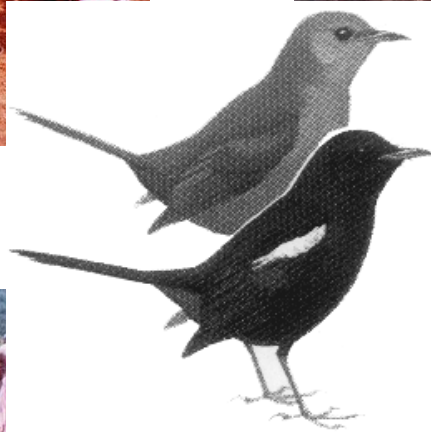
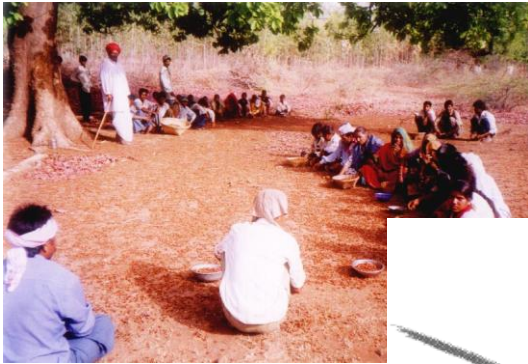


COMMUNITY CONSERVED BIO-DIVERSITY AREAS IN GUJARAT

(Sub-thematic review as part of the NBSAP – India)



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CONTENTS

<i>INTRODUCTION</i>	3
I. SACRED GROVES (NORTH GUJARAT)	4
Case studies	5
Summary of Sacred groves	12
II. GRASSLANDS	13
<i>Introduction</i>	13
Case Studies	16
III. MANGROVES	19
Case studies	19
IV. COMMUNITY AGRICULTURE	20
V. Community Fishing: <i>Matsya Gandha</i>	23
VI. COMMUNITY PARTICIPATION IN FOREST RESOURCE MANAGEMENT: THE JFM INITIATIVE	24
<i>Introduction</i>	24
Case Study	25
VII. COMMUNITY BASED WASTELAND MANAGEMENT.....	30
Case studies	30
VIII. COMMUNITY INTEREST IN ANIMAL FEEDING AND CARE TAKING	34
1. <i>Gaushalas</i>	34
Case studies	34
2. <i>Chabutara for feeding Birds</i>	35
IX. COMMUNITY CONSERVED SPECIAL SPECIES: <i>MAHUDA</i> TREE IN DHANDASAN.....	37
X. Community Conserved Area: Strategy For Action	37
SUMMARY	52
GLOSSARY.....	59

Community Conserved Areas in Gujarat

INTRODUCTION

It is a proven fact since time immemorial people managed their natural resources be it forest, wildlife, grass plots, livestock, wasteland, agriculture or fishing which are recognized as Community Conserved Areas (CCAs). These CCAs thereby have come to be recognized as traditional systems of management that preserved both people's indigenous knowledge and practices. The key objective of the resource management has had been to support their own livelihood systems, at individual, community and society levels. People also attempted to conserve, protect and develop the natural resources for ensuring continued availability to the posterity too.

This practice of natural resource management continues to exist in many parts of the country and abroad even in these days of modernization although it is more striking in rural and remote areas. Due credit therefore should be given to those indigenous systems of management which still survive supported by community efforts. This in spite of the temptations to "deplete" the natural resources in their vicinity. It is heartening to note that of late there is increasing recognition of such communities as formal institutions.

Unlike the current style of policing approach of administration, CCAs do strongly believe and practice the self imposed rules and structures within the framework of sustainability. At the same time development is changing their lifestyle, outlook, attitude and thus their traditional knowledge is undergoing change. Keeping pace with the change and yet conserving their system may help to keep the environment in balance.

The present study attempts to document CCA examples from different ecological regions and how the community has been struggling to conserve and protect their areas It also looks at how the changing scenario of administration, economic condition, competition for natural resources, and development, legal and political matters are regulating and influencing such efforts of CCA practices.

Gujarat is one such state blessed to have different kind of Community Conserved Areas (CCA) such as those from forests, agriculture, coastlands, grasslands and wastelands. The state is well known for people's participation in the management of natural resources in a sustainable way for long. The community managed grasslands in *Saurashtra*, *Banni* and other areas, the forests managed by the people before and after independence, and many individuals and communities' interest in sustaining eroding wildlife are evidences of the same. However, growth of industries, urbanisation and change in people's attitudes and lifestyle has led to hastening the process of degradation of the natural resources. Nevertheless, examples of community participation in natural resource conservation continue to exist. Strengthening/supporting such community efforts may bring a positive change for sustainable management of natural resources to meet the growing demands. Each category of CCA is explained below with some prominent/ representative case studies from different parts of the state.

I. SACRED GROVES (NORTH GUJARAT)

Introduction

The forest belt all along the eastern boundary of the state is predominantly inhabited by tribal population, spread across eight districts, viz., Dangs, Valsad, Surat, Bharuch, Vadodara, Panchmahals, Sabarkantha and Banaskantha. According to the 1991 population census, the tribal population is 61,61,775 comprising 14.92 per cent of the total population of the state.¹ Even in the midst of increasing urbanization, these forest inhabitants retain their own ethno culture - their ancestral and social traditions, laws, norms, beliefs and rituals.

One of the key “traditional” factors that aid sustainable management of the environment is their deep “respect” for Sacred Groves.

The following discusses in detail the various aspects of **Sacred Groves**.

Nature worship in Indian Society is a very old phenomenon. The institution of sacred groves is an age-old social regulatory system. The philosophy of sacred groves is a unique example of biodiversity conservation.

Sacred Groves are small patches of vegetation that have traditionally been protected by local communities by labeling them as the abode of Gods and Goddesses². Such traditional practices play a key role in the survival and harmonious conservation of rich, bio-diverse natural resources. In other words, Sacred Groves have been a traditional means of biodiversity conservation. No one is permitted to cut any tree or plant, kill animals or birds, or cause harm to any form of life in this conserved area.

Change in lifestyle as well as related market forces and human-induced development seem to have adversely affected people’s faith in Sacred Groves and the traditions.

Presently, the pace of deforestation and degradation of natural resources is increasing due to biotic interference. In this regard, the Sacred Groves act as an indicator of the virgin environment, as well as an indicator of the real moral values that exist in these tribes. We need to promote creation of more Sacred Groves for sustainable development and an eco-friendly lifestyle.

There is a strong need to promote our indigenous culture for the preservation of our environment. Mass awareness should be created in such a way that each forestland can be sustained for a long time.

Sacred groves can be seen in Western Ghats and North East Himalayas representing forests with natural biodiversity that is non-existent in Gujarat. The possible explanation could be that traditionally more importance is accorded to the agricultural lands in which the state abounds when compared to forestlands.³ So far, there has been no systematic study carried out in Gujarat on Sacred Groves. This is an attempt towards making a beginning in that direction. The case study selected here is from the foothills of The *Aravalis* in northern part of Gujarat (Banaskantha district) where the tribal culture is unique but shares some common features with those in the adjoining state of Rajasthan.

¹ *Biological Diversity of Gujarat*. Gujarat Ecological Commission.1996.pp32

² Sacred groves - an Environmental Ethics - B.N. Roy and Sudipto Chatterjee

³ Sacred groves and Gujarat” Paper presented by Prof. S. D. Sabnis at the Workshop on Conservation and Development of Sacred groves, Rajkot, Gujarat, November 18-20, 1997.

Case studies

SG1. RAJARAJESWARI MANDIR-DHARMATA

Name: Rajarajeswari Mandir

Location: Rajarajeswari Mandir is located in Danta taluka of Palanpur district. It can be approached by traveling 60-65 kms along the Palanpur-Ambaji highway.

Total area under conservation: The total land under conservation has reduced to 2 *vighas*⁴ from the 40 ha allotted earlier. Inquiries from the Forester and the *Talati* regarding information about the ownership of the land, reasons for reduction in the area under conservation etc. brought forth nothing.

Description of the area: The Rajarajeswari Mandir, an ancient temple is located here amidst thorny and scrub forest. The scrub forest is subject to great stress due to adverse climatic conditions, including scanty and erratic rainfall. Efforts of regenerating do not yield full results.

The *Mahanta* takes care of the temple and its premises. He believes that the half-laid road when completed would attract more number of devotees and lead to its development. He also has plans to expand the *sanctum sanctorum* and *dharmashala*. Part of the temple premises was paved with cement last year.

Legal status: Not known. This area is being taken care of by a local, *Mahanta Mahadevgiri*, for the past 30- 35 years.

Date of starting: 30- 35 years ago

Village institution involved: No formal village institution is involved. But, villagers contribute occasionally for the development activities.

Rules followed: The temple is open to all. People from many adjacent villages come here to worship. Their visit is mostly seasonal.

Social or other costs paid by the community: People provide financial and physical support occasionally for the upkeep of the site.

Benefits received by the community: The very fact that the people conserve the area indicates that they receive both tangible and intangible benefits. However, over a period, the sacred grove has stabilized reasonably from ecological point of view. The intangibles such as social functions, occasional religious ceremonies keep the community's interest and faith in the sacred groves going. The tangible social benefits include a *pucca* road leading to the *Mandir* which was constructed recently by the government. The *Mahanta* believes that the road enhances development of this area. His plan includes expansion of a *sanctum sanctorum* and *dharmashala*. The plot of the temple area was cemented last year.

Ecological impacts: The rich environs support a variety of flora and fauna. Some of the important species are: *Ficus religiosa* (Pipal); *Ficus benghalensis* (Vad); *Ficus glomerata* (Umbaro); *Gmelina arborea* (Sevan); *Adina cordifolia* (Edruk); *Sterculia urens* (Kadaya); *Ziziphus zuzuba* (Ber); *Azadirachta indica* (Neem); *Acacia chundra* (Kher) . The ongoing mining activities in the surrounding areas are having a detrimental effect on the status of these groves.

⁴ 5 vigha = 1 ha.

Other species found here are: *Holoptelia integrifolia* (Kanaji), *Ficus glomerata* (Umbaro), *Pandanus* (Kevda), *Saraca indica* (Asoka), *Eucalyptus* sp., *Melia azhaderach* (Bakain limdo) *Alangium salvifolium* (Onkhlo).

This site was earlier mined continuously for 10 years. Quarrying was stopped only 5 years ago. The site is slowly improving from earlier ill effects of mining. On the part of the Forest Department, there does not seem to be a clear management strategy.

Limitations of the effort: The resource manager collects seedlings from other areas and plants them in this area. Forest Department has fenced the area. Felling of *Prosopis juliflora* (*Gandabava*) for the collection of firewood and charcoal making is common. The manager is aware of the problems and believes that the Forest Department should bestow more attention to the development of this conserved area.

The temple revenue goes to the local resource manager. Villagers contribute occasionally for the development activities. The manager is working single-handedly to construct a check dam nearby to control soil erosion. Soil erosion has caused many old trees to uproot and still many trees are likely to be uprooted. The local manager spent Rs. 2,000 out of his pocket for the construction of an earthen Check Dam.

A dried up river is the only source of water. This once perennial water source is also silted up leading to reduction of storage. Mining activities have contributed majorly to the siltation process leading to the exposure of rock outcrops.

SG2. BALARAM MAHADEV MANDIR

Name: Balaram Mahadev Mandir

Location: The site is on the way from Palanpur to Ambaji. Buses ply between these places. The temple, located in a Wildlife Sanctuary, is an important place of worship and beckons many devotees. **The place is one of the thrust areas of the State Government to promote tourism. Gujarat Tourism and Development Corporation** (GTDC) is already operating a Guesthouse; a private resort has already come up.

Total area under conservation: 9.29 acres

Description of the area: The Temple is situated on the banks of the river *Banas* that was once a perennial river but has become seasonal now. During the last few years, the Balaram Mahadev Mandir Trust has taken up some construction work such as making pavements and a *Dharmashala* and is presently giving final touches to the temple renovation.

Legal Status: Owned by the Balaram Mahadev Mandir Trust

Date of starting: Not known. Has been there since a very long time and is managed traditionally with a conserved area all around the temple.

Village institution and other institutions involved: Since 1952, the Balaram Mahadev Mandir Trust is managing the 9.29-acre conserved area.

Rules followed: The Trust has imposed a set of rules and norms such as prohibition on cutting of trees. The temple is opened to all.

Social or other costs paid by the community: The community contributes voluntarily for the development of the site. Some people provide service in various forms such as in maintenance and participation in temple functions, providing voluntary watch on the conserved area. Trust uses the donations and contributions from visitors for the development of the temple and the conserved area.

Benefits received by the community: There is cultural value attached to this site. The intangibles such as social functions, occasional religious ceremonies keep the community's interest and faith in the sacred groves going.

Ecological impacts: The rich environs support a variety of flora and fauna. Some of the important species are: *Terminalia arjuna* (Arjun), *Holoptelia integrifolia* (Kanaj), *Pongamia pinnata* (Karanj), *Alangium salvifolium* (Onkhlo), *Ficus glomerata* (Umbaro), *Oclandra sp.*, *Adathoda vasica* (Aduso), *Lantana camara* (Lantana), *Capparis sepiaria* (Kanthera), *Phoenix dactylifera* (khajoor), *Syzygium cuminii* (Jamun), *Pandanus sp.*(Kevda), *Azadirachta indica* (Neem), *Aegle marmelos* (Bilva), *Santalum album* (Sandal), *Tamarindus indica* (Amli) etc.

The site is significant as the natural regeneration of fig and tamarind is optimal. Few species like that of *Bel*, *Arjuna*, *Kevda*, *Tamarinds* are coming up well now. However, weeds like *lantana* invade the area. Unfortunately, some species found 25 years ago have now disappeared totally or partially. For example, *Neem* which was found in abundance, 30-40 in number about 25 years ago in the temple premises, has now reduced to mere 3-4. On inquiry, it was found that a few years ago, *Neem* was infested by a pest that caused hollowing of the bole. Exact details are not known either to the people or to the Forest Department.

Nevertheless, the site still is a host to a variety of species. Many medicinal plants are found to exist in this area such as *Plumbago ovata* (*Chitrak* or *Chitaro*), *wild jasmine*, *Adathoda vasica* (*Adathoda*), *Eclipta prostrata* (*Bhangra*), *Centella asiatica* (*Brahmi*), *Curculigo orchooides* (*Musli*), *Vitex negundo* (*Negod*) etc. There is a perennial water source in the form of a stream.

Limitations of the effort: Religious and picnicking activities disturb the site. Every year a *mela* is held during the month of *Shravan* that receives more than 30,000 visitors. On the 10th day of the *Shravan* month, clay idols are immersed. Along with the mud idols, devotees also immerse flowers, fruits and plastic carry bags into the river thus releasing a lot of solid waste. The waste not only affects the quality of water and the water body, but also the environment. The disposal of waste poses a serious problem to the temple authority every year.

In addition, people who visit this site for recreation during different periods of the year leave behind plastic bags, food and such waste that degrades the environment further. An activity such as playing of music, vehicular movement disturbs the serene atmosphere and restricts movement. Often, the behavior of the visitors tantamounts to disrespect of the traditional norms and beliefs of the local population.

The Forest Department raises nurseries regularly. For the management of its three nurseries, 9 bore wells pump water in this water scarce area resulting in further depletion of groundwater. The perennial streamlet, which flows into the sanctum sanctorum, is gradually drying up, perhaps due to all these reasons. Thus the sacred water, a culturally important component of the environs, is missing. The temple authority has taken up the issue with the Forest Department but there has been no solution as yet.

