Heterogeneity and Equity: Some Contradictions and Compromises in Collective Action[#]

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Introduction

Several analytical models that have been formulated for examining the CPR management regimes (Oakerson 1986, Ostrom 1986, Gardner et al. 1989, Bromley and Cernea, 1989, Arnold, 1998) provide an important stress on community structure and its implications in the form of homogeneity and heterogeneity and the efficiency and equity outcomes. Most common property scholars have argued that for the success and sustenance of collective action, the benefits derived from the collectively managed resources should flow equitably to all the members of a group. The process of globalisation has also led to greater emphasis on equity principles in the public policy. It is easier to ensure equity concerns in homogeneous groups because of similarity in resource dependence. Nevertheless, it becomes difficult to enforce equity when the group is heterogeneous with members having different economic interests and use perceptions about the resource. There are diverse sources of heterogeneity that include caste, ethnicity, social grouping, economic status, enterprises, political influence, habitation pattern, physical location etc. It becomes difficult for the factions and group members having heterogeneous objectives to come to common agreement. Even then many heterogeneous groups have sustained collective action although without eliminating inequalities. Based on the analysis of case studies from six village institutions, from Rajasthan in India, involved in the collective management of forest resources, this study is aimed at understanding such factors that contribute to the success of collective action under the circumstances of heterogeneity where there is a greater likelihood of inequalities within the groups.

Heterogeneity and Common Property Regimes

For avoiding free-rider problem in the commons, it is important to bring the appropriators to a common agreement of resource use. When the appropriators dependent on a common pool resource have homogeneous objectives (owing to similarity of culture, resource use pattern, and economic dependence etc.), collective action is much easier. Nevertheless, when they have heterogeneous objectives, it becomes difficult to bring the appropriators to commonly agreed use pattern of the resource.

Homogeneity of community groups is widely acclaimed to facilitate collective action (Lowdermilk, 1978; SPWD, 1992; Jodha, 1996; Sarin, 1996; Kant and Cooke, 1999; Saxena, 2000) and this is explained to be so because of closer social ties and norms (Subramaniam et al., 1997; Singleton and Taylor, 1992). Conversely, caste heterogeneity is known to contribute to

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disputes (Fresson, 1979; Merrey and Wolf, 1986) and may increase factionalism (Kahkonen, 1999). It becomes important to initiate activities of common interest in these communities. It also requires more rigorous efforts to sensitise them for the common good to mobilise sustainable collective action.

Heterogeneity in objectives of the appropriators could result because of several features of the group. This includes ethnicity, language, political influence, wealth distribution, habitation pattern, physical location, economic well-being and dependence on the resource etc. In each particular case one or more reasons of heterogeneity may be present which may cause non-cooperative appropriation. For the success of CPR governance in such situations, two types of appropriators – the gainers and the losers need to balance. As explained by Hackett (1992), those who share in the gains from the CPR governance may have incentive to invest in its success. Conversely, the appropriators that are made worse off relative to their earlier situation have an incentive to cheat on their allocated appropriation right. Such an opposition makes the collective action difficult to sustain. Hackett (1992) further argues that the costs of implementing CPR governance in such situations may be minimised by assuring that all appropriators share in the gains from successful CPR governance.

This study analyses six case studies where heterogeneity causes some level of differences in the gains to different appropriators. The attempt has been made to understand what factors have contributed to the success of collective management of resources in such situations.

Equity in Common Property Management

It has been often argued that the appropriators for any commonly used resource would remain interested in its collective management as long as they feel that their interests are not getting adversely affected. At least it should ensure that other appropriators do not take greater advantage compared to them. It is also critical that the resource extraction and distribution should not be such that for gains in the short run, the resource looses its productivity in the long run. Equitable distribution of benefits within the limits of resource productivity is considered therefore an essential factor for the success of CPR management. Nevertheless, in practice several aspects of social structure, resource dependence and economics of use of resource affect the equity in distribution of benefits.

Reviewing the experience of CPR management in India, Arnold (1990) argued that the "successful systems reflect the realities of the community structure, and provide benefits which meet the interests of the elite and the powerful as well as those who are dependent on CPRs—they are therefore unlikely to provide equal returns to all, or to act as a vehicle primarily for redistribution in favour of the poor (but should safeguard the interests of the latter)."

Equity is considered relevant for CPR management in the context of efficiency i.e. the best possible outcomes that could be available to all the members of the group in joint. The efficiency is reflected in maximization of total net benefit that can be generated from the resource under consideration (Tsur and Dinar, 1995). Nevertheless, equity is a vague concept that changes colours, shapes and meanings depending on the particular object according to which it is

measured (opportunities, needs, incomes, utilities). Equity concerns are therefore often overshadowed by efficiency concerns in the mainstream economics. Yet it appears reasonable to require that policies aimed at allocating publicly owned natural resources will not eschew equity considerations altogether (Tsur and Dinar, 1995).

Commonly held views and experience about CPR management seem to stress widely on the values of equality. A review of the traditional community resource management systems in Nepal by Messerschmidt (1986) revealed that the successful systems had elaborate operational rules for ensuring equitable distribution of the benefits among its members. McKean (1986) observed that it is the fairness with which the resource use and the benefits flowing are distributed in the management of traditional commons in Japan. The fairness implicit in joint access is considered an assuring feature of common property management, even if the relative benefit accruing to individual may be less than the situation of exclusive use rights (Runge, 1986). Putting forward his views against parcellation of common lands, Putterman (1983) argues that collective systems are likely to promote more equality.

The equity considerations are often rooted in emotional argument for providing opportunities to the marginalized groups (Sarin, 1996, Sarin et al., 1997, Saxena, 1995). Such groups may be socially or economically segregated. The equitable opportunities to the poorer sections ensures their participation in the management of the commons who in general are more dependent on natural resources (Poffenberger, 1990).

Nevertheless, successful management of common property resources has prevailed with significant inequities (Quiggin, 1993). This may be because within the heterogeneous groups, some sections/members are able to derive greater benefits compared to others, but with the complete awareness of the other members. Such members do not interfere with this distribution pattern because their value systems and social and economic considerations let the part of the groups derive greater or lesser benefits. In many instances it may be because of the lack of power or other local factors of such groups that they are not able to raise considerations, yet they remain active constituents of group and take part in the collective action.

