

Providing incentives for sustainability: rationality beyond economic considerations

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Abstract

For achieving sustainability through collective management of forest and other natural resources, the incentives should be attractive enough that communities feel motivated to regulate the use of resources. When people have rights over the resources, they can derive benefits from products flowing from the resources. If benefits are not significant, additional incentives can be provided to communities through development investments. With this consideration, many government and non-government agencies, implementing the participatory resource management programmes, emphasize on providing additional incentives in various forms to local communities. This paper examines the effectiveness of such provision of incentives in motivating local communities for sustainable management of resources.

The analysis is based on some case studies from Rajasthan, where different forms of additional incentives have been provided by implementing agencies, in addition to the benefits flowing from the resources managed. This revealed that it is not merely the economic incentives, which always motivate communities. Rather it is the emotional attachment of people and feeling of belongingness to resources, which drive people's action, specially if they are sensitised around this issue. The rights, benefits, additional incentives in terms of development investments and emotional attachment make a combination which needs to be considered in totality. This implies that even if the potential benefits from collective protection and regulation are significant, unless the community members become emotionally sensitised and take over the responsibility, sustainable forest management may not be achieved. However, generally this understanding is hardly applied in the programmes being implemented, and as a result sustainable collective action is often not achieved despite several efforts and considerable investments. Based on this analysis, this paper outlines key considerations of a strategy for achieving sustainable collective action.

Key words: *Sustainability, incentives, collective action, emotional attachment.*

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INTRODUCTION

The efforts for promoting collective management of resources through community participation are initiated to prevent further degradation of resources and revive potential productivity. When the resources are degraded their productivity is also very low and there may be very limited product flow from such resources. Furthermore, the revival process requires restricting the extraction, resulting in reduced or non-availability of products from such resources. It has been realised that in such circumstances, it is very difficult to motivate people for the protection of the forests without giving them any economic benefits (Ali et al., 2007).

A major reason for the high failure rate of community-based forestry projects is considered as weak economic incentives for local users and other stakeholders to participate in sustainable forest management (Richards et al., 2003). Therefore, it is a major challenge for the implementing agencies to design project interventions and policies that improve these incentives. However, it has been argued that there is a poor understanding of decision making criteria and incentives, and economics can provide more information on winners and losers, and help identify the interventions and policies needed to convert losers into winners (Richards et al., 2003).

When resources are degraded and productivity has not revived, some alternative incentives could still trigger the interest of communities in rational management. Benefits should be perceived to be more than costs. The responsibilities of regulating access, protecting resources from illicit use, and controlling extraction involve some costs. Communities could take measures for improving production. Some of the costs are direct, such as time and labor invested in protection, cultural operations, regeneration measures etc. Others may be indirect costs, such as the immediate benefits forgone by not extracting the resources due to community regulation. All these costs need to be considered in economic analysis (Adhikari, 2002). Communities should follow collective regulation in making a relative judgment of benefits and costs, even if it is on a notional basis.

Thus, the need for providing economic incentives for seeking local participation in sustainable forest management (SFM) is widely recognised (Yamamoto, 2000, Richards, 2003, Matta et al., 2005, Kameshwari, 2005, Kumar, 2007, Rijal, 2009). However, it is very difficult to predict the outcomes even if similar efforts of promoting participatory forest management are implemented and the experience indicates wide variation in the outcomes (Bhattacharya et al., 2010). Thus, even if the similar incentives are provided to different communities, the results may differ widely.

Besides, economics there are several other factors that may be crucial. Traditional knowledge that incorporates social, economical and ecological values can be helpful in conserving and sustainably managing forest resources (Rijal, 2009). Similarly, social capital is crucial in facilitating collective action and community forest management (Sangita, 2009). Besides the role of government agencies in building community capacity is also considered crucial (Cavaye, 2000).

NEED FOR INCENTIVES

The need for providing additional incentives to communities becomes especially important in the following circumstances. Generally these circumstances are present in combination. Before attempting to develop an appropriate strategy, the local circumstances should be discussed with community members to help them realize the value of incentives.