One of the nurseries, *Vanavatika*, located on the river bank, draws water from the river thus reducing its availability to the temple.

An interesting turn of event took place. Sometime ago, a local newspaper published an article revealing the medicinal value of the bark of a locally found tree *Terminalia arjuna's* (*Arjun*) in curing heart ailments. This led to people coming here and collecting its bark. Some villages also resorted to collect the bark and sell at Rs 25/kg.

The other problem is *Prosopis*, which is a fast invading weed filling up the riverbanks. The temple authority plants local species every year during monsoon but the survivability is very less because of persisting dry conditions.

SG3. KEDARNATH MANDIR, BALUNDRA

Name: Kedarnath Mandir

Location: The temple is situated at the top of a hillock and is 5-6 kms away from village.

Total area under conservation: Approximately 2 hectares.

Description of the area: The temple's surroundings has a natural perennial water source and supports a variety of arid vegetation. The vegetation in the area includes: *Ficus bengalensis* (Vad), *Ficus religiosa* (Pipal), *Ficus glomerata* (Umbaro), *Holoptelia integrifolia* (Kanaji), *Polyalthia longifolia* (Asopalav), *Cocus nucifera* (Naleri), *Butea monosperma* (Khakra), *Sterculia urens* (Kadaya). The temple premise is electrified. The seasonal pressure is during the *Mela* in Feb -March every year. About 5,000 people visit the place during the months of July and August. A road was constructed up to the foothills about 6-7 years ago. The conflict for land ownership continues to exist between the village and the Forest Department, which has a bearing on the preservation of the sacred grove.

Legal status: Not clear. Conflict for ownership between local community and Forest Department exists.

Date of starting: Has been traditionally conserved for the past two or three generations. In other words, the sacred grove has been in existence for the past 50-60 years at least.

Village institution and other institutions involved: The village informal committee is mainly responsible for management of the site. A Village elder from the Patel community heads the committee.

Rules followed: Informal and self-imposed rules exist within the community.

Social or other costs paid by the community: Occasional contribution - as and when need arises- in terms of labour and money, especially during annual gathering and religious ceremonies. Also for development of the site people do contribute money and labour.

Benefits received by the community: Socio-cultural benefits and spiritual attachments. The intangibles such as social functions, occasional religious ceremonies keep the community's interest and faith in the sacred groves going.

Ecological impacts: The villagers recognize that the existence of water source and the vegetation are mutually supportive. They are therefore happy to preserve the sacred grove which also provides them with a peaceful ambience.

Limitation of the efforts: Existing conflict regarding land ownership.

SG4 VIRAMVERI KAGAJI BAP

Name: Viramveri Kagaji Bap.

Location: Situated in a remote area, it is nearly 4-5 kms away from the Balaram towards Ambaji road.

Total area under conservation: 0.5-acre

Description of the area: *The site still retains its pristine beauty without any artificial structure constructed so far unlike as in the case of other examples cited in this report.* The communities live in clusters. The village is still not electrified. Hunting small animals for food is common. The villagers do not depend on the site for food, fuel or fodder. The site has natural regeneration of *Timru* and *Butea* in moderate measures. A lot of young vegetation stand (approximately 80-100 trees) is also supported which includes *Butea monosperma* (*Khakra*), *Khinno*, *Bombax ceiba*, *Ficus benghalensis* (*Vad*), *Ficus glomerata* (*Umbaro*), *Diospyros melanoxylon* (*Timru*) and *kot* (*pulses*). Cattle thefts are common in the village.

Even in this remote area exotic species such as Eucalyptus are found planted in 2-3 tribal farmers lands. Interestingly, people here do not collect *khakra* (*Butea monosperma*) leaves for plate making. However, they sell ghee in nearby cities. They cultivate maize, wheat and pulses to a small extent. The village and the Sacred Grove premises are comparatively free from *Prosopis*.

Legal status: Panchayat owned land.

Date of starting: Has been traditionally conserved for a very long time.

Village institution and other institutions involved: No formal village institution is involved but village(s) community does contribute its physical and financial cooperation for the site management.

Rules followed: *An interesting aspect of this site is that the sacred grove is untouched but in adjacent farmland Butea monosperma trees are felled.* The villagers take their cattle to the place and offer puja (worship) as they believe that diseases will not affect cattle; they even practice animal sacrifice here.

Social or other costs paid by the community: Cattle grazing and tree felling are not allowed in this area and villagers abide by this rule strictly. During religious and socio cultural ceremonies community voluntarily provides labor and financial support.

Benefits received by the community: Socio-cultural benefits. The intangibles such as social functions, occasional religious ceremonies keep the community's interest and faith in the sacred groves.

Ecological impacts: Good regeneration of *Mahua* (*Madhuca indica*), *Khakra* (*Butea monosperma*), *khinni* (*Wrightia tinctoria*) and other species are noticeable. The site is just left to itself to regenerate naturally. The composition, density and diversity of the species are far better than the surroundings and species are kept intact since long.

Limitations of the efforts: Neither the Forest Department nor the community does any planting either for conservation or regeneration. Perhaps, this is the way of preservation without interference. Thus the site is almost untouched except for the villagers' occasional visit to worship.

SG5. PADALIYA (NAVAVAS)

Name: Padaliya (Navavas)

Location: Located on the way from Danta to Ambaji this is a sacred place of the *Dungri Garasias*.

Total area under conservation: 20 bighas or 4 ha.

Description of the area: The area represents a natural site, untouched by human 'development' activity except for a small cement structure with a very small temple of 1 x 2 m underneath a big tree. The area contains a good number of *Mahua* and *Timru* stands. This Sacred Grove is on the foothills of a hillock. Some 200-350 terracotta figures are found in a series of two groups on a cement platform. Rocks here have beautiful natural carvings and look like snakes and the human skull. The area supports a variety of flora which includes *Madhuca indica* (*Mahua*), *Anogeissus latifolia* (*Dav*), *Diospyros melanoxylon* (*Timru*), *salran*, *Ficus benghalensis* (*Vad*), *Wrightia tinctoria* (*khinni*), *Butea monosperma* (*Khakra*), *Azadirachta indica* (*Neem*), *Prosopis juliflora* (*Gandabaval*), *Terminalia bellirica* (*Behda*), and varied fauna (Peacock, leopard, bear).

Eucalyptus and *gandabaval* have also been planted here 5-6 years ago and are struggling to survive while the natural regeneration of *Timru* and *Mahua* is pronounced here.

In this drought prone area people manage to get some employment in the form of construction works and marble industries. The village plans to construct a temple and a road.

Legal status: Panchayat owned land.

Date of starting: Has been traditionally conserved for a very long time.

Village institution and other institutions involved: No formal village institution exists. Villagers voluntarily participate and contribute to the management and maintenance of the site.

Rules followed: Grazing and felling of trees is banned in the area. The villagers take their cattle to the place and offer *puja* as they believe that diseases will not affect cattle; they even practice animal sacrifice here. A *mela* is held thrice a year during *Deepavali*, *Shivaratri* and *Holi*.

Social or other costs paid by the community: Villagers voluntarily participate and contribute to the management and maintenance of the site. During occasional religious ceremonies villagers contribute some money voluntarily and also their physical labor.

Benefits received by the community: Socio-cultural benefits. Apart from this the cement structure came up in the grove recently.

Ecological impacts: The vegetation stand comprises of *Mahua*, *Timru*, *Custard apple* etc. Regeneration is noticeable.

SG6. JODHASAR

Name: Jodhasar

Location: Jodhasar is on the way from Balaram to Ambaji, 4 kms away from the main road.

Total Area Under Conservation: The total demarcated area for each of the sacred groves is approximately 10 X 10 m. There are three such plots in the village.

Description of the area: This is a good example of natural wilderness. A big statue of Jodha (5.10 m X 1.20 m) lies prostrate on the ground. A mud wall with some stones form the outer boundary. The sites (three) support tree sps. Viz., *Butea monosperma* (*Khakra*), *Ficus religiosa* (*Pipal*), *Phoenix dactylifera* (*Khajoor*) (20nos.) *Carissa conjesta* (*Kanther*), *Prosopis juliflora* (*Gandabaval*), *Ziziphus mauritiana* (*Ber*), *Acacia nilotica* (*Desi acasia*), *Opuntia*, *Anogeissus latifolia* (*Dav*), *Khinni*, *Wrightia tinctoria* (*Dudhi*), *Azadirachta indica* (*Neem*), and *Mangifera indica* (*Mango*).

The uniqueness of this village is the existence of three Sacred Groves. The Mahadev Mandir and the *Matamandir* are in the village and the natural site of *Jodha* is 2 km away from the village. The surroundings of *Jodha* are rich in *Khajoor* trees and adjacent land is under cultivation.

Locals take care of *Neem*, *Mango* and *Butea* seedlings under stone mulching. Every year they plant seedlings but the survivability is poor. People visit the site whenever they feel inclined to worship. Occasionally, a few visitors visit the site on their way to Ambaji. The Forest Department is not involved in conserving the site. The village community plans to build a temple here in future. Presently, the villagers get employment in pond construction by the Irrigation Department under the drought relief programme.

The Mahadev Mandir is an important religious point for villagers. The species found here are *Butea monosperma* (*Khakra*), *Capparis caranda* (*Kanther*), *Prosopis juliflora* (*Gandabaval*), *Ficus religiosa* (*Pipal*), *Phoenix dactylefera* (*Khajoor*) etc. The site is free from grazing due to the height of the trees and no ground cover below. Very few artificially regenerated seedlings are under stone mulch.

Here a *samadhi* and some old sculptures of Lord Ganesha and Shiva are found. A year ago in this site a 3x3m small, cemented structure was constructed. People visit the area on *Deepavali*, *Sivratri* and other seasonal festival days.

Legal status: The land belongs to the Panchayat and is not fenced.

Date of starting: Has been traditionally conserved for a very long time.

Village institution and other institutions involved: No formal village institution exists but Village elders and key persons are informally taking care of the site.

Rules followed: People take care of the site by not grazing their cattle here. Many *dhav* and *khakhra* trees, are known for their economic returns but people do not use this opportunity. This is an example of a self-imposed rule to preserve the site.

Social or other costs paid by the community: Cattle grazing and tree felling not practiced in this area. Though there are good number of *Dhav* plants on the up hillside, but people do not collect.

Benefits received by the community: Socio-cultural benefits.

Ecological impacts: The vegetation stand comprising local species is preserved over time. *Neem* regenerates naturally.

Limitations of efforts: Support from the Forest department is limited. Further, frequent droughts and scarcity mount pressure on the village natural resources.

Summary of Sacred groves

In our studies, it is found that the sacred groves in remote areas are generally found to be untouched and are more valued. Villagers very rarely visit these sites unlike in the case of sites, which are closer to the main road. A remote place like Jodhasar has seasonal visitors whereas Balaram and Padaliya which are closer to the main road have a high rate of visitors.

In the tribal areas, most of the trees are important, valuable source of minor forest produce. The species composition and density varies with the remoteness and presence of tribal settlements. Natural regeneration in the Sacred Groves in remote areas is generally found to be better than in other areas. However, the pressure of grazing is common. In the well-managed Sacred Groves, the management committee or the locals procure the seedlings from outside with great difficulty. This is difficult, as people always cannot pay much attention due to their routine fieldwork.

In the matter of maintenance of records, only temples managed by trustees or formal management committees have succeeded in having ownership records while the rest do not have any records leading to protracted conflict situation.

In our study area, modernization, mining and tourism practices are observed to be causing adverse impacts. A proper balancing of these activities with the conservation of sites is the need of the hour. Occurrence of drought is common (once every three years) and during this period, livelihood comes under stress. The result is that people are not in a position to confer due care towards maintenance of the site. Promoting MFP will help build in livelihood security to a certain extent. Enhancement of livelihood options locally will go a long way in checking migration, which also means better care of the sacred groves.

Finally, proper Identification, documentation, networking and coordination among interested groups need to be given a fillip. Identification and recording of the flora and fauna and their role in supporting livelihood systems, both historically and in the present context, needs to be taken up as a part of research agenda lacking.

* * *

II. GRASSLANDS

Introduction

Grasslands in Gujarat are spread over a total area of approximately 140276.94 ha, and can be found in the districts of Ahmedabad, Banaskantha, Gandhinagar, Rajkot, Surendranagar, Bhavnagar, Kheda, Mehasana, Sabarkantha and Surat.

The state can be divided into three convenient zones of grasslands of which Saurashtra accounts for 71925.81 ha, the Central zone, 10741.60 ha and Kachchh zone accounts for 57609.53ha.

The grasslands of Gujarat consist of shrub or tree savannah type which not only support livestock but also diverse, rare and endangered wildlife species such as the lion, wild ass, bustard, *chinkara*, black buck, blue bull, leopard, four horned antelope, and lesser florican.

Gujarat has an average of 722.59 acres of community land per village, ranking fifth in the country. 32% percent of total community land is grazing land, which is high compared to the country average of 22%; Gujarat ranks third after Rajasthan and Maharashtra.

Gauchar is a common type of Common Pool Resource existing in the state since the reign of princes as well as during the British period. However, the size of the *gauchaar* was fixed at 16 ha/100 cattle heads, and were managed by local bodies i.e., *Gram Panchayats* after the formation of the Gujarat state and implementation of the *Panchayati Raj*.

Important grassland species of Gujarat

Grasses

Sehima nervosum, *Chrysopogon fulvus*, *Cymbopogon jwarancusa*, *Heteropogon contortus*, *Sporobolus marginatus*, *Dactyloctenium indicum*, *Cenchrus ciliaris*, *Dicanthium annulatum*, *Cynodon dactylon*, *Apluda mutica*, *Cymbopogon martinii* etc.

Herbs

Cassia tora, *Crotalaria sp.*, *Sesbania sp.*, *Digera muricata*, *Indigofera sp.*, *Leucas aspera*, *Tridax procumbens*, *Cyperus rotundus*, *Desmodium diffusum*, *Barleria cristata*, *Striga asiatica*, *Xanthium stromarium* etc.

Shrubs

Calotropis procera, *Capparis deciduas*, *Cassia auriculata*, *Helicteres isora*, etc

Trees

Acacia nilotica, *Ferronia limonia*, *Hardwickia binata*, *Butea monosperma*, *Zizyphus sp.*, *Wrightia tinctoria*, *Bauhinia racemosa*, etc.

The state's grasslands are under pressure due to unscientific grazing practices, invasion of weeds, industrialization, poor efforts at regeneration and improving productivity, poor quality of livestock, and inadequate means of livelihoods, encroachment, salinity, and general land degradation.

Policy

According to Gujarat *Panchayat* Act 1993, the provision regarding the ownership of grazing land is as follows 108(4): Where any open site or waste, vacant or grazing land has been vested by Government in a Panchayat whether before or after the commencement of this Act, then it shall be lawful for the State Government to resume at any time such site or land, if it is required by it for any public purposes.⁵

The word public purpose in the Panchayat Act and Land Acquisition Act after its amendment in 1984 has a very broad definition which includes industry, mining, and residential purpose e.g. the State Government had given the grazing land of *Jaspar Gram Panchayat* for producing more food crops.

