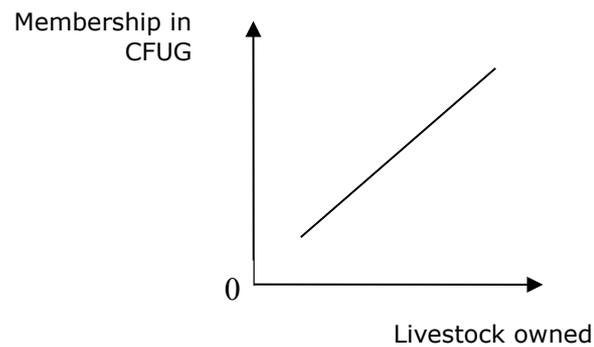
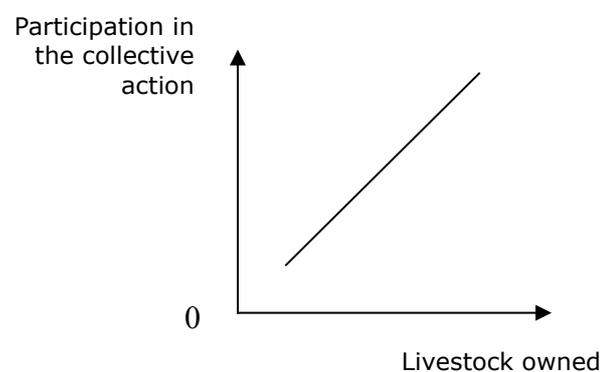


Figure 3 shows the positive relation of the livestock ownership with the level of collective action. As more and more livestock is owned by the users, their participation in the collective action also increases.

Figure 3 Relationship between the livestock and participation in the collective action.



While many have argued that heterogeneity of assets is negatively related to the capacity of a group to self-organise, Olson (1965) argued that groups were “privileged” when

one or several members owned a higher proportion of assets that would be benefited by some form of collective action. While too much disparity in wealth distribution diminishes shared interest in the collective good, some inequality of wealth provides incentives for certain individuals in the community to bear the disproportionate share in the costs associated with organising collective action. However, Angelsen and Wunder (2003) note that forest activities have low entry costs and have few requirements in terms of skills and capital, making it quite easy for the poor to participate.

2.3 Location/ Area of Residence

The location of user and settlement pattern also influence the use of forest resources. People's residence near to the forest gives them greater entitlement than other household whose residence is farthest. Distance to the forest is negatively and strongly correlated with resource extraction, more so fodder and other materials.

In a CFUG, the inability to distinguish between members with different interests results in net benefits being proportionately large for those who live at a distance because they would not participate in the maintenance and yet obtain the products.

2.4 Other Factors

Age may also reduce forest dependence as older people may have less time and physical strength to engage in forest activities. Forest dependence may also reduce with age as the age of the household head is related to the household's experience in managing CPRs as well as accumulation of social capital [Kohlin & Parks (2001) among others]. According to Adhikari (2005), age of the household head (in years) is expected to capture the extent to which household labour allocation changes over the life-cycle of the head of the household. Vedeld et al. (2004) has found that young households may be clearing more forest to build up

a sufficient amount of cropping or pasture land. Angelsen and Wunder (2003) and World Resource Institute (2005), also say that the poor often use forest products due to permanent or temporary lack of better alternatives.

According to Shively and Pagiola (2004), “Education of the household head is expected to lead to extraction of fewer forest resources since education opens up alternative employment opportunities and diverts people from subsistence agriculture and gathering activities”. Vedeld et al. (2004) further argue that the impact of education, like age may be a cultural factor where going to the forest is considered backward and not for the elderly or the well educated. “Technology, knowledge and skills are expected to enhance the efficiency of harvesting forest products” [Adhikari (2005)].

Participation in village institutions is also expected to affect the extent of forest use and thus economic benefit from the commons. Participation enhances awareness of the potential gains from forests as institutions are an important source of relevant information, including information on policy changes that directly affect forest communities [Gaspert et al. (1999); Adhikari (2005)]. According to Vedeld et al. (2004), other important institutional characteristics include customary rules governing forest/product use, government regulations affecting resource use and changes in rights governing resource use. World Resource Institute (2005) finds out that many previous studies concur that efforts to promote sustainable livelihoods among the poor are more successful when they simultaneously promote ecosystem stewardship and democratic governance.