In this study the systems of benefit distribution are being analysed in heterogeneous villages selected for the study to understand the level of equity that becomes operational and its implications for sustaining collective action.

The study area

The case study villages have been selected from Udaipur district of Rajasthan, which is a western state of India. Udaipur district is situated in the middle of Aravalli hills, one of the oldest mountain ranges of India. The Aravalli hills form the dividing line between the Indian Thar desert and non-desert part of the country. Thus, Udaipur district falls in a relatively dry zone of India with tropical dry deciduous forests having a relatively low productivity. Udaipur district has more than 3000 sq. km. of forests and administratively there are three forest development divisions in this district. The forest resources in this region have been facing severe degradation over the last few decades owing to unregulated over-exploitation or what can be termed as

'tragedy of commons'. Because of enabling policy changes, the program of forming village forest protection and management committees (VFPMCs) was started after the state government adopted a resolution in 1991 for implementing joint forest management (JFM) approach (GOR, 1991).

In JFM approach, the responsibilities for forest development and management are shared between the implementing agency (often the Forest Department) and the local community institution, the VFPMC. The implementing agency provides technical guidance and financial support. It also undertakes the extension role to mobilize the community institution and helps in building their capacity. The VFPMC formed by villagers is supposed to primarily undertake the responsibility of protection, management and regulation of resource use.

Even though there are a few sporadic examples of self-initiated community-based protection and management systems prevailing in the region, the large-scale promotion of formal community institutions started with the adoption of this government resolution. An intensive program of reforestation was carried out in the Udaipur district over last one decade. As a mandatory provision, a VFPMC was formed in each village, before taking up any forestry activities. Prior to formation of VFPMCs, village level meetings were conducted to explain the concept and implications of JFM for motivating the villagers. The level of sincerity with which villagers were sensitised and made aware of their responsibilities varied considerably owing to the ability and dedication of the agency staff and other local factors.

The pace of reforestation activities declined considerably about two years before after the closure of an externally aided project, through which most of the reforestation activities in this district had been supported. In most of the villages, the strength of collective regulation also declined as no serious follow up was continued after the closure of the programs in particular villages.

Nevertheless, there are several villages in which community institutions have functioned quite effectively protecting the resources against illicit use and regulating the resource use by community members. Such case study villages have been selected for the study that have been by and large successful in developing elaborate systems of product extraction and benefit distribution.

Economics of fodder

Owing to high livestock density in the region, the fodder availability is of vital importance to local communities in the region. Fodder grass is one of the products that become available to people right from the beginning of closure of an area for regeneration purpose. The villages located close to urban centres have a better market either for a direct sale of fodder to urban inhabitants rearing cattle or for the sale of dairy products obtained from milch cattle reared by the villagers themselves. This has been a primary reason of greater interest of local villagers in protecting their forests in some of the villages in the proximity of Udaipur city. Two of the case study villages *viz.* Eklingpura and Gorela have been selected which are within 10-12 Km from the city and dairying forms one of the important activity of the inhabitants in these villages thus having high value of the fodder.

The smaller towns also have some demand for fodder even though it may be for a much lower price. Jhadol is a small town and a sub-divisional administrative headquarter within the district which is about 50 Km from Udaipur. Therefore some communities have been selected within about 10-12 Km distance from this town. It is obvious that as the distance from the demand centres increase, it becomes economically unviable to bring fodder to these demand centres because of increasing transport costs.

The community institutions have also paid attention on developing the systems of equitable distribution mainly for fodder. The extraction of fuel and other products is not so elaborately regulated and therefore, in this paper mainly the mechanisms of distribution of fodder in different communities are analysed.

Selection of case study villages

In total six case study villages have been selected in which heterogeneity is prevailing in some form or the other and which provide a spectrum of variation regarding the local factors. The location of villages also provides an important cause of variation because of closeness of markets for their products.

Two villages viz. Eklingpura and Gorela had multi-caste composition with a dominating faction having high dependence on fodder resources from the forest resources managed. The proximity of these villages to close by urban markets of Udaipur city implied greater economic stack of such factions. These factions could play a greater role and influenced other members to agree to regulated access and use. At the same time equitable distribution of products from managed resources was also enforced. The consequential benefits were greater to such factions having greater dependence on fodder but all the group members agreed to a compromise solution for sustaining collective management of resources.

The heterogeneity in two other villages viz. Salukheda and Malpur was owing to difference in economic and cultural needs of three distinct social groups that differed in dependence on forest resources. The differences in use pattern caused inherent contradictions in deciding a common strategy of resource use. Even though members did not receive equitable benefits, collective regulation of resource use has prevailed in both these villages, although with occasional violations.

Two other villages viz. Palyakheda and Bada Bhilwara, selected for study were having ethnically homogeneous composition but the social factions and habitation pattern led to differences in deciding use regulations. In the history of management of forest resources by these communities during last seven years, there have been several contradictions and compromises in deciding and enforcing use regulations. Often the similarity in dependence on forest resources and collective interest of community brought them to agree to a common resource management strategy.

A brief description of composition, forest regeneration work, and the systems of distribution adopted in each case study villages is described below. Besides, further analysis of the functioning of each village institution is done later. Such analysis is based on in-depth

observations and information collection through multi-ferrous sources. This included interviews with key informants, village representatives and participatory exercises carried out in these villages.

Eklingpura

Eklingpura is located about 12 Km east of Udaipur city. The village with a population of about 200 households is a multi-caste society. The castes present in the village include *Dangi, Brahmin, Bhil, Lohar, Kumhar, Salvi* and *Nai*. The *Dangis* are primarily agricultural community while the *Brahmins* are revering community. The members of both these communities also rear livestock and have adapted to commercial dairying because of good demand for milk in Udaipur city. Bhils are tirbals with marginal land holdings and possess relatively less number of livestock. Rest of the communities is artisans, although many of them also possess some agricultural lands and/or rear livestock.