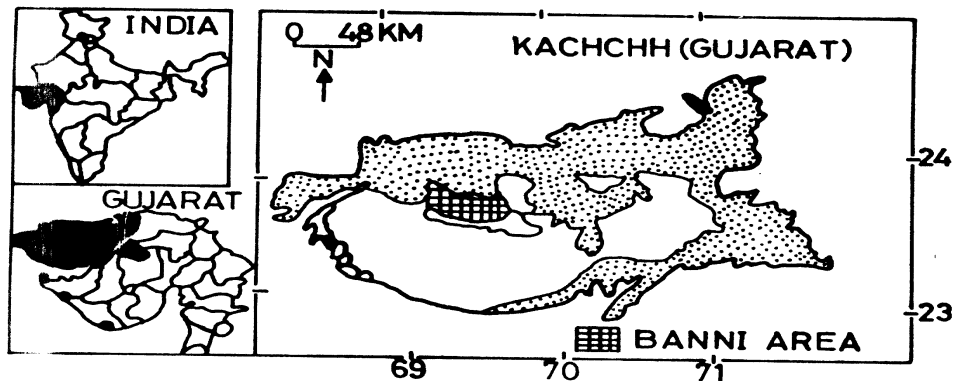
Hence, the ownership of grazing land vests with the State Government while the responsibilities for the management and monitoring lies with the *Gram Panchayat*.

The Banni Grass Lands

The Banni area is a flat pasture land within the Great 'Rann' and is situated in the northern region of the Bhuj Taluka, between north latitudes 23 19' and 23 52' and east longitudes of 68 56' to 70 32'. The temperature reaches up to 50 degrees C in the hottest months (May and June) and down to 5 degrees C in the coldest month (January and February). The Southwest monsoon is very low (annual average of 300 mm per year) and ill-distributed in Banni: . Droughts are quite common and severe. The whole year's rainfall often falls within a short spell of 10 days or less. Sometimes, half the annual average rainfall occurs within a few hours. No arable farming can be practiced here. The Banni grassland, with about 40 varieties of grasses, is considered one of Asia's finest expanse of grass. It used to attract cattle breeders from all over Gujarat, parts of Rajasthan, and Bombay in Maharashtra. There is an old practice of bringing salvage i . e., dry animals, from Bombay to Banni for grazing, and then taking them back to Bombay when they are due for delivery.

The total Banni area is 3847 sq km. People from all over the state as well as the neighbouring state of Maharashtra leave their livestock with the traditional herders of Banni for grazing purposes. Banni accounts for nearly 45% of the permanent grasses. The grasses found in Banni are *Sporobolus sp*, *Chloris sp*, *Dichanthium sp*, *Cenchrus sp*, *Dectylectynium sp*, *Desmostachya sp*, *Chrysopogon*, *Echinocloa sp* and herbs like, *Cressa sp*, *Indigofera sp*, *Digera sp*, *Corchorus sp* etc.

Banni Map



⁵ Trupti Jain. *Strengthening Local Institutions - Role of Gram Panchayat For Management of Grazing land in Gujarat*. Regional workshop report of the Common Pool Resources (CPR) in Semi Arid India.15-16 March 2001, Ahmedabad.

Weed Menace

According to the satellite imagery of IRS-IA (1998), the Banni grassland is being wiped out at a rate of 4188 ha/year by the invasion of *Prosopis juliflora*. In other words, the species is invading at the rate of half a hectare per hour.⁶

The alarming nature of growth of *Prosopis* is that its roots can go down vertically up to 60m depth and horizontally to 80 m. It is a super coppicing species. Banni's rich flora like, *piludi*, *khijado*, *deshi baval* shrubs, trees and rare birds like houbara, bustard have disappeared or almost vanished.

Denying the charges of introducing *gandabaval*, the Forest Department says that the *Nawab* of Jamnagar first carried out the aerial broadcasting in Gujarat during 1948-50. *Prosopis* is considered by them to be one of the best cattle feeds, if processed properly and has no adverse effect on cattle health.

The species does not allow grass or other species to come up. The allelopathic and phytological reactions, soil and nutrient conditions of the species are relatively unclear among the scientific community. Majority of the people find this species very unfavorable.

The NPK content of *gandabaval* is very low and hence is unsuitable as a source of manure.

In a village populated by *gandabaval*, the water table is believed to decline in the traditional water storage system. The fallen leaves and pods of *baval* render the water unfit for drinking purpose.

The hard thorns of this species often injure the common people and cattle. A proof of this lies in the fact that the women, children and youth are found to limp, and in many cases, their wounds turn to gangrene.

Cows do not like to consume this species but have no alternative during scarcity. After consuming the leaves of these species cattle develop health problems- perhaps the toxin content of the leaves escalates the phytological reactions which leads to death. While buffaloes, on the other hand, are resistant to this. This is one of the prime reasons why the indigenous *kankrej* breeds of cows have reduced considerably. People are aware of this but are helpless during a period of fodder scarcity.

The Revenue Department is short-staffed and generally lack experience in eradicating *gandabaval*. The villagers may take care of the land if it is allotted in their name. So special care may be taken if it is their livelihood. Health care should receive equal attention, as does the enhancement of livelihood.

The role of the Forest Department in this direction should be a strategized action plan to support villagers livelihood by enhancing income generating activities, provide training and permit charcoal making and marketing of the same.

The setting up of a particle board industry and other options to make use of the wood will encourage the people to take interest in controlling the diversifying into new areas.

Biomass and productivity

Dependency and deviation - natural to market oriented life style: According to a study conducted by Gujarat Forest Development corporation and GUIDE, the livestock-based economy generated about Rs. 1,538 per household a month from production of milk only (milk products not included), while the

⁶ Shyam Parekh. *Gandabaval* Set to Gobble Up Banni Grassland by 2005 AD. TOI. September 29, 1998

gandabaval based economy generated about Rs. 73.80 per household from sale of honey, gum and charcoal in Banni.

Hence reclaiming and conserving the grassland is important as it supports the dairy industry that is more profitable and feasible than the others being also the most sustainable industry here.

Livestock rearing and animal husbandry is the second most important occupation in the state next only to agriculture hence the people's dependency on grass lands is significant.

The case studies recorded here are selected from Banni area considering its fragility and sensitivity in terms of livelihoods and ecological importance. Recognizing the difficulties associated with grasslands management, the MoEF supported GEC's project on Banni Grassland Restoration project in 1995-96 under Border Area Development programme. On this, GEC and Gujarat Institute of Desert Ecology (GUIDE) joined hands to introduce a program of fodder generation on small plots of 100 hectares per village. GUIDE hoped that by creating an alternate source of fodder, pressure on common grazing lands would decrease.

The programs have been largely successful so far. Grass grown on the plots is stored in fodder banks in preparation of drought years. Management of the plots is left entirely to the village to promote self-sufficiency. The productivity has increased from 400kg/ha to 846 kg/ha. Additionally, 23 species of grass are found compared to 13 species before the plot was protected (Singh & Kumar 1998). The success of the programs is further reflected in the eagerness of villages to participate: while villages were initially reluctant to initiate a management program for fodder generation, 17 villages have now asked for GUIDE's help in starting their own plots. The following three case studies explain the success of community participation, GEC and GUIDE's efforts.

Case Studies

CS1. BHIRANDIYARA

Name: Bhirandiyara Grass Plot

Location: Approximately 50-60 km away from Bhuj.

Total area under conservation: 100 ha

Description of the area: Part of the Asia's finest grassland. The grassland is invaded by prosopis, the salinity in this area is increasing day by day.

Legal status: Land belongs to Revenue Department

Date of starting: 1996

Village institution and other institutions involved: 7-8 members formal Committee was set up to look after the 100 ha grassland and receive financial and technical support from GEC and GUIDE.

Rules followed: The committee clears *gandabaval* to raise grasses. 7-8 members formal Committee was set up to look after the 100 ha grassland and receive financial and technical support from GEC for raising, protecting and using the grassland. GEC bears the guards' salary. All the villagers are eligible to collect the grass either by giving Rs. 2 per kg without labour or collect freely by rendering their services to cut grass.

Social or other costs paid by the community: Is one of the Banni villages that express most of the problems discussed earlier with regards to salinity, ownership, weeds etc. The decision regarding

land ownership has not been taken hitherto. Invasion of *gandabaval* in these years has altered the cow population drastically and buffaloes have replaced the *Kankrej* breeds. After the 2001 Earthquake in Bhirandiyara the trench collapsed which allowed the cattle to cross over and graze on the remaining grass. Thus, the committee incurs a loss of Rs. 16,000.

Benefits received by the community: The total production of the grass during 1999 was 8 tons and was distributed freely to the villagers.

Ecological impacts:

The plot was cleaned and kept free from *gandabaval* and grass production has increased. The villagers are motivated by the success and has planned to dig staggered trenches on the site for moisture conservation. The leadership and awareness are striking impacts of the community participation.

Limitations of the effort: Inundation of the *Prosopis juliflora* (outside the grass plot), allotment of land, charcoal making etc, and drought are some limitations of success.

CS2. DHORDO

Name: Dhordo Grass Plot

Location: Approximately 80 km away from Bhuj.

Total area under conservation: In this village on an experimental basis, 200 ha of grassland have been given to the villagers by the government to develop and manage.

Description of the area: The grass plot consists of many palatable and saline resistant species. The entire area is protected by barbed wire fence.

Legal status: Land belongs to the Revenue Department.

Date of starting: 1996

Village institution and other institutions involved: Village formal Committee, GEC and GUIDE

Rules followed: Community based experience of the grass plot show good results regarding reclamation, production and equitable use of the common property resource. The committee, which was formed under a young leader, is running smoothly. Earlier the village was associated with VRTI Mandvi to work for 2 years. The MoEF supported GEC's project on Banni Grassland Restoration project in 1995-96 under Border Area Development programme, under this Rs. 15 lakh has been used for uprooting the *Prosopis*.

Social or other costs paid by the community: *Prosopis* was planted by the Forest Department during 1958. Since then, the weed is spreading and occupying important grassland area. The committee prefers to fence the area so that the major cost of protection and supervision can be reduced. Presently the committee is incurring an expense of Rs. 32,000 at the rate of Rs. 2,000 /month to 4 guards during 4 months grass production season.

Benefits received by the community The total production of grass in 1997 in community-conserved area was 3547 kg/ha, 84 kg/ha on degraded and grazed land while 216 kg/ha in *Prosopis* invaded area and this has been distributed among the villagers.

Ecological impacts: The grass quality and quantity produced in conserved plot found good and invasion of *Prosopis juliflora* is controlled. The cooperative system helped the people to prepare well for the drought.

Limitations of the efforts: Inundation of the *Prosopis juliflora*, allotment of land, charcoal making etc, drought are some limitations of success.

CS3. SADIYO

Name: SADIYO Grass Plot

Location: Approximately 75-80 km away from Bhuj.

Total area under conservation: 100 ha

Description of the area: The 100 ha contiguous patches of grassland plot contains many palatable grasses.

Legal status: Land belongs to Revenue Department

Date of starting: 1996

Village institution and other institutions involved: Village formal Committee, GEC and GUIDE

Rules followed: Formal village committee with technical and financial support from GEC and GUIDE. The management committee has assigned work of labor to different committee members. The villagers are taking care of cleaning, leveling, weeding and cutting as well as distribution of grasses. The plot is not fenced so protection is a problem. The committee appoints guards to watch the plot. When there is scarcity of fodder, the villagers receive grass from Valsad, Surat and other parts of the state.

Social or other costs paid by the community: The villagers confirmed that the removal of *gandabaval* helps in the growth of grasses- its palatability, nutrition status and checks the present domination of non-palatable grasses over palatable grasses.

Benefits received by the community: Villagers getting the grass from grass plots and as an alternate nutrient, livestock are also given cottonseeds and agricultural residue purchased at a cost of Rs. 6,000-8,000/truck, paid from village contributions and returns from the plot.

Ecological Impact: The quality and quantity of grass has increased as well profit from such production help to manage the impacts of the drought.

Limitations of the efforts: Invasion of *Prosopis juliflora*, private land ownership, charcoal making, drought etc. are some limitations to success.

III. MANGROVES

The state of Gujarat has the longest coastline of 1600 kms. among Indian states and supports marine flora and fauna. The area under mangrove cover along the Gujarat coast is the second largest in India next only to the Sunderbans. These mangrove formations are isolated and discontinuous and are found from Kandla, Navalakhi in the north to Jodia, Jamnagr, Sikka, Alaya and Okha along the coasts of the Gulf of Kutchh. Many Islands such as Pirotan, Bhaider and Dhani also have good mangrove forests. As many as seven mangrove species are reported from Gujarat. The mangroves of Kutch in general are of the open scrubby type with low wooded *Avicenna* sp and *Rhizophora* sp. In Dwaraka and Poshitra mostly single species is seen i.e., *Avicennia marina*.

The south coast of the state supports negligible mangrove area while Kutch and Jamnagar regions possess dominant and luxuriant mangroves vegetation. Here is an attempt to cover case studies from South coast and Jamnagar regions.

Case studies

CS1. NEJA

Name: Neja Mangrove Area

Location: The village is 60 km away from Jambusar taluka head quarters in Bharuch district.

Total area under conservation: 165 acres

Description of the area: In this saline ingress area the villagers constructed a check dam, practicing agriculture and planting salt resistant species.

Legal status: Revenue wasteland

Date of starting: During 1992-95 village of Neja formed a cooperative in 1996. Actual work started in the year 1998. Around in the year 1980 villagers initiated the management. However, in 1996, the cooperative society received 165 acres of saline wasteland located on the sea coast under antipoverty program of the Government. The initial work started with stopping the sea water from entering the land by construction of checkdam

Village institution and other institutions involved: Village cooperative, VIKAS, Saline Area Re-vitalisation Experiment (SAVE) and GEC.

Rules followed: The cooperative holds monthly meetings to plan and review program activities. The progress and financial aspects are discussed to ensure transparency and greater participation of the members. The whole village is invited in these meetings so that the people can understand the importance and the benefits of the work being done. The cooperative also allocates plots to individuals on yearly basis where inputs would be provided by the cooperative society while the member contributes labor.

Social or other costs paid by the community: Physical labor, protection and other management inputs. Local people contributed Rs.15 daily from their earnings for the work.

Benefits received by the community: The construction of checkdam not only stopped the sea waves but also collected rainwater. This has helped the community in planting a hybrid quality of cotton in 10 acres of land and carried out a plantation of around 10000 plants. The income from the crop is shared between the members and the society such that the cooperative can take up similar development on additional land area. Cooperative also maintains sales nit of grains at a reasonable market price.

Ecological impact: Construction of a Check dam has not only stopped the sea waves but also impounded the rainwater, which is used by the community for drinking purpose. The water was also used for leaching the salinity of large portions of the land at surface level. Women members on an average save about 20% of their work time due to easy access of drinking water.

Limitations of efforts: Only *Rathods* are involved, another dominant caste *Patels* are not involved in this process.

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CS2. Chusana Pir

Name: Chusana Pir (Island)

Location: 30 km away from the Bet Dwaraka in Jamnagar district.

Total area under conservation: NA

Description of the area. The island contains following species
Avicennia marina, Avicennia officinalis, Avicenna alba Salvadoria sp

Legal status: The Island is part of the Marine sanctuary.

Village institution and other institutions involved: no formal people's institution exists but people from the *Badela, Sanghar* and *Vadher* community in Bet Dwaraka are keen on conserving the area.

Benefits received by the community: Socio – cultural and religious sentiments

Rules followed: Villagers have religious sentiments not to disturb the vegetation. Thus, they do not collect even dried twigs and branches. *Badelas* have strong faith and belief on the site. Whenever their desire is fulfilled, they offer animal sacrifice (goat) to please the god. Annual fair is held in February.