3. Gender Inequality and CPRM

A form of heterogeneity that has received considerably less attention in the CBFM literature is that of gender inequality. According to Toole (2010), access to CBFM programs and their associated benefits does not depend only on differences in income and status, but

also- on cultural beliefs and norms prescribing women's appropriate roles and degree of participation in society. These in turn are reinforced by income differences and institutions such as the degree of legal protection and political freedom and rights accorded to women by society.

3.1 Participation

According to Chapagain (2007), women's participation in CFUGs may be classified into two broad categories i.e. participation in implementation of activities such as in the conservation and exploitation of resources and participation in decision-making. Participation in the implementation of activities does not necessarily mean effective participation in decision-making. Effective participation requires that people's views are effectively taken into account and their views influence decision-making.

Aggarwal (2000) finds that institutions for natural resource management (such as CFGs), which appear to be participative, equitable and efficient, can be found lacking on all three counts from a gender perspective. There is little to suggest that women are inherently more conservationist than men, but the distinctness of women's social networks embodying prior experience of successful cooperation, their higher dependence on these networks and their potentially greater group homogeneity relative to men, could provide an important base for managing a sustainable environmental collective action. This is largely ignored.

The exclusion from CBFM programs is particularly prevalent where gender inequalities in income, assets and political endowments are prevalent to a very high level. Most male resistance to women's involvement in forest management occurs where women are illiterate and very poor and men have worked on forest related matters since time immemorial. Despite their unequal position, women are enlisted to help with forest management because men often do not do their job up to the needed level.

However, even in communities that allows women's participation in outside activities, culturally prescribed beliefs and attitudes towards women often present considerable obstacles to the success of CBFM programs [Aggarwal (1997), (2001)]. Tole (2010) finds that there are parts of Nepal and the Uttar Pradesh hills in India where women are active participants in forestry management though the number of such participants is not very high. Moreover, participation in is often unequal because women are excluded from making important decisions regarding the management of forests. In both countries, women are seldom consulted about forest issues, and their preferences for specific species are often overlooked. For instance, women prefer domestic species because they provide multiple subsistence benefits, whereas men prefer non-native species for their income generation potential.

Women's limited participation in decision-making also means that they have little influence in the framing of rules on forest use, monitoring, benefit distribution, etc. It has implications for both distributional equity and efficiency. The persistent shortages of CPRs which women face are because of their lack of voice and bargaining power in the CFUGs, than from a lack of aggregate availability. Despite their virtual absence from male-controlled CFUGs, women often play an active role in the protection efforts as they keep an informal lookout or form patrol groups parallel to men's as they feel that men's patrolling is ineffective.

It has been found that women usually constitute less than 10 percent of the CFUG general body membership in both India and Nepal. In India's JFM programme, for instance, membership at the household level is 70 percent to 80 percent in many villages, and in some cases it is 100 percent. The women so included usually constitute a nominal rather than an effective presence. The reason is that they are seldom selected or elected by village women as their representatives or for their leadership qualities. But even where membership is open to

women, their presence is sparse as women's own economic endowments (e.g., asset ownership) and personal attributes (educational level, self-confidence, leadership qualities, etc.) do not match up to the men [Aggarwal (2000)].

From the women who are General Body or Executive body members, only a small percentage usually attend the meetings. If they do attend, they rarely speak up, and if they speak, their opinions carry little weight. Some characteristic responses are shared below¹:

What is the point of going to meetings? We would only sit silently. (Panasa Diha village, Orissa, 1998)

Men don't listen, except perhaps one or two. Men feel that they should be the spokespersons. (Garbe Kuna forest, Kaski district, Nepal, 1998)

I attend the van panchayat meetings, but I only sign, I don't say much. Or I say I agree. (Sallarautela Village, UP hills 1998)

Eight JFM states allow only one member per household and this is inevitably the male household head. In some states, both spouses are members, but this still excludes other household adults. Many CBFM programs simply fail to include women as equal participants if they include them. A large number of field studies reflect this exclusion despite formal efforts to include women [Tole (2010)].

