

Enhancing ecosystem services of commons by participatory conservation & development approach

**Archana Godbole & Jayant Sarnaik
Applied Environmental Research Foundation,
Pune, India**

Introduction

India is well known for its diverse cultures and traditions. Nature worship has been an important aspect of cultural practices in different regions in India. Bonds between the communities, local people and village governance system were close knit in the past. Management of local resources as common property resources by the communities has helped sustainable resource conservation in the past. Commons are looked at in a broader perspective; that commons are designated areas responsible for providing some direct benefits to community irrespective of the ownership.

Such commons existed in the form of community forests, grazing areas, water resources like wells and tanks, hunting areas and sacred groves. Community owned forests are prevalent in Himalayan region; wells and tanks owned and managed by community are common in Rajasthan, Gujarat and many parts of south India. Upper casts and Maharajas owned hunting grounds, though local people used to share benefits of hunting in many ways. Such hunting grounds were common in north India. Many of such areas are vanished/ degraded or included in the protected area network of the country. Common grazing areas and sacred groves are seen all over the country except in some parts of Northeast India. All these categories of common lands contributed to enhance ecosystem services for long time. The ecosystems functions of commons include biodiversity conservation, collective and sustainable resource management, habitat for wildlife and birds etc.

Since last two decades commons and their management structures are changing in various parts of India. Modernisation; loss in faith and culture resulted into deterioration of traditional resource management systems of the past. Most of the common grazing grounds have suffered the encroachments and are put at other uses than grazing for village cattle. Management of traditional water resources also slipped from community's hands and resulted into water scarcity even in the villages, which had abundant water during severe droughts in the past. Sacred groves based on social; and cultural norms within the village governance system are also degrading ; but are comparatively better preserved than other commons.

Detailed account of sacred groves, their present status, role and contribution in enhancing ecosystem services is discussed in this communication. Applied Environmental Research Foundation (AERF) has been engaged in participatory conservation of sacred groves in western coastal districts of Ratnagiri & Sindhudurg in Maharashtra (India) for last eight years. Attempt has been made to understand the nature of ecosystem services sacred groves provide today and role of these commons as well as their management to make the stronger conservation appeal. Details of the area of work and results are provided in **Annex I**.

Sacred groves tradition & management as commons

Sacred groves are traditional institutions responsible for conservation of culture and valuable biodiversity at regional as well as local level. Sacred groves are complicated resource structures and management and ownership patterns are different in various regions of world as well as in India. These institutions thrived very well through out the world by wisdom of local communities. These institutions are however facing many threats in today's urbanisation and modernisation era. Though the norms for management of resources of sacred groves and sanction systems were well defined; since last two decades the status of sacred groves in various parts of India is changing very fast and biodiversity maintained in them for hundreds of years is decreasing.

Communities managed sacred groves in the past. There were rules and regulations for the use of sacred groves for various purposes. The communities followed these well-defined rules as part of oral history. There was a taboo on cutting any standing tree from the sacred groves but it was allowed to take dry or dead fallen wood, to use flowers for worshipping the sacred grove deity and collect certain NTFPs especially medicinal plants. Due to strong sanctions and community's watch there were hardly any incidences of breaking the rules in the past. Many legends of powers of the gods and their capacities to punish the offenders are still well known. However pressures of development and advent of modern education have changed the belief system and culture to a very large extent. Ownership patterns and conflict of interests between the Govt. institutions further helped to change the traditional sacred groves management system.

In western coastal district of Ratnagiri, each village has or had at least one sacred grove. They are known as **Devrahati** means the abode of god. Most of the villages form this area are managing their sacred groves as common property resources irrespective of ownership with state machinery. Decisions like cutting trees for renovation of temple, building new temples etc. are taken collectively. Villagers are using sacred groves for their monthly meetings, for festivals and fairs of the deity and for taking important decisions like time of sowing and planting rice in the monsoon. Many a times; discussions about the new approaches and offers for village development often take place in sacred grove temple. Sacred grove deity is respected and **Kaul** i.e. taking permission of the

deity for any new work for village or individuals is still common. However there is no provision for protection of sacred grove vegetation in this system. Communities managing these groves are homogenous farmers communities with cast system prevalent in the village in the past.