The work of forest protection started in Eklingpura in 1988 and till 1990, an area of about 250 ha was taken up for regeneration by the Forest Department with community cooperation. The protection system includes a community paid watchmen for through out the year in addition to a rotational patrolling by individual households.

The community has perfected a system of equi-distribution of grass among the members. Grass harvesting is started after the grass has dried and seeds have fallen for future regeneration. From each household, two persons are allowed to go for cutting grass from the area, but only one person is allowed to bring a head load. Thus, on an average each household is able to get about 50 Kg of grass per day. A small quantity of grass is levied from each person at the exit, which is auctioned in open and can be purchased by anyone from the village. The funds received from this type of sales go to community funds. The poorer families, mainly from tribal community, after meeting their own needs, sale the grass of their share in the local or the urban market. In last more than a decade; there have hardly been any major violations.

The *Brahmins* and *Dangis*, though form the influential communities, the general experience has been that they do not tend to dominate the decisions. For collective interest of the community they have taken care of the welfare of even the poorer sections, even though people from such sections have been much less vocal in the meetings. There is a good respect for the leadership in the village and a good abidance to community decisions. The villagers have learnt to avoid the impact of local politics on the functioning of VFPMC and most of the decisions are taken by consensus. The local elections are held for local bodies for local self-government. Despite intense competition in these elections, people do not get divided on community issues relating to forest management.

Gorela

Gorela village is located at a distance of about 10 Km west of the city of Udaipur. People of three communities viz. *Gujjars, Rajputs* and *Gameties* inhabit the village. *Gujjars* are primarily a

livestock rearing community but at the same time practice agriculture with a good size of agricultural holdings. *Gameties* are a tribal community with relatively much smaller land holdings and livestock population. *Rajputs* with a much smaller population are relatively better off among all but agriculture is their main occupation along with livestock rearing.

The village has a total forest area of 1186 ha which had been severely degraded before the regeneration efforts initiated by the Forest Department. Since 1980 a total of about 450 ha of forests have been taken up for regeneration. Although people's involvement in forest protection had started much earlier, the VFPMC was formed in 1992. After this the villagers started actively protecting the area through rotational patrolling duties by community members.

Every year community members start the grass harvesting only after the decision by the VFPMC. Each member has to pay a fee of Rs. 15 for obtaining a permit for that season. The quantity of grass that can be brought by each individual after obtaining this permit is also regulated. Each person is allowed to bring 30 Kg of grass on each day. When the grass bundle is brought out, it is weighed at the exit point and if there is an extra grass, this is pooled in community account. Thus, an exact and equal quantity is available to all the members. Earlier to this an area-based approach was tried in which each individual was assigned an equal area for harvesting. But because of disputes due to variability in productivity, the present system of regulating the quantity was initiated. This system of equal distribution has been used for many years and perfected by the community. The community penalizes anybody violating the community norms or found grazing their animals or cutting trees.

The *Gujjars* and *Rajputs* are relatively powerful but they have tended to consider the welfare and interests of tribal community members also. Even though the greater advantage of availability of increased quantity of fodder was available to them, the tribal community members were at no disadvantage by regulated harvesting. This involved all the people from the community. In general there was a respect for the leadership and people abided by the decisions of the VFPMC.

Salukheda

Salukheda is located at a distance of about 57 Km from Udaipur and about 5 Km from Jhadol township. Salukheda comprised of three distinct ethnic groups. There were about 25 households from *Rajput* community having a higher social status and were well off with a relatively large size of land holding. Agriculture was their main source of income, which was supplemented through livestock rearing. There were 38 households from *Gayari* community which were traditional grazers usually rearing a large size of herds of sheep, cow, buffalos and goats. They also practiced agriculture. The tribals with a population of about 60 households formed the poorest section in the village with marginal undulating lands and a few goats and cows. Tribals worked on daily wage within and outside the village to earn their livelihood.

Salukheda village community institution was formed in 1992 as a village forest protection and management committee (VFPMC) to start a joint forest management program. Since 1993 about 50 ha area was taken up for regeneration every year for four years. The forest area in the village had earlier severely degraded due to over-exploitation. The formation of VFPMC created a sense

of collective action for regulating the resource use. As a result the resource productivity, particularly the availability of grass, improved considerably. The grazing from the regenerating area was completely stopped and the people resorted to regulated cut and carry system. Every year after drying of grass around October- November, the community would decide to initiate cutting of grass. Every member was allowed to cut and carry the grass on payment of a fee of Rs. 5-10 for seasonal permit.

Nearly half of the people from *Rajput* community did not use to go for cutting and carrying the grass because of their social and economic status. They rather employed people from tribal community for grass collection for them or they purchased the grass from other people. *Gayaries* involved in cutting and carrying the grass, but because of the relatively large herd size were not able to meet their demand. To meet the shortfall, they purchased grass from tribal people, generally in exchange for buttermilk. The people from tribal community did involved in cutting and carrying the grass for meeting their own needs and they additionally sold this to local residents as well as to those from neighbouring villages. Thus the tribals could get the maximum advantage in terms of grass produce from the area.

After development of four plantations in the area and also by closure of the area of the neighbouring villages similarly under their JFM program, the entire area available to *Gayaries* for grazing was closed. In last three years the paucity of rains have further caused stress on the availability of fodder in the area. This led to closure of a large private forest in the adjoining village, which further reduced the availability of grazing land for *Gayaries*. This has caused occasional violation of community regulations by sending animals for grazing in the closed area. The frequency of such violations has risen considerably in last two years causing serious damages to young growing plants. *Gayaries* have often demanded that at least one of the closures should be opened for grazing. Nevertheless, the rest of the community members feel that once an area is opened for grazing it would become an open access resource and would get completely degraded in no time.