Ecological Impact: The religious sentiments of the people helped save the 300-year-old mangrove vegetation as a result. This site is a safe breeding ground for many birds.

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IV. COMMUNITY AGRICULTURE

Location: In Gujarat presently 4000 villages practice community agriculture covering more than 8000 acres in area.

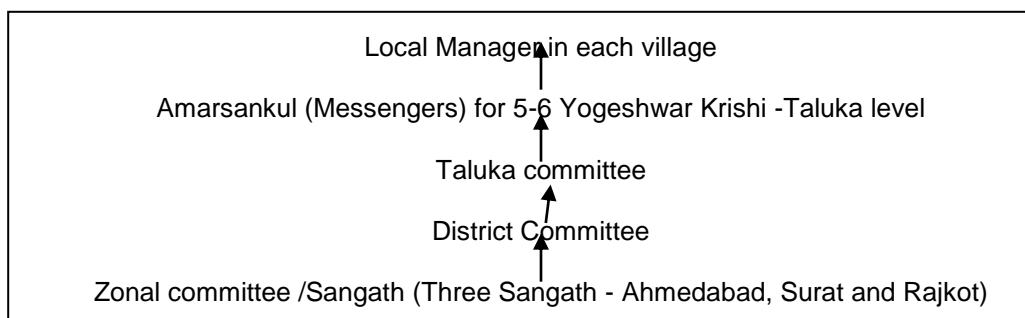
Total area under conservation: 4000 villages with average individual farm size of 2 acres. 417 units of Yogeshwar Krishi in Veraval and 125 units in Amreli district are presently known.

Description of the area: Private agriculture land where villagers participate in this program from land preparation to harvesting.

Legal Status: The land belongs to an individual who voluntarily handed it over to the village steering Committee.

Date of starting: In Gujarat, Yogeshwar Krishi has been in practice since 1980.

Village institution and other institutions involved: Informal village group and *Swadhyaya Parivar* Mumbai and its state level management unit manage the area. The hierarchal constitution of a *Yogeshwar Krishi* at state level is as follows:



Rules followed:

This type of farming usually includes the participation of the entire village where villagers, irrespective of sex or caste engage in this. Usually large farmers in the village who come voluntarily to carry out the work are selected by a lot system. The minimum area should be 2 acres. In some cases, there are exceptions. The villagers who attend the prayers at *Amritalaya* would be informed about their work by the *poojari*, who is the manager at the local level.

The land given is cultivated for a minimum of three years. Then it is the turn of the next volunteer in the village. Usually for easy practice, gathering and supervision the remote and far away farms are avoided. The *poojari* assigns the tasks to the villagers according to their experience. He selects individuals and groups and allots the time to carry out different farm activities viz, ploughing, sowing, weeding, harvesting etc. Protection of the crop is assigned to a few groups. However, the entire village takes care to prevent the entry of cattle and other disturbances.

Social or other costs paid by the community: *Farm* Inputs like seeds, fertilizers etc is collected from all villagers before they are used in their own fields. There is no compulsion to share yet the people voluntarily do so.

Benefits received by the community: To gather and exchange skills, promotion of goodwill, fraternity, oneness and togetherness. Apart from economic equity, cultural and spiritual equity is the theme of community participation. Hence, the farming is purely subsistence and non-market oriented.

Benefit sharing: The harvest is sold to the nearest market and the revenue is deposited in a joint account. Half of the benefit goes to the landowner in cash and the remaining half is shared amongst need based villagers. A part of it goes to *Madhvi Rakshan Samiti*, Thane. The training and technical inputs are provided by experts who work voluntarily at the local level.

The money in *Madhvi Rakshana Samiti* is kept as a reserve by the respective village head. Apart from this, the villagers, after their harvest deposit part of their total farm produce voluntarily at *Amritalaya*, an experimental school. The need is identified, and the money is paid directly to the person. The two key people go to the house of the person and place the money in the *sanctum sanctorum*. This money is non refundable and no interest is charged.

Ecological impacts. The resource use and equitable distribution of benefits to the needy is the first hand positive impact. However, social harmony, togetherness and subsistence cultivation are other positive impacts. In some farms, apart from local varieties people do practice organic cultivation. The farming practice generally includes the use of local and indigenous species there-by ensuring the agro biodiversity balance.

Limitations of the efforts: The methodology of Selection of species is unscientific as there is a possibility of pooling of inferior and superior genetic traits.

Sri Darshanam (SD)

Is a similar kind of cultivation practice of Yogeshwar Krishi but the difference is in extent of area and number of villages involved.

List of available Sri Darshanam areas are:

Kandhi,Una,(Una Nathed),Atpukar-(Kodinar),
Matarvaniya(Maliya)Kevadra(Keshod)Jhamka(Mendarda),Chalda(Visavdar),Miya
khizadiya(Amreli),Dhoraji (Dhoraji), Kolki (Upleta), Virpur(Jalaram),Halvad(Halvad),Kanipur,Khetpur
(Ahmdabad) Navdi(Baroda)

There are 20 Shri Darshanams (SD) existing at the national level. In Gujarat alone there are 18 Shri Darshanams. Each one is usually of 12acres

The 20-25 villages together carry out the common farming. All SDs are managed under a Registered trust at local level.

Vriksha Mandir

The trees are cultivated and managed by the members of the Swadhyaya Parivar who constitute at least 80% of the participating village/villages as a mark of devotion and dedication to Nature and God. The objective of the concept is to inculcate a feeling of unity among human beings through tree worship in the form of labour.

The cultivation is done on leased government wasteland or on the land purchased by the swadyaaya Parivar and entire operations including harvesting and marketing of the produce are carried out. The profit is either distributed amongst the families of the Parivar or employed for running educational institutes.)

Location: Various parts of the state.

Total area under conservation: 19 units of 4-28 ha spread across 11 districts of the Gujarat state⁷

Description of the area: Important species found here are mango, neem, butea, chebula, amla, lemon, bel, pipal, tulasi, bamboo, ber, guava,hibiscus, coconut etc.

Legal status: Ownership of “Vriksha Mandir” is with the Swadhyaya Parivar Group, which manages through its state level network.

Date of starting: The Vriksha Mandir in Gujarat was started in 1980 with the very first one at Rajkot in 1979. The next one was in Veraval in 1980.

Village institution and other institutions involved: Formal village groups and Madhavi Rakshan Samithi (MRS).

Rules followed: In some cases to avoid initial costs and supervision, stands were purchased. On rotation, one or two local managers were assigned to be present in the plot every day. At least 300 such local managers are on the field everyday. Devotees come to the Vriksha Mandir in the months of *Margsheersha* and *Shravan* to offer pooja.

Social or other costs paid by the community: Voluntary labour and monetary support.

⁷“ Sacred groves for Tree worship” Paper presented by Dr. S.A. Chavan.(CCF) at the Workshop on Conservation and Development of Sacred groves, Rajkot, Gujarat, November 18-20 ,1997.

Benefits received by the community: Socio- cultural benefits.

Ecological impact: It is noted that farmers are highly motivated and adopt similar tree cultivation practices in their farmlands, leading to added and widespread ecological benefits in long run.

Limitations of efforts In some coastal plots the major cyclone in 1998 affected the area and most of the trees were uprooted.

V. Community Fishing: *Matsya Gandha*

Location: Some coastal parts of Gujarat.

Total area under conservation: NA

Description of the area: Presently there are 18 units functioning in Saurashtra & Kutch, 62 in South Gujarat with 101 units functioning in India.

Legal Status: NA

Date of starting: The Matsya Gandha Yojana is being practised since 1981.

Village institution and other institutions involved: The Ratnakar Poojan Trust, Mumbai is the registered trust, which manages these activities in collaboration with the state level network of local fisher folk communities.

Rules followed: A group of 5-12 fishermen in rotation is assigned the task as per the schedule decided by local manager. The amount of catch depends on the nature of port and the capacity of their boats, season and climate. The group – *Sagarputra*, donates a part of the sales to *Ratnakar Poojan Trust*; the rest is distributed among the needy. The community participation is purely voluntary. The activity is restricted to 220 days in a year except rough sea.

Social or other costs paid by the community: Voluntary service and providing their boats for fishing.

Benefits received by the community: The revenue from fish sale will be distributed within the community and part of it to *Ratnakar Trust*, Mumbai.

Limitations of efforts: Use of latest mechanized fishing methods by other groups is limiting the efforts of the community.

Ecological Impacts: Though the activity does not directly aim at biodiversity conservation but has an indirect impact. The subsistence collections and consumption pattern checks the over harvest. As well 140 days off from their fishing activities helps in the regeneration of aquatic life.

VI. COMMUNITY PARTICIPATION IN FOREST RESOURCE MANAGEMENT: THE JFM INITIATIVE⁸

Introduction

Joint Forest Management (JFM) in Gujarat

Since early eighties, efforts have been made to involve local communities in the protection, regeneration and development of forests in the state of Gujarat. In the mid-eighties, when the phase-I of the Social Forestry under the World Bank scheme started, emphasis was laid on involving local people. These efforts were, however, restricted to mere planting and raising trees. Participation of people was sought for better implementation of forestry programmes. Around this time, scarcity was declared in many parts of Gujarat, due to continuous drought from 1985 to 1987. The situation was turning from bad to worse, as the need of people regarding fuelwood, fodder and small timber could not be met. A beginning was made in some of the villages of South Gujarat in 1987, to address the regeneration issue. Starting with three to four villages and few hectares, Joint Forest Management (JFM) scheme today encompasses more than 1300 villages and covers over 1,75,000 hectares in Gujarat. The JFM resolution was based on the National Forest Policy 1988 and the guidelines issued by the Government of India in 1990. Pertinent to note here is the fact that JFM activities in Gujarat preceded the resolution of Government of Gujarat.

Extent of Community Participation in Forest Management Programme in Gujarat (March 2002)

Sr.	Name of Forest Division	No: of JFM Committees	Forest Area brought under JFM (ha)
01	Rajpipla (East)	138	10,165.00
02	Rajpipla (West)	149	12,116.00
03	Vyara	109	15,295.10
04	Valsad (N)	52	8,671.56
05	Valsad (S)	57	10,329.00
06	Baria	192	34,831.40
07	Godhra	121	20,808.75
08	Chhotaudepur	255	48,356.35
09	Sabarkantha	96	8,592.31
10	Sabarkantha(S)	122	9,292.88
11	Banaskantha	35	2,548.08
12	Gandhinagar	10	536.20
	TOTAL	1340	1,75,083.97

⁸ Sourced from VIKSAT's Publications

Case Study

This case study is of a village called Malekpur in Bhiloda –one of the oldest JFM villages in the area—on the ecological, economic, sustainability, equity and efficiency impacts of community participation in forest resource management (officially recognized as JFM) in the village and also the institutional changes facilitated in the area towards community based forest management and its scaling up.

Jhanjharmata Vruksh Utpadan Sahkari Mandli (JVUSM) Ltd – Malekpur Village

The Jhanjharmata Vruksh Utpadan Sahkari Mandli Ltd (JVUSM) was set up by the people of Malekpur village of Bhiloda Taluka. Established in the year in 1984-85, today it has a total membership of 205 out of which 170 are male members and 35 female. The *Dungri Garasia* community of the village have been protecting a total forest area of 163 hectares.

Until the early sixties, the forest was under the direct supervision of the Vijaynagar Jagirdar and the villagers had little to do with the forest. They had no rights over it. Dry wood, leaves, fruits and flowers in the forest were free for them even though permission of the jagirdar was a must. The threat of severe punishment for culprits resulted in the preservation of greenery in the region. After 1960, the degradation of the forest began with the abolition of the jagirdari system. Most of the trees were illegally cut by the Jagirdars. For the tribal people, especially those in the lower income group, the forest became a quick money-making source. It also led to large scale timber smuggling and sale of forest products and soon the forests of the village were completely wiped out and had an impact on the overall economy of the area.

The Jhanjharmata mandli of Malekpur was one among the first few cooperatives to get registered in 1986 (Registration no. Agri./2715 Dt. 12.8.1986) with the initiative of Shri. Siddhrajibhai Solanki, a professor at Gujarat Vidyapith, and VIKSAT (A Non Governmental Organisation- NGO: working in the villages of Bhiloda Taluka on issues related to enhancing people's participation on issues related to Natural Resource Management (NRM)). Initially Sixty households (of the total 110 Households) came forward to become members of the cooperative. After the registration, the cooperative applied, for leasing out the forest land, to the Forest Department (FD). However, after two years of submitting, Ministry of Environment and Forests, Government of India, in 1988, rejected this application under the provision of Forest Conservation Act, 1980.

During this period, focus was on development of private land within the village through various programmes like Vikas Bagh – small plots of horticultural and forestry species (in 800 sq.mt.) to meet the primary needs of the fuel, fodder and fruits of the tribal family. A fodder plan was drawn to get green fodder of pioneer jowar during the summer. 50% of the programme cost was met by financial assistance from the Tribal Area Sub-Plan (TASP), Khedbrahma and the rest 50% was met by the people in the form of labour. Bio-gas programme was initiated with financial assistance from Himmatnagar centre of Gujarat Agro-Industries Cooperation Limited.

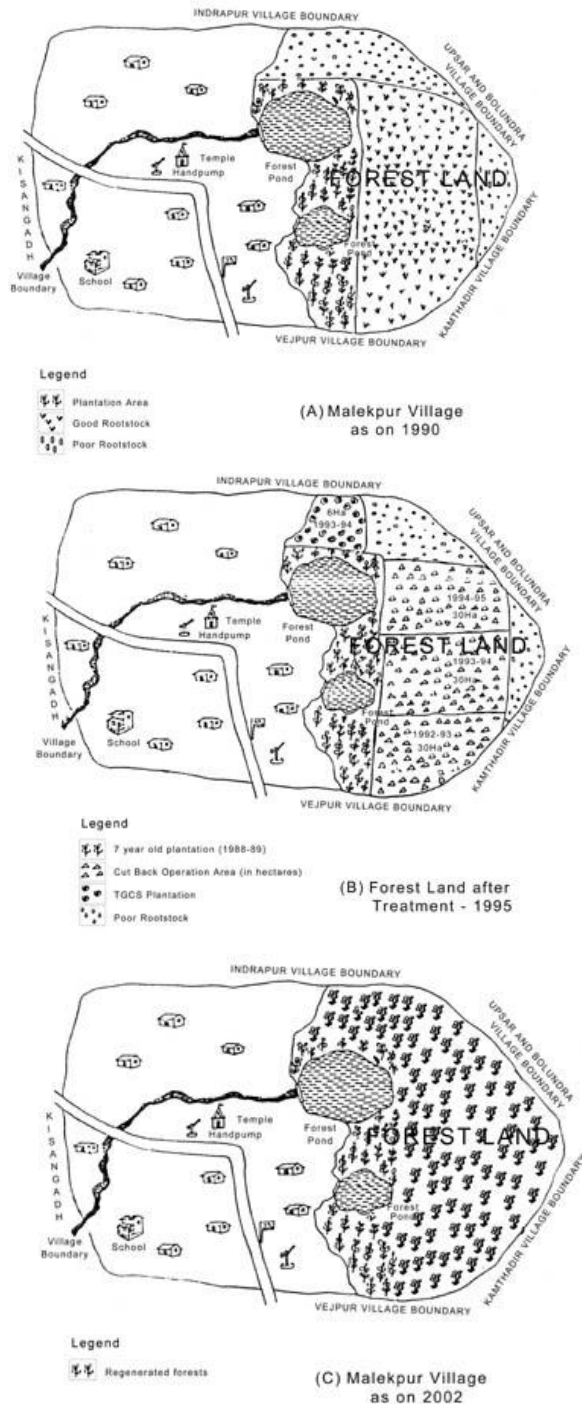
The protection efforts, rules for punishment were refined from time to time. As per one of the provisions of Gujarat JFM order, the cooperative which undertakes afforestation work on its own or with the financial assistance from non-state government agencies, would be entitled to 80% of the share of the final harvest. The JVUSM has resolved to avail off this provision and were not keen to get any assistance from the forest department. While the pros and cons of this provision is being debated, the FD has shown less enthusiasm towards JVUSM. Now the provision has been changed and in all cases the cooperative is still in dilemma as the final agreement between the JVUSM. & FD remains unsigned.