Immediate loss

Regulating use or restricting access to degraded resources reduces the immediate availability of products. Although this is intended to gradually increase the availability of products, communities remain concerned with the immediate availability of products to people.

Poverty-led pressure

When the over-exploitation of resources is due to poverty of people it becomes important to provide alternative income generating opportunities before people can be effectively persuaded to initiate regulated resource use. Dependence of local people has been growing on forest resources and with the rising needs and penetration of market-oriented economies in rural areas, common property resources became a source of earning livelihood for many rural communities.

Disproportionate impact on marginal sections

Because of socio-economic disparities, particularly in heterogeneous communities, marginal sections are generally disproportionately affected by community regulations. These sections have higher dependence on common property resources for meeting their subsistence needs or supplementing their incomes.

Invisibility of benefits

When local dependence is low and degradation is not severe enough to affect the availability of products for local needs, communities may not feel the need for preventing further degradation through regulated resource use. This is often due to the fact that communities do not perceive the value of direct and indirect benefits from resources to be significant. The additional incentives could be used to make the benefits from collective action become more visible to generate the interest of communities in regulating resource use.

FORMS OF INCENTIVES

The incentives can be provided in various forms. The commonly used strategies are as follows.

Measures for improving forest production

In the degraded areas, the regeneration process could be hastened and productivity could be improved by taking certain measures such as soil and water conservation, artificial seeding and planting. Since by recognition of community rights the benefits from increased production are going to be available to communities, these measures should be considered as a form of incentive rather than a regular activity of forestry

departments. Such incentives should be obviously linked to performance of communities.

Employment opportunities

A variety of development activities in rural areas could provide wage employment to local people in the lean season. This would motivate people to stay away from indulging in over-exploitation of resources just for supplementing their income. However, such development activities should be widely available and designed to coincide with lean seasons.

Means to increase agricultural production

In areas where irrigation facilities are not adequate, developing irrigation resources could help boosting agricultural production. In hilly areas soil and water conservation measures could be helpful in improving groundwater recharge, prevent erosion, and ultimately help in augmenting agricultural production.

Entrepreneurial training and capacity building

Rural communities traditionally have a limited involvement in marketing and other enterprises for which they could sell goods and services in the urban market. Consequently, rural people generally lack appropriate skills and aptitude for a variety of business enterprises. These may be activities based on the local forest or agricultural products or outside raw material. Providing training and marketing support may be helpful in building entrepreneurial capacity.

Credit facilities

Lack of easy availability of financial resources on appropriate terms is one of the most crucial limitations for many rural communities. This limits the ability of local people from engaging in incoming generating enterprises. Well-designed community-run micro-credit programs can get started with seed money along with training and capacity building. However, rather than providing entire resource or seed money at one time, it should be spread over a few years and it should be linked with continued performance of communities.

Social services

Health centres; periodic visits or availability of doctors or nurses; supply of medicines; provision of schools, teachers and other study materials; drinking water or sanitation facilities; and such other activities provide social benefits rather than direct economic benefits. Similarly, if the development of infrastructure facilities is the priority of communities, it may be taken as an incentive in return for community commitment to manage resources rationally. However, the critical consideration would be to make rational use of available financial resources.

THE STUDY AREA

The study area has 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 sub-tropical dry deciduous forests having a relatively low productivity. 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.

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 for forest management and development activities and other supporting rural development activities, primarily to provide incentives to local communities. 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 two decades. 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.

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 which have been by and large successful in developing elaborate systems of regulating product extraction and benefit distribution, at least in the beginning. This has been taken as an indicator of sustainable forest management (SFM), if the regulations have been quite effectively implemented.

ECONOMIC ANALYSIS OF BENEFITS AND COSTS

Because of dry deciduous nature, in this region, the productivity of forests is quite low. There are hardly any timber species that grow in enough quantity to be considered of any significant value particularly in the short term. There are a number of tree and shrub species that have the potential of providing non-timber products but their survival and growth depend on the local site conditions. Many of these species take a long time in establishment and therefore, the return in the short term may be generally low, unless such trees and shrubs are present before the regeneration efforts are started. However, fodder grass is one of the products that become available to people right from the beginning of closure of an area for regeneration purpose.