The ownership of the sacred grove land is with Revenue Dept. of the state and district Collector is the authority to take any decision for its management. However these small forest patches are not contributing to responsible for any revenue generation due to its religious importance, taboos and cultural significance. The standing vegetation and its protection has been a duty of state Forest dept. in many areas. Again due to small size and discontinuous patchy distribution it is not possible for the forest dept. to take any action for protection of sacred groves. Consequently, these groves cannot also be incorporated into larger protected area network of the country.

Both the Govt. institutions (State Revenue & Forest Dept.) legally responsible for protection and management are ignorant about the existence of these groves. Therefore the protection and management of these groves is fully dependent on the local people and their perspective to look at sacred groves today. Similarly there are many changes in the management framework of these commons over the period of time, which are directly affecting the ecosystem functions of the sacred groves.

These changes include

1. Use of sacred grove for village decision-making has reduced to few meetings in a month.
2. Maintenance of the temple has gained importance over the protection of of vegetation and water resources in the grove.
3. Grazing is a common activity allowed in many groves, which was a taboo earlier.
4. There is no manpower available in the villages to look after such institutions due to migrations of younger generation to the urban areas.

Our intervention has proved that these changes in management pattern could be improved by conscious awareness generation and developing action plan for better participatory conservation of these traditional commons with religious importance.

Ecosystem services provided by Sacred groves

The institution of sacred groves has drawn attention of the environmentalists due to their value as repositories of trees and other plant species otherwise becoming rare in the surroundings. Since last three decades, conservation scientists and researchers have realised value of these traditional forests managed and protected by local communities. In India extensive research has been carried out to know the role of sacred groves in conservation of biodiversity relating to mainly higher plant diversity. These studies were especially focused on

availability of rare, endangered and endemic plants from the sacred groves. Such research and documentation is no doubt valuable to know the existing biodiversity structure of sacred groves but it never provides any clue to achieve their conservation. Many of these groves are under serious threats due to ongoing developmental processes and acculturation. These groves are in various stages of degradation and there is an urgent need to restore them to make their various ecosystem services functional on sustainable basis. These groves though smaller in size ranging from 0.5 to 15 ha in the project area perform many crucial ecosystem functions. Precise role of sacred groves in such services is provided below.

• **Biodiversity conservation**

Many of the groves from the project area harbour large number of plant species clearly indicating the diversity maintained in them. The plants seen in the groves were once common in the area, and now disappeared from the non-sacred grove lands. These groves harbour various tree species like *Sapindous laurifolia*, *Strerospermum sps*, *Firmiana colerata*, *Strychnos nuxvomica*, *Saraka asocka*, *Semicarpus anacardium*, *Pterocarpus santalinus* and *Antiaris toxicaria*, many epiphytes like *Biophytum sensitivum*, *Remusatia vivipera* lianas like *Gnetum ula*, *Calycopteris floribunda* and *Dalbergia sympathetica* with many herbs and grasses. Epiphytic orchids like *Acamphe Dendrobium sps* and *Malaxis sps* are seen on the large tree trunks in these groves. *Dentrophoe falcata* a parasitic plant is common in most of the sacred groves. These groves also have ferns like *Adiantum*, *Cheilanthus albomarinatum* *Drynaria quercifolia* and *Athyrium hohenackerium* and bryophytes like *Riccia sps* and *Marchantia sps*. (Kulkarni 1983).

Such an ecosystem with various life forms is not prevalent in all the sacred groves but could be observed in certain well-protected sacred groves like Marleshwar, Phansavale and Devade sacred groves in our project area. It is important to know why certain groves are in better condition though the processes operating for modernisation and urbanisation are similar in the project area. Main reasons include the distance of the sacred grove from the village, terrain of the sacred grove, various legends regarding the sacred groves protecting deity and its religious importance and fame.