Literacy levels often determine which women are nominated to JFM executive committees where the rules make women's inclusion mandatory. In general, women's lower average level of education, relative to men's, not only forms biased perceptions about women's abilities but also affects their actual ability to gain information on rules, to check the accuracy of minutes on the decisions made, and so on.

Aggarwal (1989) finds that the ability of females to fulfil the responsibility of being the sole economic providers is significantly constrained by the limited resources and means at their command. This constraint stems not merely from their class position but also from

¹ Aggarwal Bina (2001)

gender. These gender inequities in access to resources take varying forms: intra-family differences in the distribution of basic necessities; women's systematically disadvantaged position in the labour market; their little access to the crucial means of production- land and associated production technology; and the growing deterioration and privatization of the country's CPRs on which the poor and women depend in substantial degree for sustenance.

3.2 Unequal Benefits

Gender inequities characterise CFGs in the sharing of both costs and benefits. While costs associated with membership fees, patrolling time or the forest guard's pay are usually borne by men, the costs of forgoing forest use are largely borne by women.

Inequities also stem from the distribution of benefits from protection. In some cases the benefits are not distributed at all but put into a collective fund and used by the groups as they see fit. A number of the autonomous groups in Orissa managed by all male youth clubs, for instance, have been selling forest products, including the wood obtained from thinning operations, and using the proceeds for religious festivities, a club house, or club functions [Agrawal (2001)].

Women might gain indirectly if the benefits are in kind for example, firewood. But if the benefits are in cash, then the money distributed to male members is seldom shared equitably within the family. In many cases, the men spend the money on gambling, liquor or personal items. "In a meeting of three JFM villages of West Bengal, women, when asked about benefit-sharing, all wanted equal and separate shares for husbands and wives" [Sarin (1995)]. Since the women now demand their own share in the benefits as a condition for joining, the attempts to enlist more women members into CFUGs may prove unsuccessful, where existing CFUG rules allow only one share per household.

Since the main responsibility for firewood and fodder collection, animal care, cooking, etc. falls on women, they also end up shouldering the burden of finding other fuel and fodder sources when the forest is closed. Women, who don't own land or trees, bear the biggest costs of forest closure. Physical exclusion from forests due to strict closure rules means that in order to meet basic subsistence needs, women must go elsewhere. It poses high opportunity costs as it includes time spent in searching for alternative sites for firewood and fodder, using inferior substitute fuels, stalls feeding animals, losing income earlier obtained from selling forest products etc. "It also means travelling long distances to obtain produce from other forests; a job that may involve all female members of the household, including daughters, with negative consequences for the latter's education" [Tole (2010)].

In countries like India, men are the head of the household and usufruct rights under CBFM programs are registered in their name only. Women are hence often denied the income stream from commercial forest enterprises which are viewed as masculine pursuits [Aggarwal (2001)]. Moreover, because women are often excluded from community forests, they have little input into rule making and have little stake in rule compliance. As a result, illegal encroachment by women is common. On the other hand, community forests have suffered from a loss of input of women's expertise and labour. Women can easily use their indigenous knowledge of the requirements and benefits of growing individual tree species and they also generally appreciate the need to maintain biodiversity [Tole (2010)].

3.3 Efficiency

According to Aggarwal (2000), the systematic exclusion of one gender from consultation, decision-making, and management of new planting programmes is likely to have negative efficiency implications, by failing to tap woman's knowledge of diverse species for enhancing biodiversity and their understanding of traditional silvicultural

practices as they are better informed about the planting species. Information about the rules framed, or changes in rules, such as in membership eligibility conditions or on other aspects of forest management; do not always filter down to the women. There is no inbuilt mechanism for their feedback too. If consulted, women usually suggest less stringent and more egalitarian rules.