Activities carried out by JVUSM : Out of 167 ha forest area , 45 ha was fully barren, on which the FD carried out plantation. The remaining 122 hectares of land had the potential for regeneration due the presence of rootstocks. The cooperative initiated protection of forest since 1986; the area was

closed for open grazing and free cutting to facilitate regeneration. Today, the forests of Malekpur have regenerated to good forests. As on date there are 35 species of trees available in the jungle, prominent among them being Teak (*Tectona Grandis*), Timru (*Diospyros Melanoxylon*), Dhavdo (*Anogeissus latifolia*), and Kada (*Holarrhena antidysentrica*).

Due to protection activities the people have also started getting benefits in terms of increased fuel-wood supply, *Timru* leaf collection, and fodder grass collection. Malekpur village has helped in promoting JFM concept to other villages.

Regeneration of forests in Malekpur over time



Impacts of Forest Management in the Village

➤ *Ecological & Economic Impacts*

Study on vegetation dynamics carried out in the village forests showed growth of 35 species, the most dominant being Teak (*Tectona grandis*)- a valuable timber species. The 6 other major species were Khakhra (*Butea monosperma*), Neem, (*Azadiracta indica*), *Timru* (*Diospyros melanoxylon*), Dhaman (*Grewia tiliaefolia*), Garmala (*Cassia fistula*) and Umbiya (*Miliusa tomentosa*). The amount of woody biomass was estimated to be 23.40 Cu.m. per hectare of which 20.67 Cu.m. was Teak.

The Important Value Index⁹ for Teak with a relative density of 88.85% was estimated to be 185.56. The ecological changes could be perceived from the increase in production of *Timru* and collection of other gums from the forest. Collection of *Timru* leaves has also seen a major increase in the past several years.

Timru leaves collection from the JFM areas

Year	Quantity in Standard Bags	Procurement rate per Std bag (Rs.)	Value in (Rs.)
1999	286 sacks	350	1,00,100
2000	400 sacks	375	1,50,000
2001	200 sacks	400	80,000

* Amount in standard bags Source: Forest Development Corporation, Himmatnagar

1 Standard bag = 1000 bundle & 1 Bundle = 50 leaves

Because of the JFM activities, there has been a marked increase in the overall production of the *Timru* leaves from the forests of the village. But unfortunately the contractors appointed by the forest development corporation for collection of *Timru* leaves gained as middlemen. The villagers are paid only the labour cost of collection of the leaves which turns out to be only 30 - 35% of the overall returns from the sales of the *Timru* leaves.

The other ecological changes were check on soil erosion, increase in ground water recharge, increase in humus and soil fertility and standing bio-mass. Further, these ecological processes have also improved habitat conditions which attracted a variety of small animals, birds, moths and insects.

⁹ **Importance Value Index (IVI)** : The Importance Value Index is a statistical quantity, which gives an overall picture of the importance of the species in the vegetative community. It considers the relative values of density, frequency, and basal area of each species in a given area. It thus incorporates three important parameters which are measures of diversity and productivity of every species.

Thus IVI = Relative density + Relative frequency of occurrence + Relative basal area.

$$1. \text{ Relative density} = \frac{\text{density of the species}}{\text{Total density of all species}} \times 100$$

$$2. \text{ Relative frequency} = \frac{\text{Frequency of occurrence of the species}}{\text{Total frequency of all the species}} \times 100$$

$$3. \text{ Relative basal area} = \frac{\text{No. of quadrat in which the species occurs}}{\text{Total number of quadrat sampled}} \times 100$$

The sum of all the species in a forest composed of several species should be 300

The changing status of ecological conditions have shown indirect positive influence on the agricultural productivity and animal husbandry which is a significant source of livelihood for local tribals.

➤ ***Concern for Biodiversity***

The PIs have a deep concern for biodiversity, more so because they use a range of forest produce from a large number of species. Edible flowers, fruits, leaves, roots etc. form a part of their diet. Some edible items are also sold in the market to meet the cash needs. Leaves of forest species are used to make leaf plates (*Butea monosperma*). Medicinal plants such as *safed Musli* are also used by the local people. *Timru* leaves and Mahua are important sources of income. To these tribal people, the NTFPs are a lifeline; they are usually collected for consumption, home use and for sale. This vital link is reflected in the traditions and customs of tribal groups (Raju et al., 1993). In Malekpur, turnover from Mahua (*Madhuca indica*) and *Timru* leaves (*Diospyros melanoxylon*) grew six and eight folds respectively. Similarly, the production of fodder grass and fuelwood has been on an increase. This success can be attributed to efficient protection by people resulting in vigorous forest regeneration. These results demonstrate that PIs view forests as source of subsistence, livelihood and profitability and hence will put in their best to protect and develop the same.

Annual Fuel-wood Collection Mechanisms

In the initial years only dry and fallen twigs were permitted to be collected from the forests, but the problems faced by the villagers in the availability of fuel-wood forced the members to rethink this issue and they evolved a plan to address the same. The villagers made a general survey of the village forest and according to the density of the trees, they demarcated the forests into five different zones and it was decided that the villagers will carry out cutback and pruning activities in these patches. One patch is selected every year and the materials harvested are distributed among the members. Thus as per plans the cutback and pruning activities were carried out in the respective patches once in every five years. This has helped the villagers to gather more fuel-wood from the forest area. Members of the executive committee helped to supervise the whole process and saw to it that the bigger trees are not cut in the process and only the branches and other smaller twigs are harvested during the whole process. Again the villagers form themselves into different groups and only one or two members from each group are allowed to carry the axe into the forest area and carry out the actual harvesting process, while the other members of the group help in gathering and transporting the material out of the forest area. This process is carried out every year and in the process it is assured that all households of the village get equal access to the fuelwood from the forest. In the past two years the villagers have been able to harvest 4000 *mans* (4000 x 20 kgs = 80,000 kgs) of fuelwood from the JFM forest area. One portion of the fuelwood collected by each of the group is deposited with the cooperative, who then auctions the share to the highest bidder (usually within the village). This helps the cooperative to earn some income and cover some of their administrative costs.

➤ ***Equity in Participation & Resource Allocation***

Equity became one of the major concerns for the PIs after the initial few years of taking up the protection. As open grazing & entry into the forests for grass & firewood collection were stopped, women started facing problems in meeting their firewood & fodder demands. To address this, the TGCS allotted a portion of the forest patch for collection of firewood and fodder. Further, as the benefits from the forests started flowing in, the issue was to distribute them equitably among the members. The PI ensures that all the members participate in grass collection & cut back operations on the dates specified for them and the product is shared on the basis of the share holding. Nevertheless, it was ensured that the poor & land-less families and especially women have their voices not only in protection and management but also importantly in decision-making and benefit sharing.

Fodder Grass Sharing Mechanisms

The Village committee evolved a unique system to regulate the harvest of fodder grass from the JFM areas. Open grazing is banned and the grass is allowed to grow till the month of January /February. Once the grass is ready for harvest a meeting of the executive committee is called and a date for the harvest of the grass is decided. The information is passed around in the village. Subsequently the villagers form themselves into different groups (mostly members of the close relatives). Generally 12 different groups are formed, each group having 10 members. The executive committee members then conduct a general survey of the forest of the village to get a measure of the potential harvest possible and the growth of the grass across the various patches of the forest. Then accordingly the total forest area is divided into 12 different patches. Denser the growth of the grass, smaller the area demarcated. Once the patches are identified, a lottery system is adopted to allocate the 12 patches to the 12 groups. Each group appoints its own leader who helps to monitor the grass harvesting procedure. Only one member from each household can participate in the actual cutting of the grass. Thus during the harvesting process, each member cuts the grass according to the time allotted (generally 2 – 3 hours) and once the grass is harvested, other members from the household can come to help to gather and prepare bundles of the grass harvested. Thus care is taken that the fodder harvested from the forest is distributed equitably among the different households. The whole fodder harvesting process lasts for 10 – 12 days depending upon the amount of grass. Everyday, in the evening when the 12 groups collect the grass, one portion of the share is deposited in the account of the cooperative. Thus everyday the cooperative gets a share of 40 – 50 bundles of grass. This grass is then sold to the highest bidder (generally to farmers within the village). In this way the cooperative also earns almost Rs 2000 – Rs. 3000/- every year.

Summary:

Certain changes in rights and privileges over forests, policies and laws pertaining to NTFPs, Working Plans, and silvicultural arrangements, etc are desirable in JFM. The field officials are willing to entrust protection to the communities, but hesitate in involving them in management and control of government forests, thus reducing JFM to 'I manage, you participate'.

Despite these problems, exciting beginnings have been made in a number of states. Local VFCs are proliferating, some spontaneously and others with the encouragement and assistance of Forest Department field staff and NGOs. Old attitudes are changing. Collecting NTFPs generates a lot of self-employment and self confidence and harmony with nature.

VII. COMMUNITY BASED WASTELAND MANAGEMENT

Case studies

CS1. GAUCHARA: COMMUNITY CARE OF COWS ¹⁰

Many parts of Saurashtra have sizeable populations of the *Ahir* community. The *Ahirs* trace their descent from Lord Krishna and even today count care of cows and animal husbandry among their main duties. Most villages in Kalyanpur taluka of Jamnagar district have an indigenous institution for community care of cows — the *Gauchara* system. This system is reportedly evolved by the *Ahirs* in the distant past. According to certain elders of the community, the essentials of the form in which it is practiced today date back to at least three hundred years. The system is believed to have been created in response to the frequent droughts in the area and the shortages of fodder during the dry season. Chhaganbhai B Ahir is the “caretaker” of the *gauchara* of Tankaria village. The *gauchara* of this village is considered small since there are only about 150 cows and about 100 female calves in the village; buffaloes and male calves are excluded from the system. The milk from the cows is retained for home consumption, and buffalo milk is converted into ghee for the market. All cow owners, regardless of their land holding or caste status, are members of the *gauchar*. The physical infrastructure includes a fenced yard of about a quarter of an acre (with a few trees providing shade), a *godown* for storing fodder, a bullpen and a small irrigated patch for green fodder for the bull.

The affairs of the *gauchara* are managed by a committee which decides the various norms to be followed.. The size of the committee is elastic, and usually varies from eight to fifteen. A member of the *Lohana* community, in which bookkeeping has been a traditional skill, keeps the accounts of the *gauchara*. The crucial pivot around which the system revolves is an annual contribution (*neeran*), around *Diwali* time, of sorghum stovers and groundnut by-produce by all bullock owners. The current norm is 100 bundles for every pair of bullocks owned. Groundnut by-produce is contributed voluntarily.. The contributions are stored in a covered *godown*.

Every morning, all the families hand over their cows and female calves to the caretaker at the yard. Who feeds the animals from the stocks maintained in the *godown*, and then takes them for grazing and watering.

The sorghum stovers are not the only contributions the *gauchara* receives. On every occasion, auspicious or inauspicious, contributions ranging from Rs. 2,000 to Rs. 10,000 are made to the *gauchara*. The money is used for buying fodder in times of scarcity, developing the infrastructure and maintenance of the bull. Every month, on ‘*amavas*’ day, the dung collected in the yard is auctioned. The winner is responsible for carting away the dung. The caretaker is not paid from the *gauchara* fund. He receives from the cow owners Rs. 8 per month per cow and its female calf.

The bull is also fed ghee and concentrates which are bought out of the fund, or are contributed by the people of the village. The bull is changed every three years. The old one is exchanged for another one, or a new bull is bought. Treatment of cows is provided by a local expert, and sometimes by the veterinary doctor.

The *gauchara* institution has played an important role in ensuring maintenance of cows in a harsh environment with low and uncertain rainfall. Its long history, presence in many villages and close identification with Lord Krishna are, factors favoring its continued existence and development. However, degradation of grasslands, deterioration of soil fertility and migration of the youth in search of industrial jobs are factors, which are bound to have a negative impact on animal husbandry in the area, as well as on its institutions such as the *gauchara*.

¹⁰ P G Vijaya Sherry Chand. Honey Bee, 6(2): 15,1995

CS2. JALJEVDI

Location: *Jaljevdi* village borders the Gir Wild Life Sanctuary in Amreli district. It is a good example of how people's participation has changed the status of wasteland into productive areas.

Total area under conservation: The available 76 ha community wasteland has the potential of turning into a productive tract. Informal protection is being carried out in the total area. Recently 1 ha area has been taken up for plantation.

Description of the area: The village consists of 150 households with a total population of 1,200. The total livestock population is 600 of which there are 210 cows, 232 buffaloes and 110 bullocks. Their livelihood is agriculture and labor work in a near by city. They also collect minor forest produce like *Timru*.

Legal status: Village wasteland.

Date of starting: For the past 4-5 years.

Village institution and other institutions involved: *Dhananjay Gram Vikas Mandal*, Development Support Centre (DSC) – the facilitating NGO and the forest Department.

Rules followed: The formal registered group, *Dhananjay Gram Vikas Mandal* with a 9-member body took up the responsibility of all the work including planning and implementation. Out of Rs. 15 lakh allotted for the project Rs. 9 lakh worth of work has been done already.

Social or other costs paid by the community: Voluntary contribution of labour for protection of wasteland and restricted grazing.

Benefits received by the community The grass harvested within the village will be distributed among the members of the village Mandal.

Limitations of efforts The ignorant key persons in the village halted the commencement of work. DSC approached the village leader in 1996 to begin integrated watershed management activities. Resistance from a *Sarpanch* himself halted the work. He didn't permit the carrying out of plantation work fearing that the land would be grabbed by the Project implementing Agency. However the permission was given to carry out water harvesting and soil-water conservation structures in 60 ha. Later on with increasing interaction and participation of the other members lead to conviction among the leader and currently the group is carrying out the work very efficiently.

CS3. HIRAVA

Name: Hirava

Location: 25 km from Dhari in Amreli district

Total area under conservation: The non-reserved forestland adjoins the Gir Wild Life Sanctuary

Legal status: Non-reserved forest areas.

Date of starting: For the past 10 - 12 years.

Village institution and other institutions involved: *Satyam Gram Vikas Mandal*, Forest Department, Develop Support Centre (DSC), Babapur *Gaushala* and Forest Department.

Social or other costs paid by the community: protection from grazing voluntary service during harvesting, and facilitate the grass distribution.

Benefits received by the community. The grass harvested from the area is being shared between the *Gaushala* and Hirava village members.

Limitations of efforts The Forest Department agreed to give the land for this purpose to *Satyam Gram Vikas Mandal* a registered village unit. The Forest Department has orally asked the mandali to collect the grass in return of their developmental work. However, another educational institution cum *Gaushala* in Babapur village, was collecting grass though it is not a neighboring or adjacent village. Babapur is 45 km away from this village.