From such diverse plant forms present in the groves it can be easily concluded that these are the relict forest patches representing the rich vegetation from the surrounding area in the past. This observations are further proved with the presence of certain Majestic specimens like *Antiaris toxicaria* with GBH up to 5 m Devade and Kundi sacred groves, large specimens of *Ficus benghalensis* and *Terminalia bellerica* trees up to 30m high with huge buttresses in Bellari, Vashi and Kulye sacred groves are representative examples of relict nature of these groves. These observations are based on survey of 287 sacred groves from the project area. Biodiversity conservation is therefore the most important ecosystem function of these groves.

Table I
Plant diversity from selected groves

	Vashi	Kundi	Kulye	Hativ	Bellari	Marleshwar	Vighravali	Karambele
Trees	19	33	48	26	20	33	34	20
Shrubs	13	23	18	12	15	19	10	8
Herbs	57	35	29	52	38	43	62	45
Vines	22	32	26	21	15	21	23	20
Ferns	10	9	5	8	4	9	3	4
TOTAL	121	132	126	119	92	125	132	97

• **Conservation of Rare/ endangered plants**

It is also observed during our research on sacred groves from the project area that these commons have preserved many rare and endangered plant species with many important medicinal plants among them. In Kurdhunda sacred grove which is about 2 ha, healthy populations of *Hydnocarpus pentandra* sps are seen. It is a rare and endemic medicinal plant. Populations of *Nothopodytes nimoniana* an endemic medicinal tree, in demand for its anti cancer properties are seen in many sacred groves. In Hative sacred groves healthy specimens of *Aporosa lindleyana* are seen in large numbers. It is also rare plant in the region. Other endemic and rare species like *Antiaris toxicaria*, *Sagerea laurifolia*, *Butea parviflora*, *Canarium strictum* and *Persia macarantha* are best preserved only through this traditional forest conservation system.

• **Habitat for birds and animals**

These well preserved or semi preserved habitats offer last refuge to the regional fauna. Birds like large pied Hornbill were once common in the project area, they are observed only in the sacred groves now. The large trees provide resting places to these magnificent birds, with abundant food in the form of various fruits. Number of large pied hornbills are seen in Kulye, Vashi and Marleshwar sacred groves. These birds are not commonly seen in the surroundings. Snakes of Marleshwar cave temple of lord Shiva and surrounding sacred grove of 22 ha on the hill is famous. Such small but rich forest patches are the last refuges for animals like barking dears, and in rare cases Leopards. The birds and animals play important role in dispersal of plants. Therefore it is important to consider this ecosystem function of the sacred groves in a serious manner.

• **Regeneration potential**

Natural regeneration of plants mainly tree species has become a difficult and rare phenomenon. Most of the land is degraded with soil hardened. Most of the non-agricultural area are devoid of any vegetation and are exposed to heavy

grazing. Such areas are devoid of any regenerating tree species. Diversity of grasses is also reducing due to heavy grazing in many parts of the project area. Such areas do not have enough soil moisture for germination of seeds fallen through dispersal. Where as in sacred groves the soil is not hardened, there is enough soil moisture for the germination and further establishment of the sapling. There are better chances of regeneration of tree species from the sacred groves. In some sacred groves like Kulye and Hative regenerating saplings of trees like *Aporosa lindleyana*, *Nothopodytis nimoniana*, and *Terminalia chebula* are seen in large numbers. In case many forest tree species it is difficult to raise the seedlings artificially in the nurseries. In such cases the regeneration potential of sacred groves could be used positively. These saplings from the grove could be collected at right time for plantations on other wastelands or for eco restoration of sacred groves using indigenous species.

• **Water resources conservation**

Many of the sacred groves in Ratnagiri district have water sources in the form of wells, tanks and streams within the groves or in the immediate surroundings. As stated earlier, there are taboos and sanction systems associated with management of sacred groves resources especially plant resources in the earlier days. But there was no restriction or taboo associated with use of water from the sacred grove.