In addition to mobilisation efforts, a lot of non-forestry activities were taken up in this village, to motivate the people to continuously protect the area and follow community regulations. The variety of village development activities taken up in Salukheda included drinking water and irrigation facilities, a floor mill, improvement of school building and a road etc. These general activities also helped this community, to some extent, to come to a common platform. Nevertheless, the *Gayaries* had a feeling that most of such activities had been taken up in the areas resided by *Rajput* community. Keeping this in view, the activities taken up in the last two years of the project were taken up in the areas that would provide greater benefits to *Gayari* community. Still *Gayaries* feel that there basic interests of grazing are not being served and they feel disgruntled with community regulations. Even among the *Gayaries*, nearly half of their population, does not own livestock in large quantity and therefore, the basic objection remains to part of the *Gayari* community. This has also weakened the case of *Gayaries* in general.

The village has power dominance primarily by *Rajput* community mainly due to their social status. All the VFPMC chairmen have so far been from this community. Even during the change of chairman, recently a conflict emerged for showing the supremacy. The violations of community regulations were purposely instigated by the previous chairman to show the

ineffectiveness of the control by the current chairman. As a follow up, more members of the community indulged in violations. However, the conflict was resolved through the involvement of Forest Department staff and through sensitisation of the community.

Malpur

Malpur is located nearly 62 Km from Udaipur and about 10 Km from Jhadol town. Malpur village population belongs to three distinct groups similar to Salukheda. Nevertheless, the population of *Gayaries* is relatively small in this village. Moreover the *Gayaries* have some common lands available in the vicinity so the problem of grazing is not severe for them. The distribution of land holding is a little more skewed in Malpur compared to Salukheda. More than half of the *Rajput* and *Gayari* residents and about 20% of the tribals possess more than 1 ha of land and in general they have greater influence on the decision making process.

The forest regeneration works taken up in Malpur are in a continuous series with that of Salukheda and fall in the same forest block. About 50 ha area was taken up for regeneration every year for four years since 1993. Initially the VFPMC was formed by the participation of tribal population only as the first site was close to their habitation. They were the immediate beneficiaries from this closure. However, gradually, *Rajputs* and *Gayaries* also joined and almost the whole forest area available in the village has been covered under regeneration program.

The grass distribution is based on the principle of equitable opportunities. Grass is harvested after the community decision to allow grass extraction sometime in October-November every year. Each member has to pay a seasonal fee of Rs. 5-10 and is entitled to collect as much as grass as can be collected. The people from neighbouring villages such as Chandwas and Gayarikheda, who do not have any alternative forest area, are also allowed to collect grass from these forests on payment of fee, although the people from these villages are not the members of VFPMC. The residents of Malpur consciously did this so that the people of these neighbouring villages do not indulge in illicit removal of products from their area.

Since the VFPMC started with initial involvement of tribal population, they have been the active participants in the decision making process in the beginning, although relatively well off people from among the tribals were dominating the process. Prior to the start of functioning of VFPMC, some form of community development organisation existed in this village that focused on tribals. This also helped the tribal community to learn about the functioning of community institution. As the area to be regenerated expanded in the later years, *Rajputs* and *Gayaries* also got involved, particularly because the areas adjoining to their habitation was also covered. The decision making process has then become more broad-based.

During the last two years, a latent conflict emerged in this village between tribal residents and *Rajputs.* Owing to paucity of rains and decline in availability of fodder and fuel, gradually some tribal people from within the village started grazing their animals. In the process, some young plants were also damaged. When these sporadic incidents became almost a regular feature, the people from *Rajput* community also started entering their cattle in the plantations. When the efforts to resolve this conflict were made by the Forest Department staff, the people from one

caste group alleged the others. The conflict could ultimately be resolved only after a long pursuance.

Since initially only tribal people became the members of the VFPMC, the initial contribution to community funds and grass collection fees etc. were collected from the tribals. When later other communities had also joined the VFPMC, the question of use of community funds emerged. This also led to a conflict between *Rajputs* and the tribals. Ultimately after a long pursuance by the Forest Department staff, it was resolved to postpone the use of community fund but with the understanding that initial activities from these funds would be focused on the tribals. Such incidents indicate the immaturity and vulnerability of the community institution.

Palyakheda

This village is located at about 47 Km from Udaipur towards Jhadol but about 5 Km before Jhadol town. The village has a population of about 85 households all of which belong to a tribal community. The land holding variation is also not high and almost all the villagers have some amount of land. More than 50% of the population has an average land holding of about 0.5 ha. There are only about 10% people that possess land holdings more than 1 ha, but they form generally the influential group of people.

The village has a forest area of about 511 ha, of which nearly 300 ha has been taken up for regeneration since 1996 with about 50 ha area every year. The rest of the area, being slightly interior, still possesses a good density of forest. The regeneration work has considerably improved the availability of grass from the area besides other forest products.

The villagers have completely banned green harvesting from the area and harvesting of grass is allowed only after a community decision when the grass has dried. A fee of Rs. 5-10 is charged for one season from the members willing to collect grass from the area. Once a member takes a permit, he/she is allowed to cut and carry as much grass as can be collected by them through out the season. The people even from the neighbouring villages such as Selana, Bida and Jotana are also allowed to collect grass if they are willing to pay the fee. The villagers of Palyakheda have done this so that the people from neighbouring villages do not indulge in illicit cutting or removal of grass. There is no forest area that has been left closed in these villages, even though regeneration works have been taken earlier. Therefore, the grass availability from the areas within their villages is very low.

The village habitation is on both sides of the road. A part of the population resides in close proximity to the forest while the population residing on the other side of the road remains slightly away from the forest. When harvesting is done, the proximate population has an advantage of getting the produce with much less time and labour input.

Although the decision making process is open but there is a strong involvement of Forest Department staff. On one occasion, in October, 2000 some of the residents of proximate group started removing the grass even before the community decision was taken about its removal. When the members from non-proximate groups noticed this, they decided to burn the whole such grass collected illegitimately. The non-proximate group had a feeling that the members from the

proximate groups are even otherwise are able to get greater advantage. Despite this their tendency for such illegitimate removal of forest products was intolerable. Surprisingly, even the chairman of the VFPMC was involved in this illegitimate activity. The matter was resolved through the intervention of Forest Department staff after which the violators were fined equal to the value of the grass. The people even fined the chairman and other members and they were given warning for stricter action in future if such violations were noticed. Nevertheless, such incidents indicate that the community institution has not yet become self-reliant and remains vulnerable to small deviations in the behaviour of community members.