This *Babapur gaushala* being far away, collection of grass is the only task undertaken by the gaushala. Hence the task is done very indiscriminately with no concern for the site. The conflict of grass sharing soon started. The committee proposed to the Forest Department to give 50 ha of the land to the *Gaushala* management. In fact, the village committee agreed to supply the required quantity of grass to *gaushala* if it managed the whole area. Recognising the villagers efforts the Forest Department was ready to give only 50 % -50% share to two units. But the *gaushala* rejected it. A *chokidar* was employed who in turn manipulated the transport of grass and in many cases the grass didn't reach the Babapur itself. Villagers also started to keep a watch on the grass plots, this was not liked by the guards employed by the *Gaushala* and they began harassing the villagers. The *chowkidars* deliberately complained to Range Forest Officer against the *Mandali* president who fined the latter on the grounds that cattle was found in the grass plot.

The issue irked the villagers and they raised the issue with higher authorities of the department. Again, the Forest Department held a *Gram Sabha* and assured the village to get 50% of the grass from the site. However, this decision was still to come into writing before the monsoon.

Ecological impact: Improvement in the soil moisture regime in the area and soil erosion control. The plot has enough grass potential and readily available to both the parties from the plot.

CS4. Layeri. (Taluka Nakhatrana District: Bhuj)

Layeri village of Nakhatrana taluka is dominated by the Jat community. Livestock management is a major component of the livelihood pattern of the villages. The livestock population in village in the year 1990 was 2,000 cows, 700 Buffaloes, 700sheep and goats whereas in the year 2000 their number was 700, 1,000 and 700 respectively

Over a period, their experience over unmet demands and degrading resources of grassland brought about a realization of the importance of the grasses and soon the village community took to conserving the grassland. As a result, a formal committee came into existence to look after the same.

A Registered village committee with the help of *Sahajeevan-the local NGO* is taking care of about 200 acres of grass plot since the last several years. The Committee involves 10 executive bodies of which 5 are women. The NGO *Sahajeevan* provides technical and financial inputs while committee carries out management, planning, and distribution of the responsibility of carrying out the protection activities and also the distribution of the grass to the villagers. The collected grass will be used when there is scarcity so currently they are storing the grass in the village godown. The villagers contributed Rs.10 every month and they have a sizeable savings in their account. The Rs. 2 lakhs present in savings bank will be used to acquire grass in case of extreme scarcity.

Ecological Profile of the village plot: The grasses found here are Seasonal-*Bajri, Sami, kurai, mandhanu, kulai*. The Perennial grasses are *Bennaie, Suaeda monoica (Lurno), Cenchrus satigarus (Draman), drub, kevai, hanir,kaj. Bennai* and *Sporobolus helvolus (Khevai), lum, rub* which are increasing because the tubers of this species are hardy and anchored well. So grazing will have no

effect as non-palatable tall grass suppress the short and prevent the palatable seasonal grass to come up.

The plot is protected by live hedge fencing, and is trenched. The invasion of *gandabaval* has taken place and the efforts are on to remove it.

By consumption of the seasonal grass the cattle gives 10-12 liters of milk, where-as during the summer months it reduces to just 4-6 liter/day as a result of using imported fodder.

In this region the milk marketing system is individual based. Still some intermediaries collect milk at Rs. 8-10 /litre and sell the same at Rs. 12. Some of the villagers are also involved in making charcoal by cutting *gandabaval* and earn up to Rs. 40 /40 kg bag.

Agriculture is also practiced on a smaller scale here. The crops generally grown are (pulses) *Kathol*, *bajri*, *jowar*, and *erranda (castor)*, vegetables like *tomato*, *mirch* etc. Wild animals like *nilgai*, *hiran*, and *jackal*, etc. are also sighted in the vicinity of the village.

The other plant species found here are *kher*, *baval*, *mthi jar*, *karijar*.

VIII. COMMUNITY INTEREST IN ANIMAL FEEDING AND CARE TAKING

1. *Gaushalas*

Case studies

CS1. RAVNI

Name : Ravni

Location: Ravni Vanthil Taluka, Junagarh dist ¹¹

Total area under conservation: 51.20 ha

Description of the area: A self initiated activity to support cows on religious grounds.

Legal status: The land belongs to Forest Department.

Date of starting: Around the year 1980 the village community initiated the management activities.

Village institution and other institutions involved: The *Gau Seva Samaj* manages the wasteland and cows. Bharat Agro-Industrial Foundation (BAIF) intervened in the year 1994.

Rules followed: Compulsory cultural donations during social ceremonies like, marriage, death etc.

Social or other costs paid by the community: All the village members take interest and contribute their service in wasteland management. The Revenue collected from different sources includes donations from individuals from and outside the village as well as voluntary donations made during social ceremonies (Marriage, death etc). Even the *Gau Samaj* charges Rs.15 per cattle /month.

Benefits received by the community: The fund is used for fodder management, vaccination, permanent building for management of calves, salary for cowherds and preservation of fodder.

Construction plans:

Ecological impact: During drought adequate supply of fodder and water to cows is guaranteed.

CS2. RAMRECHI

Location & Total area under conservation: The Gram Panchayat is producing fodder on a 15-acre plot and another 75-acre *gauchaar* belongs to *Madhavram Gaushala*.¹²

Description of the area: Village – Ramrechi, taluka – Talala, District - Junagarh, is another outstanding example where over the past 30 years the villagers are taking care of cows which

¹¹ Ajit Jadhav and Dinesh Chabadia. *Study on Ravni Gau Seva Samaj plot for grass and tree plantation*. Regional workshop report of the Common Pool Resources (CPR) in Semi Arid India. 15-16 March 2001, Ahmedabad

¹² Ajit Jadhav and Dinesh Chabadia. *Study on Fodder Development Plot at Village Ramrech*. Regional workshop report of the Common Pool Resources (CPR) in Semi Arid India. 15-16 March 2001, Ahmedabad

they consider sacred. The Gram Panchayat is managing the wastelands, *gauchaar* and revenue land which falls under section 4 of Forest law. The Gram Panchayat is producing fodder on a 15-acre plot and another 75-acre *gauchaar* belongs to *Madhavram Gaushala* that had 994 cows

Legal status: Revenue wasteland.

Date of starting: Over the past 30 years the villagers are taking care of cows.

Village institution and other institutions involved: *Gram panchayat, Madhavram Gaushala*

Rules followed: Villagers bound to certain rules and rituals that are self-imposed as well as according to Hindu and *Jain* cultures.

Social or other costs paid by the community Village individuals donate the area for plots to the Gram Panchayat and *Gaushala*. The informal village group manages the land, fodder and cows. The donations from villagers and resourceful persons are accepted and apart from this the cattle owners contribute Rs. 20 /cattle/month.

Benefits received by the community Benefits to the cows during drought, fodder supply

2. Chabutara for feeding Birds¹³

Chabutara (a platform) is an institution that focuses on feeding birds particularly in seasons when food becomes scarce. Such an idea emphasizes the sensitivity we need to have for the rights of other non-human living beings to co-exist with us, even in a drought year. This practice is managed in some villages by nature loving individuals while in others, it is managed by communities.

Details:

Human perception of nature has moulded the relationship among various stakeholders, including non-human living beings. The tradition of feeding birds perhaps is very old and found among most cultures around the world. However, it has continued as a living tradition only in some regions. Except the urban pockets where pigeons are generally fed grains, in rural areas, such a practice is often found in dry regions. Gujarat is no exception. Most of the bird-feeding platforms and indigenous institutions are found in North Gujarat and other similar region. Different norms have evolved among local communities for pooling grain and feeding the birds. During one such visit to some villages in and around Balaram-Ambaji Sanctuary, semi-arid regions of Banaskantha district, we came across several examples of *chabutara*. Setting A village *chabutara* exists in Kanpura village (Palanpur). The *chabutara* is a small 10-12 ft high platform constructed with bricks with an open pan on the top where grains are kept. The design and architecture of a *chabutara* may vary from village to village. For instance, the *chabutaras* located in Pedagara (Palanpur taluka), Bajothiya Mahadev, Malpuriya (near Chitrasani) are quite different in shape and architecture. How does it work? Birds from six surrounding villages come to the *chabutara* for their daily feed. Approximately two Kgs. of wheat/maize is fed to the birds visiting the *chabutara*.

Whenever anybody commits an unlawful action like stealing cattle, cutting trees from village commons (*Gauchaar*) and forest, they are asked to give a certain amount of grain as a penalty. Sometimes people from Kanpura village give the grains in return for the fulfillment of a wish (*Manyata*). In case of social-offence, the offender is asked to give five kg of wheat grains towards the *chabutara*. Sometimes a small share of the grains that was sold to grain merchants is kept for the birds.

Most of the birds flock to the *chabutara* either in the early morning or in the evening hours. Pigeons,

¹³ Lyes Ferroukhi and Jitendra H Suthar. Honey Bee: 5(2): 5-7, 1994.

sparrows, Indian maina, 'Hola' (pink headed dove) and even peacocks visit the place regularly. The frequency of visits increases during late-summer months and monsoon (May to August) when an alternative source of grains in the fields becomes scarce. Sometimes, omnivorous birds like *kabar* (mynah) also visit nearby farms to feed on pests. Some believe this helps farmers in controlling pests through their natural predators.

Sustaining the spirit-Challenge ahead : The *chabutaras* of Kanpura are well maintained. While the culture of maintaining a *Chabutara* is more popular in surrounding villages, the people from Kanpura have not shown enough enthusiasm and interest. In some of the villages these *chabutaras*, which were maintained well, need restoration. Mere financial support is not enough. Some villagers have agreed to organize consultation in surrounding villages with SRISTI's support to revive both the spirit and norms of one of their oldest institutions and also provide drinking water facility near the *chabutara* after learning from the experiences of others¹⁴

¹⁴Honey Bee, 10(3): 10-11,1999.

IX. COMMUNITY CONSERVED SPECIAL SPECIES: *MAHUDA* TREE IN DHANDASAN

Bhiloda is a tribal taluka of Sabarkantha district in North Gujarat. The Total geographical area of the taluka is 722.55 sq.km, one third of which is covered by forests. The tribals are highly dependent on the forests as a source of their livelihood for fuel-wood, fodder, medicines, leaves, flowers etc. The Dhandhasan village panchayat (Village council) has 500 *Mahuda* (*Madhuca indica*; trees grown on 75 hectares of village. For the last 35 years, people of this village have been traditionally following the practice of collecting the flowers of *Mahuda* on a community basis. The flowers are used for various purposes after drying them *Mahuda* tree is supposed to be a good source of timber. The wood is used for various purposes including agricultural implements. This case exemplifies unique contributions of local communities under the able local leadership towards protection of trees and sharing of fruits and flowers, equitably.

History

Earlier, people had the privilege to use the *Mahuda* trees according to their respective needs. Nobody in the village objected to it. But as time passed with increasing demands of households, the resource started becoming inadequate to fulfill everybody's demand. Altercations and internal conflicts among sections soon became common. Looking at the state of affairs the then *Sarpanch* of Dhandasan village felt that there was a need to evolve norms for regulating the access. It was soon decided that every household would get an equal share of flowers every year. Thus from 1965 onwards, this traditional practice is being maintained with lot of enthusiasm. The practice has more or less ended the conflict among the villagers and seems to have increased a feeling of interdependence among them.

Socio-economic Status of the village

Dhandasan is a small village with 465 households comprising various castes. The main occupation are farming and livestock rearing. The important crops grown are Maize (*Zea mays*), udad (*Vigna radiata*), tuver (*Cajanus cajan*), Jowar (*Sorghum bicolor*) and wheat. Generally villagers do not use any chemical fertilizer. In this village traditional varieties of makai, tuver and adad are also found. Each farmer had approximately two to four acres of land. There are 400 wells in the village and around 26 borewells.

Apart from *Mahuda*, nilgiri (*Eucalyptus spp.*), baval (*Acacia nilotica*) limdi (*Murraya koenigii*), ganda baval (*Prosopis juliflora*), Khakhara (*Butea monosperma*) and neem trees are also found in this area. Every household individually owns four to six *Mahuda* trees (bitter and sweet). The literacy rate of this village is moderately higher than is neighboring ones.

The picking process

All the members of the village participate in the operation of flower collection. Only one person can participate from each household. Except the village members no other outsider is allowed to take part in the collection of flowers nor are they entitled to any share. A membership fee of Rs.10 is fixed. If a single household lives separately, then in that case to include themselves as members, each individual has to provide fresh application with a fee of Rs. 10 to the Panchayat.

Mode of operation

There are total 465 households in the village and all of them participate in this operation. The villagers keep a close watch on the *Mahuda* trees so that flowers are not plucked from the trees. They are allowed to remain in the trees till they get dried and fall automatically on the ground. Nobody is supposed to touch the flowers until the collection starts. A decision is taken regarding the method of operation, and selection of guards for three months. The village elders decide upon the wages for the current year to be paid for employing guards in the field. Then on a specific day the village community holds a meeting to decide the date of collection of the flowers. Every member of the household takes part in the operation of collecting the flowers in early morning between 8 am to 1 pm and afternoon 3 pm to 6 pm on the dates decided earlier.

The flowers are assembled in one corner near any particular tree. Later, small bundles are prepared out of these according to the names of the rightholders/members that are maintained in a register. The operation continues for about 15 days. If any members is unable to participate in the collection operation then she must send a labourer as a replacement, otherwise a fine is imposed on the absentee for neglecting one's duty. The same rule is applied on the members who have migrated away. If anybody misses half a day then he has to bring a labourer with him to compensate his absence. If there is any ceremony in the house then more than one person from the same household can participate in the operation depending upon his availability for the rest of the days.

Maintenance

All members of the community in Dhandasan are engaged in the maintenance of the *Mahuda* trees. Based on the tribal traditions, the village community has maintained a cooperative attitude among themselves. The Panchayat has nine members. The head of the Panchayat, in association with others members, takes all the major decisions on behalf of the villagers. In order to achieve and maintain the security of the *Mahuda* trees, the villagers appoint four guards on daily wage system during the period of collection for three months starting from the flowering stage. Every house of the village contributes Rs. 10-20/- per month as maintain fee. The guards are recruited from the same village. Apart from the daily wage, they also receive their share of *Mahuda* flowers. The *Mahuda* flowers are sold in the market and the amount thus earned is utilized for meeting ones household needs.

Resource allocation

When there is a good monsoon, the production of *Mahuda* flowers is generally high. But if it rains during the flowering stage of the flowers, then the yield of the flowers is reduced to a great extent.

In 1999, 18,600 Kg flowers were collected and each member got a share of 40 Kg flowers. Last year the total collection was 12,090 Kg and watch members received a share of 26 Kg. The flowers are sold in the market at the rate of 10-12/Kg.

Mahudas of Kanodara

A similar institutions with five thousand trees of *Mahuda* was located in the Kanodara village of Vijyanagar taluka in Sabarkantha district . The village is situated fifteen kilometers away from Bhiloda, (Juni and Navi Kanadar) having about 400 inhabitants, Prior to 1960 there were ten thousands trees of *Mahuda* in this Adivasi (tribal) region. But due to the rehabilitation of the migrants of Meshwa Dam, 5,000 *Mahuda* trees were chopped off. In spite of it , *Mahuda* has a significant place in the life of the local people of Kanodara.