Owing to high livestock density in the region, the fodder availability is of vital importance to local communities in the region. 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.

Among the benefits, there could be some indirect benefits like recharging of water table and increased water availability in the local wells or the water storage structures. However, this is not considered to be significant among the perceived benefits by most of the communities. In some villages some non-forestry activities have also been provided as additional incentives. But if there is no perceived economic benefit from such activities at present they may not be considered in the economic analysis.

Thus, in the economic analysis benefits from the products and activities have been considered only if the benefits are being received in the present times or if are likely to be obtained in near future, like for example from harvesting of produce in coming few years. Moreover, these should be perceived as benefits by local people.

Benefits thus expected should be perceived to be more than the costs. The responsibilities of regulating access, protecting resources from illicit use, and controlling extraction involve some costs. Communities could take measures for improving production. Some of the costs are direct, such as time and labor invested in protection, cultural operations, regeneration measures etc. Others may be indirect or opportunity costs, such as the immediate benefits forgone by not extracting the resources due to community regulation. All these costs need to be considered in economic analysis (Adhikari, 2002).

Communities are expected to follow collective regulation by making a relative judgment of benefits and costs, even if it is on a notional basis. According to economic analysis, if the benefits are more than the costs, this should motivate the communities to decide and implement the collective regulations to manage the resources in sustainable manner. On the contrary, if the costs are higher than the benefits, communities may not remain interested in forming and implementing collective regulations. Even if additional incentives are provided in terms of development activities their effect may not last for long enough, if the product flow does not provide sustainable benefits which should be perceived to be more than the costs. Therefore, additional incentives may remain effective only if they lead to providing time in which the product flow improves. This paper analyses the effectiveness of providing additional incentives in developing a system of sustainable forest management.

SELECTION OF VILLAGES

For the detailed analysis, 6 villages were selected in which the JFM activities had been started at least a decade before and a formal institution of village forest protection and management committee (VFPMC) had been formed. The care was

taken in selecting such villages which had initiated a good protection activities in the beginning even if it was with the help of forestry staff or the staff paid by government funding as a support and incentive for strengthening village institution. The benefits were perceived to be more than the costs to communities in all the villages and grazing and unregulated extraction of grass and other products had also been stopped in these villages in the beginning. Incentives had been provided in these villages in various forms.

The main incentive provided was investment for reforestation and regeneration of forest areas in the vicinity of villages. This included building of protection fences, planting forest species and activities to enhance soil and moisture conservation in the site. This led to enhancement of grass production from these areas and these could be cut and carried by the villagers, as the grazing was completely prohibited from such areas. Most of the villages developed elaborate system of equitable distribution of grass, particularly if the availability of grass was less than the total demand in the village. In some villages additional incentives were provided in terms of rural development investments or support for initiating income generating activities to motivate them for adopting collective regulations.

The primary aim of selecting such villages was to see if the effect of incentives provided in the beginning remains effective in the long run as indicated from the collective regulations being followed for sustainable forest management.

The study of selected villages revealed that there is a wide variation in the level of product availability and the collective regulations being followed. In some villages grazing is not being controlled and therefore no grass is produced for cutting and carrying. While in many of the villages grazing is still prohibited and people enforce a cut and carry system every year. Grass is the main product and in a very few villages some other non-timber forest products are available which are collected by people. The continuation of effective protection of forest areas against uncontrolled grazing and unregulated extraction is taken as an indicator of sustainable forest management (SFM). The level of regulations varied in the study villages.

Thus, based on the provision of additional incentives and the level of sustainable forest management, the study villages could be grouped into four categories (Fig. 1). The case study villages have been selected in which different level of collective regulations are prevalent and different types of incentives have been provided.

First, two villages, viz. Eklingpura and Gorela have been selected in which no additional incentives have been provided except initial support for reforestation in the forest areas which is expected to be protected and regulated by the village communities. One of these villages, Eklingpura, is still having effective community regulations, while in the other (Gorela) regulations are not being abided by the community, indicating thereby unsustainable use of resources. Then four villages have been selected in which additional incentives have been provided. Out of these four, in two villages (Salukheda and Palyakheda), community regulations became effective as a result of providing additional incentives, while in the other two (Kirat and Ghodimari) the additional incentives did not lead to effective community regulations. This type of purposive sampling has been used to understand the various factors influencing the outcomes.