Bada Bhilwara

Bada Bhilwara is a hamlet of village Bichhiwada located nearly 80 Km south of Udaipur city and nearly 27 Km away from Jhadol town. Bada Bhilwara VFPMC is functioning since 1994 when it started regeneration program in 50 ha of the local forest area with the assistance of an Udaipur-based NGO, Seva Mandir. The forest regeneration works with closing the area for grazing and supplementing it with artificial regeneration measures were taken up in the forests of Bichhiwada block from 1994 to 1999. In each of the year about 50 ha area was covered. Thus, the VFPMC has an area of regenerating forests of 300 ha besides nearly 300 ha of forest area that is kept open for grazing.

The population of Bada Bhilwara is 854, which is scattered around these forests in 6 sub-hamlets. Besides, the main Bichhiwada village having a population of about 2000 is also dependent on the same forest area. The habitation of Bichhiwada is slightly away from the forests while the residents of Bada Bhilwara are in close proximity of the forests, although some hamlets such as *Bida* and *Panidari* are relatively closer to productive and regenerating forests. All the residents of Bada Bhilwara belong to a local tribe while the residents of Bichhiwada are all from non-tribal communities. Almost all the residents of Bada Bhilwara are the members of VFPMC while only about 100 households have become the members of VFPMC from Bichhiwada, most of whom also do not take active part in the affairs of the VFPMC.

The residents of Bada Bhilwara primarily depend on agriculture and livestock rearing and almost all the residents have some piece of land. The variation in the size of land holding is low and only about 10% of people have a land holding more than a hectare. The residents of Bada Bhilwara have high dependence on forests. There is a high variation in enterprises in multi-caste community of Bichhiwada that include jobs outside the village, local artisanship and shop-keeping etc. *Dangi* is an agricultural community in Bichhiwada, which is relatively well off compared to that of tribal residents of Bada Bhilwara.

Since the start of an effort by Seva Mandir, the NGO that is involved in activating the VFPMC, the fodder distribution was regulated by charging a fee of Rs. 5-10 per season although this system mainly operated in three of the plantations. Rest of the plantations have become open access areas due to damage by people from within the village and the neighbouring villages. These plantations are located on one side of the village and most of the village population is not able to keep watch on them. They were closer to neighbouring villages such as Shyampura and Tunder, who had shortage of fodder resources in their own villages. The agency involved in

raising these plantations was also different, and the differences in the level of involvement of the forestry staff also influenced the interest of the villagers in these plantations.

However, for three of the plantations, every year when the grass has dried in October-November, the VFPMC will jointly decide to allow grass harvesting. The Bada Bhilwara VFPMC does not restrict it only to the residents of Bada Bhilwara or Bichhiwada, but people from nearby tribal villages such as Tunder, Shyampura etc. are also allowed to collect grass if they are willing to pay the fee. This decision has been taken so that people from these villages do not indulge in illicit removal as there is scarcity of grass in the local areas of these villages and that people from these villages have been collecting grass or grazing in the forest areas of Bichhiwada block before the start of closures. The villagers are aware that if they do not allow the people from these neighbouring villages, there will be more resistance, violations and conflicts. The local people are also aware that people from far off areas such as neighbouring villages can only take a small quantity and with a less frequency.

The abidance by community members of Bada Bhilwara to agreed regulations is generally satisfactory. Nevertheless there are occasional violations by the local as well as outside residents. The villagers feel that the proximate groups, particularly the residents of *Bida* and *Panidari* hamlets, are able to receive greater advantages because of less labour and time required to collect the products. They also occasionally remove products in the darkness of night when others cannot notice them.

The neighbouring villages also often violate the regulations and involvement of local residents in protecting the resources from such illicit removal is sometimes not effective. On one occasion, a person from higher caste noticed and tried to prevent a tribal woman from illicitly cutting wood. However, the person was abused by the tribal women, resulting in inter-caste conflict in the village. Such conflicts have also weakened the strength of the collective action, though this conflict was resolved with the involvement of NGO representatives.

In general, the strength of collective action has been on the decline in last 2-3 years. This period has been relatively dry because of scanty rainfall in these years. This caused low production of grasses in the area. Owing to declining availability of grasses outside the closed areas, the people decided to open one of the closed areas for grazing for large ruminants, but they wanted to keep the small ruminants out to avoid browsing of new sprouts. Nevertheless, people particularly from proximate groups started violating the regulations by even taking the small ruminants inside the area. This led the rest of the people also to violate the regulation causing considerable damage to the resource. This was stopped only after the interference and sensitisation by the NGO and the forestry staff. This indicates the community dependence on outsiders and the lack of self-reliance for collective management of resources.

Heterogeneity in case study villages

The case study villages provide a spectrum of variability in heterogeneity. The different sources of heterogeneity are mapped in Table 2. In two of the villages i.e. Eklingpura and Gorela, it was a multi-caste community having considerable variation in living pattern and dependence on the

resource. For dairy enterprising people, the availability of fodder was crucial and the economic gains to them were multi-fold. The people from tribal communities, who were largely involved in free grazing of their cattle earlier, shifted to cut and carry system. The variation in wealth distribution in these two villages was high. Similarly this variation was high among the residents of Salukhera and Malpur. But in Salukhera generally the better off families belonged to *Rajput* community while in Malpur some of the tribal families were also wealthy. Thus, in Malpur the decisions were almost equally influenced by *Rajput* as well as the tribal communities.

The power dominance of some of the sections in these villages also formed an important source of variation. *Rajputs* in Salukhera and Malpur for example constituted socially respected castes and often dominated in the decision making process. Because of this the members of *Gayari* community could not influence the whole village to open up the regenerating plantation area for grazing in Salukhera.