History states that there was a king named Harisinh in Vijaynagar who was a great lover of trees. In those days, there was a tradition among the adivasis of offering wine to the king made out of their *Mahuda* trees. The villagers believe that perhaps it is for this reason that they grew *Mahuda* trees on a large scale. Since then the villagers have developed certain norms for the conservation and distribution of *Mahuda* trees. Other trees found in this area are dhavadi, saal, bamboo, *Timru*, sadad, amla and sag.

Institutional Arrangement

Earlier the villagers used to collect the flowers of the *Mahuda* randomly and there was no rule of limitations. At a later stage, villages decided to collect *Mahuda* in groups and then distribute the same among the villagers. But discrepancies occurred in distribution and resulted in friction among the members of group. The villagers soon came up with an innovative method. They took an account of the total land and number of trees of the village. Similarly they counted the number of *falia* (Hamlets, i.e. area and the number of houses in each *falia*. Keeping in view the number of houses they distributed the land area and number of trees among the households.

One member is identified as the supervisor from each *falia*. *Juni* (old) and *Navi* (New) Kanadara have 15 *falia*. The supervisor normally helps in protecting the trees that fall under his territory by assigning responsibility to particular persons. To protect the flowers from birds, monkeys and humans, one person from each *falia* is appointed to guard the trees during day and night.

One person from every household is supposed to take part in the collection of flowers from their area. Women also participate in equal numbers as the men. If nobody turns up for collecting fruits from some family, then the wages for one labourer is deducted from their share. Once this operation is over, the flowers are collected in their respective areas. If somebody damages any tree the villagers fine the person. If necessary, they inform the Forest Department and get him punished.

Resource Allocation

During March to April, family wise share of *Mahuda* is 12 to 13 *munds* (240-260kg). They get about Rs. 120 to 140 for this in the market. A single *Mahuda* tree gives an average annual income for Rs. 3000 to 5000. The whole operation of collecting *Mahuda* flowers takes about 25 days.

Uses of Doli

Within two to three months, after the operation, the *Mahuda* trees are ready with the ripened fruits i.e., *Doli*. The ripe fruits are collected freely and any member of the village can perform this task. The fruits are extracted for oil. About 20 Kg oil is extracted out of 12 to 14 kilo of dry *Mahuda* fruits when processed in local oil mill, locally termed as *doliyu*. This oil is used for domestic consumption as cooking food. The rate of dry *Doli* of *Mahuda* is Rs. 120 to 180 per 20 kilogram.

The fruit is available on the trees only during the month of May and June, and the flowers are available on the trees only during the month of April and May.

Mahuda flowers are used as food when fried with til seeds or groundnuts, or used for liquor, or preparing *dhokla*, a local food preparation.

Other uses of *Mahuda* are:

- (a) Two hundred grams of *Mahuda* floors are mixed with *jaggery* and heated. This mixture is applied on the affected part of the body of the animal suffering from pain caused due to some injury (also applicable to humans).
- (b) If within a period of two hours after delivery the placenta does not come out from the body of the animal then one to two Kg of *Mahuda* flowers could be given to the animal to eat
- (c) If the animal is physically injured or has developed germs, then a hot formentation of its vapour is given.
- (d) If one Kg. dry *Mahuda* flowers are fed to animals, it helps in increasing the milk yield. During the drought times the leaves serve as an alternative fodder for animals
- (e) *Doliyu* oil is applied on leather in order to make it smooth and durable and increase the lusture
- (f) Dry *Mahuda* flowers are used as a fertiliser in the farm.

Community Conserved Area: Strategy For Action

In true sense Indian Forest Policy-1988 is the first step in the history of Indian forest management, which paid an attention towards meeting the requirements of locals and their participation. Eventually, later implemented Eco-development and Joint forest management efforts in the country are to be viewed in similar perspective. The scope has further strengthened by implementation of Bhuria committee recommendations and Panchayati Raj extension Area into Scheduled areas (PESA). Thus the winds of new change in policy matters are in favor of people. The current approach towards policy framework of natural resource management from bottom to top; if strictly enforced shall definitely help to overcome the current problems of degradation of natural resources.

However, the success of conservation and sustainable use of resources is the function of formal recognition and legal support. Developing a positive administrative outlook towards synchronized scientific approach along with community knowledge and its use will be more viable to attend the multiple objects of conservation. By taking into account the success of these age old traditional and indigenous system of management one thing strongly suggest us to review the existing Wildlife (Protection) Act, 1972 and declare these sites as "Community Conserved Areas" equally or on par with the other category of Protected areas. There should be sufficient legal space for these communities from planning to implementation. If so the recognition will definitely opens a new era of conservation with the scent of traditional knowledge. The positive impact will bring a revolutionary change in the field of community participation, local governance and integrated scenario of development.

Hence, supporting the community requires a special attention and special plans to strengthen their capacities and capabilities for sustained results. The ground reality is that Communities are ready to go to any extent to take part in conservation activities supporting their livelihoods, except financial involvement. It is also important the flow of money in conserving these areas should be prioritized in such a way that it should restrict within the community and make it mandatory that the revenue should be reused for management and improving the productivity of the site.

Apart from these comprehensive guidelines at macro level, there are some immediate issues to be addressed particularly in some of our study areas of community interventions due to their multiple functions.

The significance of the conservation of some of the CCAs of Gujarat enlisted below have a greater role in promotion of existing Protected Area Network. In case of Sacred Groves areas of Jessore Wildlife Sanctuary (WLS) and Banni areas supports directly and indirectly many other adjacent protected areas of Kutch and Saurashtra respectively. The Sloth Bear and Panther are key species of Jessore WLS. The great Indian bustard, flamingo, migratory birds and many indigenous cattle breeds are significant species of Banni and its surrounding area. Hence, for the proper ecological functions of the species richness and uniqueness of these areas require a comprehensive management strategies and action plans.

The sacred grooves listed here in this study are from the area of Jessore WLS, one of the three WLS of Gujarat known for the existence of typical Sloth bear habitat.

Protected Area (PA) is rich with respect to endemic rare and threatened flora and fauna. Some globally important species, which fall in the International Union for Conservation of Nature and Natural resources (IUCN) category of threatened species, are also recorded from here. These include four rare species namely, *Pavonia arabica*, *Tecomella undulata*, *Caparis cartieaginea* and *Dendrocalamus strictus*; two threatened *Sterculia urens* and *Phoenix sylvestris* and one endangered species *Ceropegio adorata*. The most exciting discovery was that of six species endemic to India. These are *Anogeissus sericea*, *Chlorophytum borivillianum*, *Sterculia urens*, *Tecomella undulata*, *Phoenix sylvestris* and *Dendrocalamus strictus*.

An endangered species (IUCN) 'Indian Python' (*Python molurus*), 'Flapshell turtle' (*Lissemys punctata*), 'Muggar' (*Crocodylus palustris*), and 'Varanus' (*Varanus bengalensis*) of vulnerable

category (ZSI) are also found here. The major threat faced by the herpetofaunal species is the scarcity of water points, which are very crucial for their activities. It has been noted that amphibians are less diverse than the reptiles indicating water as a limiting factor for the amphibious mode of life apart from the heavy moving traffic and hunting. A total of 17 species of amphibians and reptiles have been spotted. The avifauna is also rich with water birds and migratory birds as a halting site making the sanctuaries thus important for conservation.

In this way, the sacred groove conservation in this area has a broader perspective to reduce the stress on surrounding wilderness. For proper management of integrated planning and management below issues are hurdle to go forward for the desired result of conservation.

Issue-1: Denotification of the area

This requires immediate attention as the State Government is seriously considering denotifying either the entire or a huge chunk of the 544 sq.km Jessore wildlife Sanctuary spread across Banasakantha district. The Wild Life Sanctuary supports 26 bears and 29 panthers, rich herbal, medicinal plants including the valuable *Terminalia arjuna* (arjuna). The sanctuary is also rich in minerals like lime stone, marble and granite.

Strategy

➤ Extension of PA

Area coverage under the PAs in the Aravallis is adequate but the distribution is not uniform. Jessore WLS has a honeycomb pattern of existing villages and it is possible to manage this sanctuary effectively in its present form under the WPA 1972. The best forest areas in the Aravallis that support a rich biodiversity as in case of the Sabarakantha district have not been included in the PA. Hence, the boundaries of the Jessore sanctuary should be rationalized and an equivalent area in the Vijayanagar taluka of Sabarakantha district should be identified for constituting a wildlife sanctuary.¹⁵

Promotion of Joint protected area management

Issue-2: Habitat Destruction

The Sloth bear diet range includes varieties of fruits, tubers, shoots, vegetables, flowers, honey, ants and termites. The area supports the rich fruit trees especially *Ficus glomerata* and *Diospyros melanoxylon* (preferred most by Sloth bears) and also show the presence of honey, ants and termites.

The habitat destruction is a concern of hour for flora and fauna. The reasons for the destruction of habitat are due to overgrazing, quarrying, lopping of wooded trees, invasion of *Prosopis juliflora* and hunting of a few birds like, 'Redspur fowl', 'Peafowl', 'Bulbul' etc. The causes of degradation are explained below.

A) Degradation due to Mining: Mining is a common disturbing activity that has been in practice since decades. The impact of mining has already been noticed at important religious tourist centres-Balaram and Dharmata temples. In these sites water quality and quantity has reduced due to siltation by mining in surrounding areas like Dhanpura, Virampur, Kanjhara, Chikanvas. Mining is one of the important sources of the state revenue. Priority should be given to minimize impact of mining sensitive ethno-cultural sites.

¹⁵ Gujarat State Biodiversity Conservation Strategy and Action Plan GFD.2002.P.no.22

B) Checking deforestation: Presently, the pace of deforestation and degradation of natural resources is increasing due to biotic interference. In the last 25 yrs lots of species disappeared from the site. The composition of the species has noticed in and around the Sacred grove.. The surrounding thorny and scrub forest is depleting day by day because of adverse climatic conditions- no or scanty rain fall; which is also the main constraint in achieving artificial regeneration in this area. Wildlife migrates because of the dry condition.

Strategy

- **Afforestation:** It is observed that people have taken some interest in regenerating the Sacred Groves areas. However, the rate is very less. The Forest Department should supply suitable species as required. In most of the cases the Sacred Groves management committee or locals, procure the seedlings from outside with great difficulty. This actually reduces the interest of the villagers, as they cannot pay much attention due to their routine fieldwork.
- **Enrich regeneration by special nursery and multi purpose plantations.**
- **Create more Sacred Groves:** In this regard, the Sacred Groves act as an indicator of the virgin environment, as well as an indicator of the real moral values that exist in these tribes. We need to create more Sacred Groves for sustainable development and an eco-friendly lifestyle.

C) Soil erosion: Most of the sites are affected by soil erosion. This water scarce area is resulting in depletion of groundwater. Further, the perennial streamlet, which flows into the sanctum sanctorum, is drying up. Thus the sacred water, a culturally important component of the environs is missing. The Soil and Moisture Conservation (SMC) efforts will definitely benefit these sites to address the community needs and to perform ecological functions. Even the sacred groves managed by trusts are also not being given due care towards SMC. The site has a variety of species and there is a perennial water source through rock creeks. Many medicinal plants exist in this area. Hence the attention is required.

Strategy: Adopt proper Soil and Water Conservation measures.

Issue-3: Ownership Records

In terms of legal status, the sacred groves in the sanctuary area are situated on lands governed by Forest Department or Revenue Department or are owned by private individuals.

In some places 'grampanchayat' is the owner of a sacred grove. Only temples managed by trustees or formal management committees have ownership records while the rest have no any records.

Strategy

- **Identification and documenting: settle ownership records.**
- Forest Department should take lead in Identification, documentation, recording, networking and coordinating with interested groups. Hence attention and networking on the subject is the basic need of the hour.
- Simultaneously, **mass awareness** should also be stepped up to give a fillip to the conservation of these sites.

Issue-4: Development, tourism and seasonal pressures:

Cement constructions are coming up gradually in some of the Sacred Groves. These kinds of encroachments are found for instance, in Ukarada, Balaram, Bajotia, Isavani etc. Sacred Groves are slowly turning into man-made landscapes with the construction of cement domes, temples, seating arrangements etc. Due to this, the trees in the vicinity are disappearing. This development should be checked at this stage. The reasons for this development are due to influences of modern lifestyle and exposure to other areas.

Balaram Mahadev Mandir is one of the example of State Government's thrust areas to promote tourism. Gujarat Tourism Development Corporation (GTDC) is already operating its Guesthouse and a private resort has come up.

In some cases it has been observed that the Village development schemes through Panchayat funds are coming up. Villagers are unaware of the expenditure incurred in such schemes and modern infrastructures are created without people involvement. The community participation is must from planning to implementation.

Strategy

- **Promotion of indigenous culture:** Irrespective of the grim scenario of degradation of natural resources of the rural communities, their indigenous knowledge of economic and cultural utilization of their resources for subsistence can be utilised for sustainable management of the environment. Conservation should be supplemented with the preservation of their culture along with their traditional knowledge that has been preserved by them through many generations. These traditional institutions play a role in the survival and harmonious conservation of rich natural resources.

Change in lifestyle as well as related market forces and human-induced development seem to have diminished people's faith in Sacred Groves and in the existing norms and traditions.

Their knowledge base has been very useful in formulating data collection approach and in understanding the interaction among social and ecological systems. Existing network of protected areas has to be complemented with community oriented strategies to conserve sloth bear and other endangered wild life and agro-biodiversity. Network of sacred groves, community forests can be developed to build upon local institutions as well as conservation ethic.

- **Creation of special Working Plan to retain tribal heritage.**

At present, there is no Working plan to explain either the management strategies or people's involvement in maintenance and development of sites. The Forest Department should take keen interest in promoting conservation of these sites. Thus, the special management plans (Working plans) like creation of separate sacred grove circle would serve the purpose

Issue-5: Livelihood, Migration and Labour

Gujarat is a state where drought is common (occurs once every three years) and during this period, food and water are scarce. Thus people are not in a position to confer due care towards maintenance of the site. Sometimes people have to shift temporarily to areas where food and water are in abundance. In addition to natural stresses such as drought, overgrazing severely affects the regeneration of trees and grasses. Every year thousands of *Rabaris* migrate with their cattle from Rajasthan to North Gujarat. They stay in the villages and forest for seven to eight months. During this period, grazing by their cattle creates an additional pressure on the ecology of the sacred groves.

Strategy:

- Combating Drought and addressing livelihood issues.
- Halting migration and providing alternative livelihood support to the communities.
- Promotion of collection, Processing, value addition, marketing, and use of NTFP for sustained flow of returns to locals.

Issue-6: Weed Menace

Prosopis is a fast invading weed filling up the riverbanks. The temple authority plants local species every year during monsoon but the survivability is very less because of persisting dry conditions. Few species like that of Bel, Arjuna, Kevda, Tamarinds are coming up well now.

Strategy:

- Encourage to plant native species.
- Incentives and awards to local people involving in weed control.

Grassland

Issue-7: Land ownership

State grasslands are neglected by Government due to scarcity of water and salinity. However the Government was not ready to handover the Banni area to the Forest Department though it has been declared a protected forest.¹⁶ The Forest Department is managing the area since 1952 but actual ownership is with the Revenue Department. Availability of rich minerals in the area made the State Govt. not to notify as protected as after notification the Government had to approach Union Govt. prior approval to de notify for non forestry activities. However, rich minerals tempt the Government to approach revenue department so as to avoid Union Government's prior approval to de notify for non forestry activities. The Chief Minister blames the Forest Department for the inefficient management of the area over the last 50 years; so on these grounds the area has been handed over to the Revenue Department.