Problem of water scarcity is acute in summer in this area and people are using water from the sacred groves for drinking and household purposes. Perennial stream of water in Ujgaon sacred grove and traditional wells in Katavali and Vigravali sacred groves provide drinking water to the village from March to May every year. These groves and their catchments are better preserved. However due to degradation of vegetation in Vighravali sacred grove the amount of water available is decreasing every year. Better-preserved sacred groves also contribute to ground water recharging and enhancing ground water level in the area. Similarly traditional water harvesting structures like wells and **Kunds**¹ in the sacred groves are not maintained and most of them need immediate attention and repairs. Such activities could be taken up as community work and will enhance the ecosystem services of the groves. Water resources within the groves also help to maintain the soil moisture.

To resolve this issue of water scarcity in a sustainable manner, it is necessary to rejuvenate these streams through eco-restoration of sacred groves which will in turn lead to improvement in the water availability. However there is need of awareness generation to develop the understanding of linkage of health of sacred groves and water resource within the same. Such awareness generation should follow the collective action for restoration of sacred groves and maintenance of traditional water harvesting systems within the sacred groves as well as sustainable water use mechanisms from the sacred grove water source. There is a

¹ Kunds are square shaped water-harvesting structures built by using stones. They have proper steps to collect water and spillways for releasing excess water.

lot of potential to make best use of this opportunity in participatory conservation of sacred groves and to link it to ongoing development programmes like watershed management .

Table II
Ecosystem services of Sacred Groves & Communities benefits

Ecosystem service	Benefits to community	
	Direct	Indirect
Biodiversity conservation	* Rare commodities like medicinal plants could be used for individuals *Addressing health issues	Valuable germplasm of important useful plants from the region is conserved
Habitat for birds & animals	-----	*Dispersal of particular seeds by birds useful for regeneration *Regional fauna protected.
Water resources conservation	*Water available to people * Soil & Moisture cons. *Improved water table	-----
Regeneration	-----	Potential of regeneration improved due to protection
Compensation for carbon emissions	Standing vegetation protection for compensating carbon emissions direct monetary gains for the village	Helping to compensate c effect of carbon emissions.

Participatory conservation of commons : challenges and efforts

In general the local people are unable to assign any direct benefits of Sacred Groves to the village or community. Temples in the sacred groves played important role in protection as well as in degradation of sacred groves. The firm belief system deteriorated and exploiting sacred groves resources has become a common practice. At the same time in some larger sacred groves with tremendous religious importance attached to the deity; taboos and sanctions are still well protected e g Marleshwar sacred grove. It is clear from our research and action research on sacred groves for last ten years that the role of sacred groves in the village resource management patterns has changed over time. Communities have been managing and protecting the sacred groves without any direct benefits even today. Most of the sacred groves in western coastal Maharashtra are facing challenges as

- ❖ Acculturation& loss of faith in traditions among younger generation, as a result of modern education system

- ❖ Except for some well-preserved sacred groves about 70 % of the sacred groves from the western coastal Maharashtra are under various threat and degrading at faster rates.
- ❖ Threats include developmental interventions like roads and dams, rehabilitation of oustees on sacred groves land, canal through sacred grove area, cutting the entire grove for social forestry plantations, illegal felling, encroachments for agriculture etc.
- ❖ Sacred groves conservation and few activities like plantations on the degrade areas of grove are not remunerative.
- ❖ Long-term intervention programme for participatory conservation framework is not available.
- ❖ Govt. machinery is not interested in and empowered to take sacred groves conservation seriously.

Considering these challenges it is still possible to plan and implement participatory conservation programmes in case of sacred groves. Our approach and successful interventions are discussed below with more possibilities of such programmes.

Enhancement of ecosystem services

Our approach to understand the institute of sacred groves and vital role it could play in resource conservation in today's context; was based on research and action research; to thoroughly examine the issues involved in their conservation, to understand the processes responsible for their degradation and possibilities of revival of these traditional institutions by involving community in their conservation and management.