Thus, in four of the villages, Eklingpura, Gorela, Salukhera and Malpur, the heterogeneity is mainly due to the variability in ethnic composition, economic dependence on forest products, power inequalities owing to social structure & wealth distribution etc. All these villages also had a community for whom grazer or livestock rearing was their main occupation and therefore the fodder needs of these sections was higher. Grazing by livestock in the forests has been one of the main reasons of degradation and therefore grazing by animals has to be restricted in the areas taken up for regeneration. These variations also caused differences in resource use patterns.

In two of the villages Palyakheda and Bada Bhilwara, despite the ethnic homogeneity, similarity in economic dependence and resource use patterns, the variation in benefit distribution resulted from proximity of some of the population. At the same time lack of sensitivity of the entire population also resulted in occasional efforts by some of the segments to break the regulations and attempt to derive greater benefits. This was indicative of lack of maturity in these community institutions. Even the dependence on implementing agencies for resolving issues emerging at the community level was higher in these case study villages. The variation in wealth distribution was not as skewed as in case of the other four villages but still about 10-20% of the population in these villages had land holdings more than 1 ha while the average holding size in these villages was about 0.5 ha. These well off people had relatively greater influence on the decision making process.

Equity in case study villages

Because of proximity of urban markets for two of the villages i.e. Eklingpura and Gorela, the fodder had considerable economic importance. For the families involved in dairy enterprise, the increase in availability of fodder had contributed significantly in the economic gains of these communities. Nevertheless, even though the relative economic gains to tribal communities were not as much, the gains to them improved from the sale of grass. Despite considerable variation in the occupations of the residents and therefore in the relative importance of fodder, perfect systems of equal distribution developed in these villages. This was probably forced by heterogeneity in the villages that such perfect systems were desirable for sustaining collective action.

In Malpur, since the members of the tribal community were involved first in the formation of community institution, they were gainers right from the beginning. The other factions of the community got gradually involved and shared the benefits. The system of equitable opportunities to all the members amounted to provide greater benefit to those who could provide the labour input and involved in sale of the produce to the other potential buyers. A significant portion of *Rajput* community did not involve in grass harvesting but bought it from the tribal members of the community. Thus, the tribal people could gain greater share in the economic gains from the resource. The people from even the neighbouring villages were allowed, even though they were not the members of the community institution, primarily because they did not have any alternative land available from where they could meet their needs.

In Salukheda, principally equitable opportunities were available to all the members for cutting and carrying the grass after community decision and all the sections took advantage of this. The people from neighbouring villages were generally not allowed to cut and carry the grass. Therefore they bought the grass from local residents. The members of some of the *Rajput* families did not go for grass cutting because of their social status but purchased the grass from others. The members from tribal communities generally involved in this sale and thus were significant gainers from the regulations. The members of *Rajput* and *Gayari* communities involved in harvesting of grass for meeting their own needs.

In Palyakheda, even with equitable opportunities, all the members took advantage of this and probably derived almost the equal benefit. Although the groups living close to the forest areas required much less labour and time to meet their needs compared to the residents living slightly far off. Except the better off people, most of the people, particularly the poorer ones, often involved in sale of grass to the neighbouring villages or in the township of Jhadol. The people from neighbouring villages were also allowed to cut and carry the grass on payment of seasonal grazing fee. This was done in order to prevent them from indulging in illicit removal.

In Bada Bhilwara, the system of grass distribution was also based on equitable opportunities. Nevertheless, the tendency of proximate groups to take greater advantage, even violating the decided regulations, has been repeatedly noticed. The pressure of unregulated removal by neighbouring villagers in at least part of the areas has also disrupted the systems of equitable distribution. The local VFPMC members feel that fruits of their efforts in developing and implementing regulations have not fully accrued to them. This has resulted in reduction in the attention of the VFPMC on limiting the area of regenerated forests over which regulations need to be imposed.

Thus in two of the villages, Eklingpura and Gorela, the system of strict equal distribution of product was enforced, even though economic gains from this system were higher to those members who could gain further value addition by using the produce in milk production. In rest of the four villages, the systems were based on equitable opportunities, but the gains differed to different factions. In Salukheda and Malpur, the tribal members could get greater benefits, because they could provide the labour for extraction of the available produce. While in Palyakheda and Bada Bhilwara the proximate groups could harness higher benefits, even though sometimes this involved violations of community regulations. In all these four villages

neighbouring villagers having no other alternative were allowed to share in the resource. This was also because there was in general more than adequate grass for meeting the local needs and commonly the local people involved in selling grass to residents from other villages. This also created an economic stake among the people involved in selling and supplementing their income.

Contradictions and compromises

From the analysis of case study villages, it becomes evident that heterogeneity of appropriators causes many contradictions in collective action. The success of collective management of resources depends on compromises made by communities in the process of working out a negotiated agreement of resource use and benefit sharing.

Economic interest of the communities involved in dairy enterprise in Eklingpura and Gorela was to maximise the availability of fodder for the milch cattle. This could become possible only by closing the potential forest area for grazing, particularly when the degradation of the area has already resulted in decline in productivity of grass and other products. Nevertheless, tribal communities in these villages by and large did not involve in commercial dairying. Their traditional practice was to do free grazing of their cattle in forest areas. Closure of the forest areas for grazing had implications on changing their living pattern besides higher opportunity cost of the time incurred in cutting and carrying grass. This inherent contradiction could be resolved by providing equal share to these communities in the produce. Such produce could be then sold to members of the communities from within the village and in neighbouring areas that require grass for their dairy cattle. Similarly the members of the *Gujjar* community from these villages, who were traditional grazers, have adopted to stall feeding for dairy enterprise. The proximity of urban market and their greater exposure has led them to adopt the newer practices.

In Salukhera and Malpur, the tribal communities similarly involved in harvest and sale of grass within the village and in the neighbouring villages. In both these villages, the system of distribution was such that every member in the community could go and bring as much grass as possible in every season after grass cutting was opened through community decision. The well off members of the *Rajput* community in these villages did not go for cutting and carrying the grass but they used to buy grass from other members of the community. This provided an incentive to the tribal members to cut and carry grass and earn income through sale of this. Thus, this provided a sense of mutual compromise in closing the area. Nevertheless, the third community in both these villages viz. *Gayaries* being traditionally grazers, did not feel happy with this solution.