	Additional incentives	No additional incentives
Regulated sustainable management	Salukheda Palyakheda	Eklingpura
Unregulated unsustainable extraction	Kirat Ghodimari	Gorela

Fig. 1. Examples illustrating impact of additional incentives on sustainable forest management

DETAILED CASE STUDY OF VILLAGES

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 tibrals 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 employing a community paid watchmen throughout the year.

The community has perfected a system of equitable 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, sell the grass of their share in the local or the urban market. In last more than two decades, there have hardly been any major violations. On some occasional violations, the people were warned not to repeat the offense or were fined if the offense was little serious.

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. In the neighbouring areas, it is popular that the area protected by Eklingpura VFPMC, cannot be used by people from any other villages. The local villagers of this village have strong emotional attachment with their forests and as such the village forest area is being maintained sustainably.

There are more than 200 households in the village. The period of grass collection lasts on an average (depending on variation in rainfall) for about a month and each household is able to get about 15 quintals of grass. At an average price of Rs. 4-5 per kg, each household is able to get the grass worth Rs. 7,500 annually. The cost to each individual household is only Rs. 100-200 per year. Thus, benefits received far out way the costs. Besides, people attach a considerable value to sustenance of forests.

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 450 ha which had been severely degraded before the regeneration efforts initiated by the Forest Department in 1980. Since then a total of about 450 ha of forests have been taken up for regeneration. This is one of the villages, where protection activities were started earliest among all the neighbouring villages, indicating strong emotional attachment to their forests. 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.

Since beginning, every year community members started the grass harvesting only after the decision by the VFPMC. Each member had to pay a fee of Rs. 15 for obtaining a permit for that season. The quantity of grass that could be brought by each individual after obtaining this permit was also regulated. Each person was allowed to bring 30 Kg of grass on each day. The grass bundle was weighed at the exit point and if there was an extra grass, this was pooled in community account. Thus, an exact and equal quantity was 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, this 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 used to penalize 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.

However, this system has broken since 2004 and now there is almost no regulation. The whole area is used for grazing during the rainy season periodically by local community members. Some left over grass in the interiors is collected by community members but any one from the community can go and collect now. In 2004, the village leader, who used to be chairperson of the VFPMC had died and after this there were conflicts of leadership in the village. The new chairperson elected could not resolve this conflict and the abidance of formerly established community regulations could not be ensured. At the same time the Forest Department staff, who was very effective in keeping good communication, organise periodic meetings, mediate small conflicts was also transferred and owing to staff shortage, he was not replaced with some capable staff.

The land prices have risen sharply. The agricultural community having large holdings have now much less interest in community lands and they meet their grass and fodder needs from their own private sources or by purchasing from outside. The members of the tribal community are often engaged in daily wage labour in the city and pay much less attention to local community affairs.

Although even now the people from outside the village are not allowed to graze or collect the grasses, indicating a sense of emotional attachment, the system for the local village has become almost unregulated and unsustainable. The grass productivity is on the decline and shrubs of *Lantana camera* (an obnoxious weed and an invasive species) are fast intruding the forest area. When the system was regulated, the benefits from grass were much higher than the costs, particularly due higher prices of grass in the vicinity of city. However, it seems that the system of collective regulations is now not working primarily due to lack of leadership and sensitisation of community members.

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. At this time, a considerable proportion of forest area was voluntarily evacuated by members of some *Rajput* community. 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 emotional attachment and 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 but there was no restriction on the quantity of grass to be harvested by the members.

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 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. During the years the paucity of rains, this 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 caused occasional violation of community regulations by sending animals for grazing in the closed area. The frequency of such violations had risen considerably gradually 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 expressed their emotions and concerns that once an area is opened for grazing it would become an open access resource and would get completely degraded in no time.