With continuous rapport building, awareness generation, attempts to involve other organizations working in the region, an approach has been designed to involve local people in the sacred groves conservation (**Godbole et al 1998, 2002**).

Though our focused approach was on conservation of valuable biodiversity and forest ecosystem of the village, it revealed that to gain positive participation of communities for developing sustainable model of protection and management, it is necessary look at immediate benefits of groves to the community.

Sacred groves conservation initiatives

In late 1980s sacred grove research expanded and socio cultural aspects of this traditional institution were studied. It is clear from publications and research papers; that all the remaining sacred groves are under threat and in various stages of degradation. While reviewing all such literature for last 8 years and studying sacred groves from Northern Western Ghats of India we realized that there is an urgent need to initiate the process of eco restoration and participatory conservation of these repositories of valuable biodiversity. Eco restoration of sacred groves using activities like afforestation with fast growing indigenous and economically important species, Development of NTFP species within the sacred

groves, training local people for sustainable harvesting of NTFPs from the groves, providing market linkage support for products of plantations are some of the options. Such programmes and conscious implementation of the same will definitively help enhancing ecosystem services provided by these commons.

Box I provides a brief account of our work in Vashi sacred grove using eco restoration activities.

Box I

A small village Vashi in Ratnagiri district has a sacred grove of about 7 ha. It harbours many rare plants like *Antiaris toxicaria*, *Nothopodities nimiriana*, *Butea parviflora*, *Streospermeum* sps. etc. It also harbours many useful species like *Artocarpus heterophyllus*, Mango and Bamboo. Part of this sacred grove has been cut for rebuilding the temple. Similarly it was the only passage available for cattle to reach water source on the other side of the grove. about 1/3 of the area was degraded and open spaces devoid of any vegetation were prominent.

Through our intervention for four years in the village, we could organise people of the village in such a way that people formed their own initiative to protect the sacred grove.

Initially about 200 seedlings of various local indigenous species were planted on the degraded areas of the grove. Some economically important species like *Tectona grandis*, *Mangifera indica*, *Anacardium occidentale* and *Artocarpus heterophyllus* were also planted. Local people accepted the responsibility of protection of this plantation. It was a total failure due to cattle freely grazing in the grove. Next year villagers again repeated the plantation with AERF planned the protection activities before the plantation.

It involved construction of solid stone fence around the grove boundary and replanting the degraded open areas within the grove using indigenous species. Communities providing voluntary labour carried out these activities and our role was that of facilitation rather providing direct financial inputs to the activities. The villagers are also protecting Plantation and a benefit sharing mechanism for using the produce of the sacred grove resources in sustainable manner is also evolving.

Later Villagers also repaired the well in the sacred grove, which is now providing water to people in April and may. Success of our intervention was mainly due to

- ❖ Continuous awareness generation programmes in the village for three years before the activity
- ❖ Planning the plantation activity and selection of species by the community
- ❖ AERF as facilitating NGO does not have stake in future benefits
- ❖ Benefit sharing mechanism is planned as per the commons management rules and regulations of the village governance and resource use patterns.
- ❖ Approach has been developed through trial and error and evaluation of the mistakes.

Marleshwar : Management of grove for protection

Management of this sacred grove often is done with some local institution along with villagers. In case of sacred groves with well-known temples, the temple trust authorities are also involved. Development of tourism has recently initiated in the project area and local people are confused about its impact. However they understand the role of beautiful natural surroundings at certain sacred groves and its role in attracting tourists and pilgrims. Our intervention at Marleshwar

sacred grove provided an opportunity through the awareness generation and networking with temple trust authorities, which resulted in collaborative management to reduce the pressures on such commons. The modalities and impacts of intervention at Marleshwar are provided in box II .