In Malpur, since *Gayaries* formed only a relatively small faction and since other community lands were available for open grazing, they abided by community regulation of cutting and carrying the grass. However, in Salukheda this is becoming the cause of persistent conflict within the community. Because of occasional violations by the members of *Gayari* community for grazing their cattle, the other members particularly from tribal communities also tend to follow the suit. One of the compromise solution proposed by *Gayari* community is that a part of the whole area should be earmarked for them in which they should be free to graze their animals.

Nevertheless, perceiving the threat of the whole area becoming an open access resource and consequent degradation, no compromise solution has been reached as yet.

The power inequalities are also the cause of contradictions in Salukheda and Malpur. The *Rajput* members are generally better off and have socially a greater voice and influence. *Gayaries* fall in the middle and tribal communities form the lowest strata in these villages. *Gayaries* being a relative minority in Malpur and owing to the factors explained above have adjusted to the community decisions. Nevertheless, *Gayaries* in Salukheda raise their voice regularly. The repeated efforts to convince them about the need for regulated extraction and rationality of closure of areas for grazing have not been successful. Besides, because of the unavailability of alternative lands for open grazing, the *Gayaries* feel their voice has often been suppressed in the decision making process.

Even though unequal power and social structure provide greater voice to better off communities in Eklingpura and Gorela, the dominant factions have kept the interests of the dominated factions. The system of equal distribution perfected in these villages have therefore sustained over years. The conflicts arose during the process in the last decade or so have also been resolved due to maturity of the group and the benevolent leadership.

Proximate population is generally expected to keep a closure vigil over the area being protected by any community, because they could easily notice the offenders. Nevertheless, in Palyakheda and Bada Bhilwara, the proximate groups have themselves involved in occasional violations of community regulations, primarily because the distant groups may not be able to spot them. This appears due to lack of sensitisation of community members and the consideration of immediate gains rather than long-term sustenance of the resource. Such violating incidents were controlled by punitive measures by the community in Palyakheda, but in Bada Bhilwara there have been repeated incidents despite several efforts to sensitise the community members. The paucity of rains and unavailability of grass in last three years have also triggered these incidents.

Factors contributing to the success

Economic gains from the regulated resource management act as one of the most important factors contributing to the success of collective action. However, the share from these gains should be distributed among all the members of the community in a manner that all feel benefited compared to the previous situation. Hackett (1992) discussed the outcome of the CPR governance in heterogeneous communities. He suggested that to provide share in the gains from successful CPR governance to all the appropriators, relatively large appropriation rights might be accorded to those who make relatively large non-cooperative appropriations. Even if this may result into relatively inequitable distribution of benefits, this is likely to involve all the appropriators for sustaining collective management, at least in the beginning.

In Eklingpura and Gorela, economic gains to all the factions have been helpful in involving all the members. In Salukheda, the economic gains to the members of the *Gayari* community do not appear to have increased from the regulated resource use because of their peculiar living pattern. This community being primarily a grazing community and often possessing a relatively large

population of small ruminants, require grazing lands for their sustenance. Since almost all the area available for grazing had been closed (including the lands from neighbouring villages, particularly from the last year), they are finding it hard to sustain their animal population. Even though the influential leadership in the village made an effort to involve all the members in the decision making process, the concern of the *Gayari* community could not be addressed which is causing a persistent conflict.

Effective leadership contribute to the successful functioning of community institutions, however, the individual members as well as the leaders should remain accountable to the whole community (Sarin, 1996). In homogenous environment, commonality of interest among users and internal cohesion helps in the functioning of community institutions (Arnold, 1998). Nevertheless, it has been suggested that heterogeneity can encourage the emergence of leadership and cooperation to help in effective functioning of institutions (Ostrom, 1990). This is more likely when there is high economic stake or other strong interests of the members. This is evident in Eklingpura and Gorela villages that a strong leadership emerged to mobilize collective action. The development of effective leadership has not become so apparent in the other case study villages.

The functioning of community institutions matures with experience, although conflicts are often inevitable in the process. There is an incremental learning in the process and each successful resolution of conflicts builds greater confidence of the community (Jain and Jain, 1998). Though once a system of working is established, the prevailing inequalities may persist such as widespread exclusion of marginalized groups (Sarin, 1996; Hobley, 1996). The institutional maturity is high in Eklingpura and Gorela while in the other villages this has not occurred because of several factors including dependence on the agency staff and the lack of efforts made for promoting self-reliance in the institutional functioning.

It is needless to emphasise that the level of awareness and concern for converting the open access to a common property is the most crucial aspect for sustaining collective action. The people should feel convinced about the need for rational and regulated extraction and management in a manner that resource regeneration process is not adversely affected. They should be able to realise that such a practice would be advantageous to all in the long run, rather than allowing unregulated extraction in which there may be more advantage to a few in the short run. This would require a regular process of extension and sensitisation of community members, along with the support from the agency staff. The lack of awareness and concern among all the factions and members is quite apparent in at least four of case study villages in this study.

The lesson that can be learnt here is that the implementation process should be such that it does not create dependence on the agency staff and communities gradually become self-reliant. Contrary to this, the general practice of implementation being followed in this region has created a sense of investment dependence (Jain and Jain, 2001). It is generally observed that people tend to cooperate and take interest in collective management as long as regeneration investment is being made by the implementing agencies and even the agency staff maintains greater contacts with communities only during this period (Jain and Jain, 2001). This practice can be reversed by rewarding the positive action by communities. This can be achieved by following a process

approach in which each incremental investment is made dependent on the performance of the community as described elaborately in Jain (1998).

One of the most critical factors that significantly contributes to the successful functioning of community institutions is evolution of norms or procedures, whether formal or informal, acceptable to majority of the members (Sarin, 1996). Ostrom et al. (1994) suggests that for effective implementation, the participants must develop an understanding of the rules and learn how to make them work. This knowledge is part of the social capital that develops over time. The formation of social capital is more crucial in heterogeneous communities to effectively implement the commonly agreed norms and procedures and build trust among the members. This is also because a group that learns to cooperate effectively together in one type of tasks can learn to take similar other tasks with much less time and effort (Ostrom, 1994).