At this stage, a lot of non-forestry activities were taken up in this village, to provide additional incentives and to motivate the people to continuously protect the area and follow community regulations. *Gayaries* also 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 were taken up in the areas that would provide greater benefits to *Gayari* community. This has motivated many of the members of this community to extend greater cooperation in enforcing community regulations. Still *Gayaries* felt that their basic interests of grazing were 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.

Even then after a few years, looking at the persistent demand from *Gayaries*, and owing to increasing number of violations from this community, one of the plantations was opened for grazing. This is now open for nearly last one decade, and even a lot of trees have been pruned, grazed or damaged. But this has reduced the grazing pressure from other 3 plantations. Grass is regularly harvested every year from these 3 plantations after October-November, like in previous years and trees are being protected. Thus the forest is being maintained sustainably at least in these three plantations.

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, 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.

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. The local people have developed a strong feeling of emotional attachment with their forests. They have also used a practice of *Kesar chanta*, in which they sprinkle saffron impregnated water around the forest area to restrict any green harvesting. This is a religious belief abided by all the community members. Among all the neighbouring villages, this is the only village having abundant availability of grasses now and well protected forests. A fee of Rs. 5-10 is charged for one season from the members willing to collect grass from the area. Once a permit is taken by a member, he/she is allowed to cut and carry as much grass as can be collected by them during the season. The people even from the neighboring villages such as Selana, Bida and Jotana are also allowed to collect grass if they are willing to pay the fee. This has been done by the villagers of Palyakheda so that the people from neighboring villages do not indulge in illicit cutting or removal of grass. There is no forest area that has remained continuously 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 labor 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 this was noticed by the members from non-proximate groups, 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 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.

During the same year, some illicit users from farther villages tried to remove bamboo particularly during the night. Some of the villagers, who noticed them, asked other villagers to carry out organised patrolling during the night to catch the culprits. However, only a few villagers cooperated a few times and then it became difficult to organise patrolling. The incidents of occasional illicit removal of bamboos continued for some time. The Forest Department staff also failed to mobilise community members for this purpose. At this stage, the villagers were offered watershed development activities in the form of additional incentives to strengthen the community institution, but only when villagers cooperate to control the illicit removal of products.

Since the watershed development activities would have provided them considerable labour employment and other village development activities, this motivated the villagers to cooperate. As a result of this motivation, some of the villagers mobilised the rest of villagers and jointly spied against the culprits through periodic rotational duties. Ultimately the culprits were caught and even their links were traced to a farther town where they used to sell the illicitly removed bamboos. With this information, the Forest Department officials raided and caught the buyers of this illicit product.

After this, watershed development activities were started in 2001 and continued upto 2004. During this period stray incidents of illicit removal of products were noticed but were easily controlled through community cooperation. As a result, the resources are being maintained sustainably through regulated use.

Kirat

This village is located at about 62 km away from Udaipur and about 10 km beyond Jhadol town. This village is entirely habituated by tribal community. The VFPMC is functioning since 1987 when first reforestation activity was taken up. But this was not well protected, and as a result the area degraded again. The village had a forest area of about 450 ha which was mostly hilly and the village agricultural lands were situated in relatively plain lands in the shape of a valley surrounded by hills. To motivate the villagers for protecting the whole forest area of the village, an incentive programme of watershed development was taken up since 2000. This included provision for reforestation in about 100 ha, soil and moisture conservation works on forest and agricultural lands and some other activities of village development. The village had a population of nearly 100 households and these activities were included to get the enough product flow so that it becomes beneficial for the villagers to protect and regulate the use of the area.

Several meetings were held for sensitising the villagers particularly to explain them that this incentive programme is for motivating them. They were also explained the value of collective action and regulated use of forest area to get maximum production from the area and benefit from it. People generally understood the importance of collectively protecting the area and regulating the product extraction. However, there was a conflict within the community, as some of the well off people did not abide by the community regulations and continued to graze in the forest area.

These people were even not allowing the other villagers in some part of the forest area, in which they used to graze their livestock. They did not even participate in the meetings.