Box II

Participatory management of Marleshwar sacred grove during annual fair

Marleshwar is a famous pilgrimage, with cave temple of Shiva. These caves are situated on the higher hill within the sacred grove covering an area of 22ha. During the annual fair in Jan thousands of pilgrims stay on the hillsides to worship. They use fuelwood and water from the grove. Pollution due to overuse of plastic and lack of pilgrims management they grove was continuously under threat. To serve these pilgrims shopkeepers erect temporary stalls for selling their goods. All these groups use fuelwood, wood and other resources from the grove. Lot of awareness generation among the tourists and pilgrims was the first priority when we initiated work in this village. There were already sanctions laid by temple trust and villagers restricting hunting, wood cutting and killing of snakes. However there was no management system during the fair, obviously no control on indiscriminate use of sacred grove resources.

Through understanding the problem in scientific manner, awareness generation and dialogue with villagers, tehsil administration, and temple trust authorities and (grampanchayat) the village governing body now developed into an initiative for better management of the sacred grove and surroundings during the annual fair. Important aspects of grove management by collaboration of Grampanchayat, Temple trust, and youth groups in the villages includes

- ❖ Collection and disposal of plastic waste by unemployed youth.
- ❖ Continuous awareness generation among pilgrims and tourists by posters , slogans , handbills.
- ❖ Arrangements for parking at the foothill to reduce pressure of vehicles and air pollution
- ❖ Provisions of clean drinking water to pilgrims
- ❖ Villagers donated their land for parking during the fair.
- ❖ Local politicians donated for amenities like cleaning and broadening the road up to cave temple and common toilets for pilgrims.
- ❖ Payment to the young volunteers through parking charges and Grampanchayat tax.
- ❖ Cleaning of water resources in and around the grove.

AERF as a research organization now has to continue there with some awareness generation activities till this initiative becomes part of the culture along with new understanding of sacred grove tradition.

Water resources improvement

It is very important to consider water resources management on priority basis for the intervention. It is easily acceptable to the communities as water scarcity is prominent feature of any resource depletion. Use of water resources improvement by linking sacred groves protection programme to ongoing watershed management programmes has been tried in Sindhudurg district successfully and being tried in Ratnagiri district in the project area. Such intervention is built on the understanding of the functions of water resources in the sacred groves and to make best use of it to get better participation of the communities. It is well known fact that recharging of ground water is dependent on the vegetative cover in the catchments. Plantations being carried out in routine watershed management programmes are often more water demanding in the initial years rather than immediately helping recharging. Therefore it is all the more important to incorporate sacred groves conservation programme for better health of the ground water and water resources in the watershed management programmes.

AERF has initiated such intervention in ten villages in the project area where community has planned activities like cleaning and repairs of water resources within the groves, laying pipelines for water supply from grove to village. It will reduce the interference in the grove.

Arboretum

Sacred groves could be developed into arboretum with standing indigenous trees with supplementary plantations of rare endangered and endemic plants of the region. Such development could provide income generation opportunities to the local people. The school dropouts and village youth could be trained to work as guides in such arboreta. Income through the visitor's fee etc could be shared between village managing the grove and managers of the arboretum. Sacred groves could also be developed into the regional eco information centre with interpretation centres. Such efforts need investments and private sector could be involved consciously.

Eco tourism & Pilgrimage

Ecotourism is also important option to make best use of sacred groves. Sacred groves could be used as environment education centres, nature trails etc. Some large sacred groves with famous temples could be developed into pilgrimages without disturbing the vegetation and sanctity of the surroundings. Ecotourism initiatives could create the possibilities of private sector participation in sacred groves conservation, it will help creating seasonal or permanent jobs at village level, it will be regular source of income to service providers like transporters and guides etc. from the villages.

Sustainable harvesting of NTFP

Traditionally in sacred groves collection of NTFPs was not allowed. These rules and regulations were diluted later and commodities like leaf litter, medicinal

plants etc are collected from the sacred groves from the project area. From the sacred groves from the project area collection of leaf litter through auctions is a regular practice. Similarly medicinal fruits of *Antiaris toxicaria* are collected from Devade sacred grove on large scale. Such possibilities of regularise collection of NTFP could provide income to the local people. Plantations of fast growing indigenous NTFP species could also get better response from the community. It is necessary to develop the sustainable harvesting methods and to develop rules and regulations for equal benefit sharing . Community should take the responsibility to avoid overexploitation and that of not disturbing the other non-NTFP vegetation of the grove.