Efficiency issues can arise from inaccurate assessments of resource depletion. For example, there can be gender differences in abilities to identify the state of the local resource base. It is women who regularly have to collect firewood, grasses and NTFPs. Hence, their lack of involvement in framing working rules for protection and use creates non-abiding tendencies in the users.

Aggarwal (2000) finds that in South Asia, women's virtual absence from their decision-making bodies is significantly prevalent. Also it has been observed that significant gender inequalities in the distribution of costs and benefits, and a range of observed or potential inefficiencies in functioning exist in CPRM institutions. Inefficiencies, for instance, are likely to arise from rule enforcement problems, imperfections in the information flow, inaccurate assessments of resource depletion, and problems in catching transgressors. Unsatisfactory conflict resolution and non-incorporation of women's specific knowledge of species also lead to problems in CPRM. Some of these factors could obstruct successful cooperation even in the short term; others could affect the long term sustainability of arrangements for communal resource management, or cause them to fall short of attaining their production potential. Increase in women participation had effect on other several aspects of institutional functioning. Women members tend to take responsibility of occasional patrolling of the area to control women offenders, which are difficult to be controlled by male members and they also try to form self help groups and raise their voice in various community affairs.

“In many ways gender discrimination reproduces biases in social capital as does poverty and inequality, reinforcing male domination and power and excluding women from participating in CBFM. Women’s presence has a strongly positive influence on the degree of reciprocity, solidarity and level of conflict” [Tole (2010)].

Hence the term heterogeneity is used to describe asymmetric distributions of wealth and power, different preferences, opportunity costs, unequal claims to natural resources and socio-cultural differences within a community. Heterogeneity also encompass economic and social inequalities, i.e. inequalities in sacrifices made by community members in cooperating with forest management, inequalities in outside earning opportunities, cultural heterogeneity and location differences.

4. Conclusion

The aim of the paper was to bring out various heterogeneities prevalent in CPR use and its management and their implications. It is evident from the above discussion that the existence of various types of heterogeneity makes the common property resource management biased. The rich households or the households having more number of livestock are better placed as far as the participation in CPRM is concerned. Further, gender inequality is also evident from the discussion. Women get affected if the benefits are in cash instead of kind like firewood. They also have a minimal or no participation in decision making process. Their lack of involvement in framing working rules for protection and use of a CPR creates non-abiding tendencies in the users.

References:

Adhikari, B., (2003), *Property rights and Natural resources: Socio-Economic Heterogeneity and Distributional Implications of Common Property Resource Management*, Working paper no.1-03, SANDEE.

- Adhikari, B., (2004 a), *Community Forestry in Nepal Management rules and Distribution of benefits*, No.-1-04, SANDEE.
- Adhikari, B., (2004 b), *Transaction Costs and Common Property Forest Management: Empirical Evidence from Nepal*, *Journal of Forest and Livelihood* Vol.4, No.1, pp 30-37.
- Adhikari, B., Falco, S.D., and Lovett, J. C., (2004), *Household Characteristics and Forest dependency: Evidence from Common Property Forest Management in Nepal*, *Ecological Economics*, Vol.48, pp 245–257.
- Adhikari, B., (2005), *Poverty, Property Rights and Collective Action: Understanding the distributive aspects of Common Property Resource Management*, *Environment and Development Economics*, Vol.10, pp 7-31.
- Adhikari, B., Lovett, J.C., (2006), *Institutions and Collective Action: Does Heterogeneity Hinders Community-Based Resource Management?* *Journal of Development Studies*, Vol.78, No.1, pp 5-15.
- Adhockery, B., Falco, S.D., J.C. Lovett, J.C., (2004), *Household Characteristic and Forest dependence; Evidence from Common Property Forest Management in Nepal*, *Ecological Economics*, Vol.48, pp 245- 257.
- Aggarwal, B., (1989), *Rural Women, Poverty and Natural Resources*, EPW, Oct 28.
- Aggarwal, B., (1997), *Environmental action, Gender, Equity and Women's Participation*, *Development and Change*, Vol. 28, pp 1- 44.
- Aggarwal, B., (2000), *Conceptualising Environmental Collective Action: Why Gender Matters*, *Cambridge Journal of Economics*, Vol.24, pp 283–310.
- Aggarwal, B., (2001), *Participatory exclusions, Community forestry, and Gender: An analysis for South Asia and Conceptual framework*, *Institute of Economic Growth, World Development* Vol 29, No 10, pp 1623-1648.
- Agrawal, A., (2001), *Common Property Institutions and Sustainable Governance of Resources*, *World Development*, Vol.29, No.10, pp 1649-72.
- Angelsen, A., Wunder, S., (2003), *exploring the Forest-Poverty link: Key Concepts, Issues and Research Implications*, CIFOR occasional paper no. 40.
- Baker, J.M., (1998), *The Effect of Community Structure on Social Forestry Outcomes: Insights from Chota Nagpur, India*, *Mountain Research and Development*, Vol.18, No.1, pp 51- 62.
- Bardhan, P., Dayton-Johnson, J., (2000), *'Heterogeneity and Commons Management*, Department of Economics, University of California, USA.
- Beteille, A., (1983), *Equality and Inequality: Theory and Practice*, Delhi: Oxford University Press.