When a new reforestation effort was started in about 100 ha area, it was hoped that at least this area will be protected. But very soon after closing the area and even before planting, the grazing was started by some of the members. The meeting of villagers was again organised to discuss the issue and explain them that whole of this reforestation effort will go waste if the grazing was not stopped. On this some of the villagers took responsibility of keeping watch and ward and control the grazing. But one day when grazing cattle were taken out, one of the sick cattle died. The owner of the cattle filed complaint in the police. The Forest Department staff intervened got the post mortem of animal done, which revealed that the animal had eaten some polythene and sharp needle etc, which caused internal injury resulting in death. However, despite this the conflict could not be resolved and some members continued to graze the area.

The Forest Department staff tried to control the grazing by patrolling themselves in the area and did reforestation work. However, the efforts did not succeed, as people tried to put cattle inside when the staff is not present. Soon it became evident that the efforts are not likely to succeed. However, there was no option of withdrawing the sanctioned incentive project of watershed development, as this was part of targets to be achieved. Moreover, some part funds had already been spent and accountability systems were such that unused part funds are considered a liability of officials. Therefore, soil and moisture conservation activities were carried out as per original plans and even some school development activity was taken up. The community members were explained again and even the Forest Department staff support was provided in patrolling but even the recently reforested could not be protected. Some of the community members promised to cooperate on repeated sensitisation but all the community members did not abide. Slowly the whole area became an open access area and degraded almost completely.

Ghodi Mari

Ghodi Mari is situated at about 75 Km from Udaipur. The village has only tribal habitation of about 75 households. In one of the earliest effort, reforestation activity was taken up in this village in 1998 in about 50 ha forest land, but the area was protected through a paid watchmen. The community involvement was minimal as before this a formal village forest protection and management committee (VFPMC) was not constituted. At this stage, an incentive strategy was developed to motivate the villagers to form a VFPMC and take over the responsibility of protecting and regulating the use of forest area. The plan included a fresh reforestation of 50 ha of forest land in the vicinity of village and carrying out an activity of village development as demanded by the villagers after assessing their priority needs.

Before deciding to reforest the 50 ha area, a village meeting was held to discuss the strategy. The area was chosen based on the suggestion of majority of the villagers and they also promised to help in evacuating the small encroachment from this area

done by a few villagers. As a felt need, villagers proposed to develop a lift irrigation system by constructing a new well and installing a pump and water supply pipe line system to carry water to the agricultural fields. Both these activities were sanctioned and the activities were started early in 2001. A formal VFPMC was also registered and involved in carrying out various activities. Periodic meetings were held and people were sensitised to maintain collective regulations.

Initially the activities began almost as planned but the original encroachers of the land started creating problems by occasionally grazing the area and trying to restore their encroachments. It was initially resisted by a few people and with the support of Forest Department, prevented them to disturb the area. But the encroachers continued to disturb the area and they even uprooted the seedlings planted from their encroached area. This was repeated even after replanting the area and the efforts of village members also did not yield satisfactory results as nobody wanted to have permanent enmity with the encroachers, as they were known for their notoriety and nuisance.

At this stage a serious effort was made by the Forest Department to sensitise the VFPMC members again, however, the village committee could not initiate any strong measures against violators. The Forest Department officials had almost no choice but to complete the promised activities of developing lift irrigation system and accomplish the maintenance of reforested area in the best possible manners, even using the departmental patrolling of the area. Since not all the villagers could have received irrigation water from the lift irrigation system, they also objected and showed less interest in cooperating in collective action. They also included encroachers, who continued to damage the area even during the nights. Since the villagers could not unite against them, no serious action could be taken. Following this other local members also gradually started sending their cattle inside and the area degraded just in few years. Recently even more people have encroached the area and established their hutments in the hope of getting it regularised.

ANALYSIS OF CASES AND IMPLICATIONS

The analysis of above sample cases indicated that sustainable forest management practices through community regulations are effectively practised once the villagers realise that there is a considerable benefit from such a management. This may not require any additional incentives, as commonly believed, if the local leadership is effective and people are sensitised like in Eklingpura. However, if the local leadership is not effective and people tend to defect over small matters and selfish gains, like in Gorela village, collective regulations would not remain effective. This is so even when, implementing collective regulations can be beneficial for all the members and community had experienced this for a reasonably long period. This calls for a role in promoting effective leadership and support for sensitising community members on a continuous basis, as the problems often crop up intermittently and even if once established the system cannot be assumed to be effective in the long run.