Sacred groves as Carbon credits for the communities

In recent times , scientist all over the world are finding ways and means to deal with the problem of global climate change. They have realised that the rich tropical forests from the developing countries if protected properly could help balance the global climate as these absorb the green house gases like CO effectively.

Moreover , communities dependent on these forests for livelihoods need to be involved in this programme and need to be offered financial incentives for long term protection of these forests. Various mechanisms under Kyoto protocol are being used to make use of tropical forests for compensating carbon emissions.

Sacred groves with its complex ownership pattern and as an important ecosystem could be an ideal system for availing the carbon credits under the Clean Development mechanism of Kyoto protocol.

It will not only help compensate for carbon emissions of polluting industries but it will also offer direct monetary benefits to the communities for simply protecting these groves besides the other ecosystem benefits. Sacred groves should be considered for such a purpose because they could offer such a service for a longer term than any other forestry project. However lot of studies for potential of sacred groves as forests compensating carbon emissions is a prerequisite for such programme.

Table III

Participatory conservation activity	Benefits to community	Indicator of enhancement of ES
Plantation of indigenous species	Remuneration for plantation like labour work for land preparation etc.	Biodiversity of the region maintained
Plantation of Economically useful species	*Direct benefits of plantation activities * Products of the trees in future	People's interest in protection will increase.

Improving water resource within the grove	*Water availability *Water recharging	*Increased ground water level * Soil moisture increase
Ecotourism & pilgrimage development , nature walks Eco information centre etc.	*Income generation opportunities created *Infrastructure improvement *Awareness generation *Maintenance of the grove	People's interest in protection will increase
Arboretum & Museum development	*Income generation opportunities created *Knowledge about the resources increased. *Possibilities of new skills developed (trained guides /informants)	* Possibilities of protection for longer period created * Specific protection to rare and endangered species * Habitat for fauna and birds protected in turn their threats reduced at regional level.
Development for sustainable NTFP harvesting	*Availability of NTFP * Income generation * Capacity building	Best populations and regenerating populations of NTFP protected.

Need for awareness generation

Continuous awareness generation is basic need for success of any participatory conservation programme. It is necessary to develop the rapport and generate confidence among the local communities to look at opportunities through conservation. Later continuous interventions can develop urge to participate and understand the importance of the issues being dealt with for development and conservation of commons especially complex systems like sacred groves, and their linkage to better livelihoods and sustainable resource management. It is utmost important to maintain the enthusiasm through awareness generation activities. In fact it should become the integral part of ongoing activities for any participatory conservation and development project. Similarly many a times it is necessary to find innovative activities for awareness generation rather using the known forms like films, posters, slideshows. Such activities include folk art forms, religious songs, exposure visits and dissemination material in the local language.

Awareness generation for successful implementation of participatory conservation in many ways

1. It creates enthusiasm about the traditional & culture
2. It generates curiosity about the traditional resource management systems
3. It provides the knowledge about the environmental values of the resources
4. It provides a platform to discuss the issues and solutions
5. It helps to organise community for long term intervention
6. It provides basis for designing participatory monitoring and evaluation
7. It develops shared understanding among the people and facilitating agency.

Policies for better management of SGs as commons

Sacred groves cannot be dealt with as isolated entities. Strong policy support is necessary to bring in the effective development framework for better participation and sustainable resource use. It may not be possible now to give the total control of sacred groves to the communities, but certain policy issues will help to bring back the principals of commons management.

In northern Western Ghats following policy matters should be addressed.