- Bista, D.B., (1991), *Fatalism and Development: Explorations in Political Theory*, New Delhi, Sage Publications.
- Cavendish, W., (2000), *Empirical Regularities in the Poverty-Environment relationship of Rural Households: Evidence from Zimbabwe*, *World Development*, Vol. 28, pp 1979–2003.
- Chapagain, B.P., (2007), *Impact of Community Forestry on Livelihood Improvement of Rural People*, Tribhuvan University, Institute of Forestry, Hetauda Campus, Nepal.
- Chhetri, B.B.K., (2005), *Community Forestry Programmes in the Hills of Nepal: Determinants of Users Participation and Household Dependency*. M. Sc. Thesis.
- Dasgupta, P., (1993), *An Inquiry into Well-Being and Destitution*, Oxford, Clarendon Press.
- Dev, O. P., Yadav, N. P., Springate-Baginski, O., Soussan, J., (2003), *Impacts of Community Forestry on Livelihoods in the Middle Hills of Nepal*, *Journal of Forest and Livelihoods* Vol. 3, No.1, pp 64-77.
- Gaspert, F., Jabbar, M., Melard, C., Plateau, J.P., (1999), *Participation in the Construction of a Local Public Good with Indivisibilities: An Application to Watershed Development in Ethiopia*, CRED, University of Namur, Belgium.
- Gilmour, D.A., Fisher, R.J., (1991), *Villagers, Forest and Foresters: The Philosophy, Process and Practice of Community Forestry in Nepal*. Sahayogi Press, Kathmandu.
- Guggenheim, S., Spears, J., (1991) *Sociological & Environmental Dimensions of Social Forestry Projects* in M.M Carnea ed., *Putting people first: Sociological Variables in Rural Development*, New York: OUP, pp 305-309.
- Hobley, M., (1996), *Participatory forestry: The process of change in India and Nepal*, Overseas Development Institute, London.
- Jodha, N.S., (1986), *Common Property Resources and Rural Poor in Dry Regions of India*, *EPW*, 21, pp 1169-81.
- Kafle, M.R., (2008), *Contribution of Community Forestry to Users' Household Income: A Financial Analysis*, Tribhuvan University, Institute of Forestry, Nepal.
- Kant, S., (1999). *Endogenous rate of time preference, traditional communities, and sustainable forest management*. *J. Soc. Econ. Dev.* Vol.2, No.1, pp 65–87.
- Kant, S., (2000), *A Dynamic Approach to Forest Regimes in Developing Economies*, *Ecological Economics*, Vol.32, pp 287-300.