The provision of additional incentives can be helpful only if delivered in a needful manner and after ensuring adequate community commitment. The process of providing additional incentives has to be clearly linked with the objective of strengthening the abundance of collective regulations. This has to be accompanied by an appropriate strategy of sensitising people. This is reflected both in Salukheda and Palyakheda, where a basic feeling and experience of reasonably implementing collective regulations existed for a reasonably period. The villagers were more interested in regulations till the initial incentives were available almost continuously in the form of wage labour. Once the availability of wage labour declined, people became less interested. When some additional activities were initiated in both these villages it helped in motivating the villagers again. It was also important that the delivery of additional incentives was accompanied by intensive sensitisation efforts.

The experience of other two villages viz. Kirat and Ghodimari reveals that even the additional incentives could not motivate the whole community to act collectively. Personal interest of some of the members led to non-cooperation with community decisions. Even the other community members could not persuade the defecting members. Since the programme being implemented is guided by schemes and targets, which are once assigned could not be withdrawn or postponed. This made the villagers to realise that the programme will be implemented any way, whether they act collectively or not.

It is noteworthy that the provision of additional incentives would not be effective unless linked with performance. There should be a possibility of withdrawal of incentives, if the community commitment is not seen towards implementing collective regulations. The incentives would be effective only when they are delivered in a way that these are perceived as rewards rather than as subsidy. Based on the observations and analysis of these cases, some suggestions are provided here to improve the effectiveness of incentive measures.

Improving the effectiveness of incentive measures

- The rewards should benefit the whole community rather than just a few individuals. When all the members have equitable rights and benefits, the peer group pressure becomes effective in persuading all the members to follow community regulations.
- As long as the interest of other members of a community is not affected, granting rights or providing specific incentives to the specific members having special needs or dependence may be desirable to motivate them not to indulge in excessive exploitation. This could otherwise become destructive for the whole resource and in turn affect the interests of the whole community. For example, in Salukheda, opening of one of the plantation for grazing, looking at the needs of Gayari community, proved helpful in protecting rest of the resources.
- Incentives would be more effective if the development intervention fulfils the needs felt by communities rather than being decided by the outsiders. Subsidy addiction and adoption of supply driven programs followed by different agencies in the same area may not get the desired results unless all the area agencies adopt a joint or similar approach. The contribution could be

in various forms such as cash or kind. Communities take initiative for those activities which they feel most advantageous to them, often even without state intervention or assistance.

- Participation of all the members of communities is obviously desirable in this process of deciding the felt needs so that what comes out reflects the feelings of community as a whole rather than only a segment of influential people. When communities have freedom to decide, such incentive measures are more relevant in the local socio-cultural context.
- Nevertheless, most development programs often include a list of activities that could be carried out to motivate communities. This may not reflect the true felt needs and priorities of local communities. In conventional target-driven functioning the felt needs of communities cannot be predicted, therefore requiring that neither the rural activities are planned nor the financial targets should be fixed in advance. The procedure will require considerable changes in the systems of allocating financial and physical targets of activities and altering the system of monitoring and approval of intended activities.
- If there are no violations of agreed principles, communities deserve more rewards compared to those in which community regulations are not effectively implemented. This will motivate them to become more effective and exert social pressure on the violators. Linking some type of incentives with performance is often difficult. For example, development of school building, health centre, and irrigation dam could not be split over many years. However, option of taking activities one by one over years may be more effective than taking all the activities together in the beginning.
- The provision of any rewards or reduction in rewards and punishment should preferably be applied on the community institution. The community institution, in turn, should be authorized to distribute benefits or collect penalties from its members. This will strengthen the community institution and social pressure on the members to abide by community regulations.
- The most critical consideration in implementing a development strategy should be to judge when an incentive could be perceived as a subsidy rather than a reward. Thus, even a justified subsidy becomes more effective when it is perceived as earned rather than merely given. A clear understanding among development practitioners about what characterizes subsidy and a reward will be helpful.

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