1. Rigid framework for implementing participatory conservation programmes should be changes.
2. Conservation and protection of these commons should be linked to other resource development programmes.
3. Collaborative approach for conservation and development of the sacred groves must be encouraged to build strong institutional base for continuous protection and enhancement of valuable functions.
4. Management of the sacred groves should be handed over to communities to ensure the responsibility by the communities and development of equal benefit sharing mechanisms.
5. Policy at State and regional level should support need of awareness generation, local capacity building, training and coalitions approach among the organisations engaged in rural development is utmost important

Conclusion

Most of the conservation activities are indirectly beneficial to communities. They are very important from the regional environmental conservation perspective. However it is important to design participatory sacred groves conservation programmes to make the conservation beneficial to communities with precise immediate as well as long term benefits. Awareness generation about the value of sacred groves in today's context, possibilities of using them for sustainable use and direct benefits can definitely help to get better participation of the communities.

The management of these sacred landscapes was with communities in the past. These systems were respected and protected as common lands. Later due to acculturation, development urbanisation and migrations these systems deteriorated. There management system changed and due to Govt. ownership and interference communities lost their interest. The resource depletion and need for revival of culture made it possible to bring back the focus on such commons. Research on sacred groves during last three decades provided information about conservation status of these groves.

Making conservation of these commons remunerative it is necessary to use the sacred groves resources without cutting the standing vegetation. Participatory conservation activities of varied nature could help enhancing the ecosystem services provided by them and could benefit the communities if long-term interventions are planned and implemented carefully. Such programmes must be

designed after the careful need analysis and prioritising communities' needs while focusing on conservation. Awareness generation about the value of sacred groves in today's context and linking conservation and development are key factors for success of such programmes.

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References

Kulkarni B.G. 1983 : **Flora of Sindhudurg District** , Botanical Survey of India, Calcutta .

Archana Godbole, Aparna Watve, Swapna Prabhu and Jayant Sarnaik (1998) : **Role of Sacred Groves in Biodiversity Conservation With Local People's Participation : A Case Study From Ratnagiri District, Maharashtra**” in Conserving The Sacred For Biodiversity Management : (Ed.) P.S. Ramakrishnan, K.S. Saxena, U.M. Chandrashekhara ,UNESCO- OXFORD IBH.

Archana Godbole, Jayant Sarnaik & Umesh Mundlye 2002 : **People's Initiative for protection of Sacred Groves : Approach & Implementation** .Paper presented at 8th International Ethnobiology Congress Addis Abeba ,Sept. 2003.

Annex I

Project area and achievements through participatory sacred groves conservation programmes

AERF has been involved in participatory resource conservation work in Western Coastal Maharashtra in India. Two western coastal districts Ratnagiri & Sindhudurg have sacred groves in almost every village. This is hilly area except for a narrow coastal strip. Many of the sacred groves are situated along the slopes. This area receives high rainfall and has homogenous community structure. Local people own most of the land and only 2 –5 % of land is under control of Govt. Sacred groves are important common lands with complicated ownership patterns.

Our achievements through last eight years

- Awareness level among local people increased.
- Detailed database of more than 280 sacred groves with biodiversity within them and preservation status has been developed.
- Actual conservation programme initiated at three villages where the underlying problems for sacred groves conservation were varied.
- Sacred grove conservation has been incorporated into the wider development framework of Govt. programmes.
- Institutional set ups operating at village level and collaborative approach developed through the project have been appreciated in the project area and specific research work related to water resources conservation and forest protection issues are now considered by many developmental agencies operating in the project area.
- A new way of organizing people using participatory methodologies for conservation has been developed and tested successfully.
- Effective participatory analysis methods were developed to discuss and find out solutions to the issues related to developmental projects and preservation of sacred groves.
- Augmentation of sacred groves has become part of Social Forestry Directorate's integrated watershed development programmes in Sindhudurg district. This is a very important impact of AERF's continuous work as earlier sacred groves were cut a to establish the social forestry plantations.
- A model for participatory conservation has evolved and tested successfully. It could be easily replicable elsewhere for effective conservation action for sacred groves as well as other traditional resource conservation systems.