In recent years there has been a growing recognition of the role of social capital formation in effectiveness of community institutions (Kahkonen, 1999). Nevertheless, the process of formation of social capital takes much longer but the same can be destroyed quickly if not used (Ostrom, 1994). There are several instances in which inappropriately designed policies and practices without having adequate considerations for existing social networks and the norms, have actually destroyed the much needed social capital (Putnam, 1993; 1995). A recent study of the functioning of community institutions in this region has established that the invest-driven process in which community commitment is not ensured has actually acted against the formation of social capital while the efforts made for fostering social capital through sensitisation efforts and rewarding community commitment have actually been helpful in enhancing social capital (Jain and Jain, 2001).

Conclusions

In the present case study villages, most of the above factors have contributed to the success of community institutions though with a varying degree. In Eklingpura and Gorela, formation of social capital, emergence of effective leadership, better enforcement of equal distribution of benefits and rise in economic gains to all the factions of the community have contributed to the success. The awareness and concern for sustainable resource management was high in these villages because of severe degradation of the resources in the past and sensitisation and follow up efforts by the agency staff and the local leadership. Moreover the economic gains from the rational resource management or the regulated resource use were considerable owing to the proximity of urban markets.

The other four case study villages indicate that the presence of the factors contributing to the success varied to great degree. There is a need for increasing the efforts for enhancing the level of awareness and concern among community members through sensitisation and promoting leadership through making them more self-reliant in the decision making process. Where some factions are feeling disadvantaged, the efforts would be required to provide alternatives to them. This would apply particularly on *Gayari* community in Salukheda.

It also becomes apparent from the examples of Eklingpura and Gorela that if economic stakes are higher and people become sensitive enough for the common good, heterogeneity of the appropriators may not hinder the process of rational collective action. It rather appears that heterogeneity forces people to develop elaborate systems of equity to ensure all the factions remain interested in cooperation. However, it is apparent that this becomes possible only when the other factors discussed above remain favourable, which appear like a prerequisite of success. It also appears that with appropriate efforts for sensitisation and promotion of self-reliance or in other words social capital, the systems of equitable opportunities could be adequate in sustaining collective action. This not only provides freedom to those who have labour and time (generally the poorer sections) to take advantage of the situation but also creates an economic stake among them.

Heterogeneity undoubtedly creates a situation in which sustaining collective action is more difficult. Nevertheless, it becomes an inevitable situation wherever it exists. It is more important to find the common factors that motivate people to cooperate and strengthen the capacity of the community institution for collective action. The system of benefit distribution remains one of the important factors but the level of equity necessary to sustain the interests of a community varies. Higher the economic stake of the population, higher would be precision required in developing the systems of equitable distribution. Otherwise the system of providing equitable opportunities could be considered adequate in which may be that some sections are able to take more advantage compared to the others.

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Table-1 Basic information about the villages selected for the study

Details	Name of the village					
	Palyakheda	Bada Bhilwara	Salukheda	Malpur	Eklingpura	Gorela
Social Profile						
Population	545	854	624	615	1132	1650
No. of Families	82	172	123	129	217	230
a. Scheduled caste	0	6	38	58	11	0
b. Scheduled tribe	82	161	60	45	41	76
c. Others	0	5	25	26	165	154
Live Stock Statistics						
Cows, Oxen, Buffaloes	766	560	588	621	1341	1300
Sheep & Goat	892	496	609	799	196	3004
Others	27	0	2	2	120	57
Total (Live Stock)	1685	1056	1189	1422	1657	4361
Livestock density per ha	2.47	0.84	1.74	2.79	1.92	2.55
Land Statistics						
Agriculture land						
a)Irrigated land	16	14	10	16	174	138
b)Unirrigated land	65	349	121	52	314	284
Pasture land	9.8	47	0	101	0	33
Forest land	511	712	337	218	272	1186
Other land	81	139.29	87	122	103	69
Total land (in ha)	682.8	1261.29	685	509	863	1710
Forest land per capita	0.94	0.83	0.54	0.35	0.24	0.72
Area reforested (ha)						
1993	0	0	50	50	100 (1988)	100(1980)
1994	0	0	50	50	100(1989)	100(1985)
1995	0	100	50	50	50 (1990)	100(1987)
1996	50	100	50	50	0	100(1991)
1997	30+NF	0	0+NF	20	0	50(1992)
1998	50+NF	50	0+NF	0	0	0
1999	50+NF	50	0+NF	0	0	0
2000	50+NF	0	0+NF	0	0	0
2001	WD	0	0	0	0	0

NF = Non-forestry village development activities; WD = Watershed development activities
Note: For Eklingpura and Gorela villages the year of reforestation is given in parentheses

Table 2. Sources of heterogeneity in case study villages

Sources / Villages	Caste/ethnic groups	Variability in wealth distribution	Variation in proximity	Variation in economic dependence	Power dominance
Eklingpura	7	High	Low	High	Skewed
Gorela	3	High	Low	High	Skewed
Salukheda	3	Moderate	Low	Diverse	Skewed
Malpur	3	Moderate	Low	Diverse	Slightly skewed
Palyakheda	1	Low	Moderate	Low	Less skewed
Bada Bhilwara	1	Low	Moderate	Low	Less skewed

Table 3. Parameters relating to equity issues in case study villages

Sources / Villages	Degree of strict regulations	Enforcement of regulations	Benefit distribution	Participation in decision making	Impact of power dominance
Eklingpura	High	High	Equal	Equitable	Low
Gorela	High	High	Equal	Equitable	Low
Salukheda	Low	Moderate	Equal opportunities	Dominated	Skewed
Malpur	Moderate	Moderate	Equal opportunities (neighbours allowed)	Equitable	Slightly skewed
Palyakheda	Relatively high	Good	Equal opportunities (neighbours allowed)	Equitable	Less skewed
Bada Bhilwara	Moderate	Moderate	Equal opportunities (neighbours allowed)	Equitable	Less skewed