- Kohlin, G., Parks, P.J., (2001), *Spatial Variability and Disincentives to Harvest*, Land Economics, Vol.77, pp 206-218.
- Koirala, P.N., (2007), *Benefit Sharing in Community Forests in Nepal (A case study in Makawanpur District of Nepal)*.
- Lawati, M., (2005), *Towards a Democratic Nepal Inclusive Political Institutions for a Multicultural Society*, Sage Publication: New Delhi.
- Malla, Y.B., (2000), *Impact of Community Forestry Policy on Rural Livelihood & Food Security in Nepal*, Unasylva, Vol. 51, No.3, pp 37-45.
- Mariara, J.K., Gachoki, C., (2008), *Forest dependence and Household Welfare: Empirical Evidence from Kenya*, CEEPA.
- Naidu, S.C., (2009), *Heterogeneity and Common Pool Resources: Collective Management of Forests in Himachal Pradesh, India*, University of Massachusetts Amherst, Department of Resource Economics, Working Paper No. 2005-8.
- Olson, M., (1965), *The Logic of Collective Action. Public Goods and the Theory of Groups*, Cambridge, Massachusetts 1965, pp 43-63.
- Ostrom, E., (2001) “*The contested role of heterogeneity in collective action: some evidence from community forestry in Nepal*”, World Development Vol. 29. No.5. pp 747-765.
- Pandey, T.R., (1999), *Local Strength and Institutional Limitations: Issues of User Group conflict in Community Forest Management* in R.B. Chhetri and O.P. Gurung (eds.), *Anthropology and Sociology of Nepal: Culture, Societies, Ecology and Development*.
- Pattnayak, K. S., Sills, E.O., Kramer, R., (2004), *Seeing the Forest for Fuel*, Environment and Development Economics, Vol. 9, pp 155-179.
- Pokharel, B. K., Nurse, M., (2004), *Forests and Peoples' Livelihoods: Benefiting the Poor from Community Forestry*. Journal of Forest and Livelihoods, Vol.4, No.1, pp 19-29.
- Poudel, D., (1999), *Distributional Impacts of Community Forestry Programmes on Different Social Groups in the Mid-Hills of Nepal*, Unpublished MPhil Dissertation, University of Cambridge.
- Putnam, R., (1993), *Making Democracy Work: Civic Traditions in Modern Italy*, Princeton: Princeton, University Press.
- Reddy, S.R.C., Chakravarty, S.P., (1999), *Forest Dependence and Income Distribution in a Subsistence Economy: Evidence from India*, World Development, Vol.27, No.7, pp 1141-1149.

- Sarin, M., (1995), *Regenerating India's Forest: Reconciling Gender Equity JFM*, IDS bulletin, Vol. 26, No.1, pp 83- 91.
- Shively, G.E., Pagiola, S., (2004), *Agricultural Intensification, Local Labour Markets, and Deforestation in the Philippines*, Environment and Development Economics, Vol. 9, pp 241-266.
- Sundar, N., (1997), *Subalterns and Sovereigns*, Oxford University Press, New Delhi.
- Thapa, S., Shrestha, R.N., Yadav, K.P., (1998), *Socio-economic aspects of Forest Resource Assessment Study*, Nepal-UK Community Forestry Project Report B/NUKCFP/55, Kathmandu, Nepal.
- Tole, L., (2010), *Reforms from the Ground Up: A Review of Community Based Forest Management in Tropical Developing Countries*, Environmental Management, June 2010, Vol. 45, pp 1312-1331.
- Varughese, G., Ostrom, E., (2001), *The Contested Role of Heterogeneity in Collective Action: Some Evidence from Community Forestry in Nepal*, World Development, Vol. 29, No. 5, pp 747-765.
- Vedeld, A., Angelsen, A., Sjaastad, E., Kobugabe, G. B., (2004), *Counting on the Environment: Forest Incomes and the Rural Poor*. The World Bank Environment Department, Environmental Economics Series, Paper No. 98. Washington D.C.
- Wade, R., (1987), *The Management of Common Property Resources: Collective Action as an Alternative to Privatisation or State Regulation*, Cambridge Journal of Economics, Vol.11, pp 95-106.
- World Resource Institute (2005), *The Wealth of the Poor: Managing Eco Systems to fight Poverty*. UNDP, United Nations Environment Programme. The World Bank, World Resources Washington D.C.
- Zufferey, F. S., (1986), *A Study of Local Institutions and Resource Management Inquiry in Eastern Central District*, Land Tenure Center, LTC paper No 88, University of Wisconsin-Madison.