The so called protected area is being managed without a Working plan This, in itself is an indicator of the manner in which the Government and concerned departments are managing the area. In the 17 existing Panchayats of Banni area, the area has not been demarcated and no inch of land is in the name of a private party so far.

The villagers' long demand is the allocation of land in their name. However, the Government is reluctant to do so. The Forest Department avoided allotment of lands to the villagers and dismissed their demands on the argument that the villagers were earlier nomads and have settled here only since the last 15-20 years

The villagers demand the issue of land ownership in order to control the *gandabaval* and are even optimistic that they can plant some suitable crops.

Strategy

Settle Ownership Dispute at State level for efficient management of the area and to resolve the multi stake conflicts.

Issue-8: Weed Menace

With regards to the weed menace the Forest Department is of the opinion that no other species is effective to halt the desertification other than prosopis in Shelterbelts on the fringe of the desert and are planning to introduce the *Acacia senegal*, *P. cineraria*, *Sueda nudifolra* as an alternate species in this area which are saline resistant too. Regarding toxic content of the prosopis leaves, the Forest Department states that the processed leaves will act as a good feed without side effects. But there are no evidence of the same and processing units are yet to promote the same.

The experience of the villagers indicates that there is potential to grow some of the local species like mango, neem, piludi etc here. It is also a fact that tree species viz, neem, pipal, vadh, mango, ber and *Acacia nilotica* are found in the surrounding areas alternate to *Prosopis juliflora*.

¹⁶ State Opens Banni for Commercial Feeding. Indian Express, 5-8-2000.

Strategy**Controlling weeds**

- Research on identifying the suitable bio-control methods.
- Identifying and promoting the best alternate and optimal economic returns from the weed.
- Permit villagers to make and sell coal.
- Setting up of particle industry/leaf processing unit.
- Introducing thorn proof prosopis.
- Encourage to plant native species.
- Incentives and awards to local people involving in weed control.

Issue-9: Encroachment and Industrialization

The industrial development near or within the vicinity of common land is a great threat to common access.

The Choryasi taluka of Surat district has received the maximum industrial investment in Gujarat. Due to industrial expansion, the villagers lost much common land. The livestock population, which was 4,000 in the early eighties, has come down and milk production has reduced by 1,000 liters/day and is consequently affecting the rural economy.

As per details available on 47 villages from Narmada and Bharuch district the protected area under JFM are more than 2000 ha and community plantation is 751.5 ha, whereas the encroachment here is 732 ha (63%) and 100 ha (24%) on *gauchaar* and revenue land respectively. Encroachment is overtaking protection, particularly on *gauchaar* land, which is a real constraint for community access.

Encroachment of common land and its frequent regularization by political forces have been responsible for de- communization of common lands. There is a significant reduction in village common lands, available for community purposes.

Thori Mubarak village of Viramgam Taluk Ahmedabad district, dominated by Maldharis is facing acute shortage of *gauchaar* land because 29 farmers cleared the *gauchaar* and encroached 275 acres of land in order to practice cultivation. This has affected the women folk, who now use up a lot of time in collection of fuel wood and grasses that was once readily available. Thus, some times they are even forced to buy grass.

Junagarh well known for its groundnut cultivation, the value of private land is found to be high and the labor wage too. So the people are less interested in planting trees on common lands. Besides the pastoralists themselves are gradually taking interest in agriculture. Thus the agricultural land value is on the rise.

Strategy

Controlling encroachments of village wastelands: The dependency on Common Property Land Resources (CPLR) is increasing especially from the small and marginal landholders and landless. Unless the solution at micro level the problem will not be solved. Usually in case of encroachment the Panchayat and talathi's are being side with encroachers. the role of Panchayat is individual specific. Thus the strategy should be

- Sensitizing the encroachment issue to the panchayat members.
- Change in land use policy in favor of village commons and their functions.
- Proper urban and industrial planning.

Issue-10: Salinity control and Improving Productivity

The construction of Rudramata dam (1960) the source of drinking water supply for Bhuj resulted in the increase in salinity, since the dam stopped the flow of rain water which dissolved accumulated

salt on the surface due to submergence of high tides of ocean water. The pH in Banni area after Rudramata Dam is reported to be on an average of 8.6 and above.

Apart from the problem of salinity, decreasing rate of productivity is an additional problem of grasslands. For instance, in Surendranagar district, 40% of the population is pastoralists and even agriculturists who depend on animal husbandry depend on CPLR. Being a princely state the Government records states that most of the revenue wastelands are under the control of local *darbars* who in turn lease it out for grazing. In some cases the sub contract is made to *Rabari/Bharwad* leaders who charge rent on per cattle basis. *Darbars* are earning quick money without any investments; hence, efforts to improve the productivity are zero.

Increase in quantity and productivity of grass cultivation in private fields is not recognised or encouraged.

Being princely owned state the Government records most of the revenue wastelands under the control of local *darbars* who in turn lease it out for grazing. In some cases the sub contract to *Rabari /Bharwad* leaders who charges rent on per cattle basis. *Darbars* are readily earning money without any investments so improving the productivity efforts are zero.

Strategy

Efforts to improve productivity of grasslands and checking salinity

Encouraging people's participation in promotion of Joint Grass land management activities. Initiating JFM activity in this area is favorable but management strategies should be different from the normal JFM guidelines so that the easy access, benefit sharing and institutional process is given due care. In one way the institutionalization may reduce the common access and conflicts. Otherwise, the words of the villagers are proving true 'Common Pool Resource (CPR) is everybody's property and CPR is no body's property' in particular with reference to control of the weed *Prosopis juliflora* as concerned.

- Promote proper soil moisture conservation activities.
- Identifying genetically superior salt resistant palatable grass species and multiplying.
- Mandatory assignments to enriching the quality of the private grassplots.
- Promote stall feeding

Issue-11: Problems with common access

According to Gujarat Panchayat Act 1993, provision regarding the ownership of grazing land is as follows 108(4):' Where any open site or waste, vacant or grazing land vesting in Government has been vested by Government in a Panchayat whether before or after the commencement of this act, then it shall be lawful for the State Government to resume at any time such site or land, if it is required by it for any public purposes'.

The word 'public purpose' in the Panchayat Act and Land Acquisition Act after its amendments in 1984 has a very broad definition which includes industry, mining, and building residence for industry, e.g. the State Government had given the grazing land of Jaspur Gram Panchayat for producing more food crops.

Hence, the ownership of grazing land is with the State Government while the responsibilities for the management and monitoring lies with the Gram Panchayat.

Strategy

❖ Grazing Policy

Another point is to emphasize the **need of Grazing policy, as such** there is no Grazing policy exists either at State level or at Centre. It is equally known that there is no grassland sanctuary or park in India though the banni and some high altitude pastures have a potential to bestow it upon. Hence formulation of grassland policy is urgently required.

❖ Declare PA to grasslands

This is a unique opportunity to declare PAs into grassland so to boost the terrestrial ecosystem component which are already existing for key animals, plant and marine species.

The grasslands of Saurashtra and Kutch play an important role in wildlife management. To elaborate, the grasslands of the Saurashtra, Surendranagar and Kutch regions form a Triangle of Corridor in some sense, although not strictly according to definition. Proper management of these grasslands would reduce the escalating pressure and conflict between the livestock, wild life and the humans.

Banni being important grassland and wetland site had a potential to declare PA. The Chari Dhundh is an important wetland of considerable international significance¹⁷. This area was proposed and has been accepted by the Govt. Of India for declaration as a Ramsar site. Thus this area along with adjoining areas of Banni should be declared as Banni wildlife sanctuary.

Issue-12: Halting Migration

Banni will be the last chance of survival for cattle from Kutch, Rajasthan, Banaskantha and adjoining areas, which flock to the grassland during the worst of droughts.¹⁸ The Banni people are predominantly pastoralists who keep large herds of buffaloes, cows, sheep, goats and camels. The Banni buffalo is considered one of the promising native breeds of India. Many Maldharis (the cattle breeders of Banni) have been forced by environmental stress to migrate to other parts of Kutch or Gujarat. In turn results in over-exploitation of mangroves for fodder and fuel by local communities and cattle herders which further reduces the natural regeneration caused by natural as well as man made factors. These cover reduction in freshwater inflow leading to increased salinity, violent sea action, frequent cyclones etc. Ultimately results in diversion of mangrove lands for other uses like saltpans, industries etc thus goes unable to perform their ecological functions on long term.

Strategy

- **Promotion of Handicrafts:** The Banni women have contributed much to Indian culture and art. Their embroidery is considered to be among the best in the country. Promotion of this art definitely has a potential to support the livelihood options of the area.
- Urgent need **to discourage the migration** of people and cattle from this area is required for greater socio- economic and ecological benefits.
- **Promotion of NTFP collection and use through Capacity building**
Besides grazing and livestock, the villagers solely depend on fuel wood and revenue from minor forest produce (mfp) and collect the gum and honey free of cost from the forest area. Same time Forest Department permits coal making and marketing of coal in this area under a tender system. That is, one who bids the highest price is allowed to cut the species to make coal. It is found that the one who gets the contract is usually an outsider. For this reason, the Forest Department restricts the villagers from cutting the *Prosopis juliflora* since it does not favor the existing tender structure of harvesting.

Industry works under the strong lobby of contractors, who engage the local people in labour and readily get transit passes - a major hurdle for marketing and transportation of the produce. The local people are involved in the initial stages of activity alone and the institutional course of action makes them keep away from the marketing process hence, losing the earning potential.

¹⁷ Gujarat State Biodiversity conservation Strategy and Action plan 2002.P.no.23.

¹⁸ *Gandobaval* set to gobble up Banni by 2005AD. The Times of India.29—1998.

The people have a poor opinion about the Forest Department as they allow the wealthy contractors to make coal, obtain permits and transit passes while the villagers in this process only get a daily wage. The villagers are only employed in the preparation of the coal and the profits go to the contractor. To counter the argument, the Forest Department says the inhabitants of Banni are non skilled in coal making unlike those of Rapar, Anjar and Bhachau.

After invasion of the prosopis species in this area, availability and collection of some of the important mfp like phalsa, *Manilkara hexandra* (Rayan), *Salvadora oleoides*(Meetha jar-pilu), *Salvadora persica* (Khari jar pilu) has come down. Apart from their source of income, these species serve as a source of food and nutrition. Consequently a daily friction ensues between policing activity and livelihood.

The serious efforts to train and support their livelihood has not proved fruitful yet. This assessment and decision of Forest Department irks the local people. Unlike *Koli* people of Rapar and Bachau area who are technically skilled in coal making, here the people are unskilled. Hence, forest department should give attention to build the capacity of the banni people in preparing, manufacturing and marketing the coal.

Joint Forest Management

The JFM programme has found wide acceptance and is evolving in the state according to the local conditions to suit the variations therein. However, the initiative that involves active participation of people has thrown up a number of issues that need to be addressed. It is understood that there are neither uniform solutions. Yet, in keeping with local socio-economic, political, agricultural, traditional and forest conditions, the issues need to be addressed adequately. Such issues are listed below.

Issues-13

A. Institutional Management Unit:

Gujarat resolution identifies Panchayats as possible management units, but not a single Panchayat has come forward to implement the same. There had been instances to indicate impracticability of standard units. It was observed in a study that while GR required participation of all the hamlets of the village only one hamlet was interested in piece of forest that was to be protected. In another case a large chunk of forests that is traditionally used by number of villagers got assigned to a particular village by virtue of it being in the revenue boundary of that village leading to a conflict. The recent amendments to the constitution with reference to the Bhuria Committee report identify Gram Sabha as an important unit.

Organizational Format and Institutional Set-Up: The issue of organizational format is most prevalent in JFM in Gujarat. When the program was launched, it was natural to be dependent on the system that already existed. So, the Forest Protection Committee (FPCs) in Gujarat were registered under the Gujarat Cooperative Societies Act (1961). It came very naturally in Gujarat because of the history of cooperative ventures. It had some positive aspects. An FPC became an independent legal body. It being registered with the registrar of societies, it is a legal entity and not an extension of any other institution.

A cooperative society is based on membership and shares. The people who cannot pay membership cannot avail of the benefits. In a sense this is logical. But when we talk of a Common Property Resource (C.P.R.) then the question arises: how can only a few persons from the village community decide to cordon off a C.P.R. and share the resource.

Furthermore, there are lots of instances wherein membership increased after a period of time, i.e., when the people who could not really afford to take part in the venture without being sure of the benefits, become members because otherwise they would loose out on the resource completely. In

one village, membership is now closed for non-members because results are visible and these people get nothing of a resource they were traditionally using. In some cases, membership fee has increased so much that it is difficult for people to shell out the money even at the cost of not having any access to this resource. It is just that they cannot pay – e.g. the current membership fees of the Malekpur village TGCS is in excess of Rs. 3000/-.

Relationship with Panchayats: Panchayats are recognized democratically elected institutions representing villages. It will be pertinent to look at the relation between the Village level organization (VLOs) proposed under JFM and the Panchayats with reference to recent legislation's assigning specific role to Panchayats/Gram Sabhas in forest management).

Powers to VLOs : There have been suggestions that VLOs be empowered to deal with village offenders to be able to protect the forest effectively. *Nyay Panchayats* do have powers to deal with certain offenses. It may have to be examined legally as to how VLOs can be authorized in this regard.

B. Technical

Viability: Viability of JFM as an economic pursuit has often been assumed. It may be desirable to examine the assumption and address lacuna, if any.

Micro Plan Vs. Working Plans: With the understanding that preparation of Working Plan is an elaborate exercise with provisions of approval from the State and National Governments. Government resolution for JFM should invariably include the process of village level Micro Plan preparation. Further the Working Plans must provide flexibility to incorporate the provisions of works of micro plans as this will facilitate the flow of benefits to local people in the short and medium run. It is also imperative that in JFM areas, the working plan should be prepared on the basis of micro-plans and not other wise. Such an approach would also be in conformity with the new forest policy which deals with conservation and meeting the needs of the local people in a sustainable manner. The concept of creating JFM working circles would facilitate this process.

Production options: Ecological sustainability, economic viability including need for continuous flow of benefits to sustain enthusiasm of the FPC members in face of high discount rates are the technological challenge that may require serious silvi-cultural interventions. The inputs in this direction have been lacking. The present practice of trying to incorporate species into the plantation programmes yielding different NTFP may not be sufficient to address the concern.

Developmental inputs: The pioneering efforts that have largely been quoted for the successful JFM largely rely on inputs to increase employment opportunities, improve agriculture and provide for village needs to varying extent. Developmental and other entry point activities are essential ingredients for a successful JFM programme. Appropriate institutional arrangements to provide for the entry point activities needs to be strengthened. However, the present token provisions are too less to enthuse the local people.

C. Intra / Inter village issues

Benefit Sharing: When the *Adhikar Patra* for JFM is given to a village, it mentions an amount of forest and that is understood to be under the program. No plot, however, is actually demarcated in the forests. The *Adhikar Patra* does not normally cover the whole of forestland. But people protect the whole of Forest Land and expect that the share will come from the entire plot. This is going to create a problem because over-expectations that have been built will crash and lead to mistrust of the government. It is a gap between what is written vis-à-vis the understanding they have.

Currently, when issues do crop up, decisions are taken by particular Forest Officers. So in future too, it would be left entirely to their wishes/decisions who may or may not feel that it is the right of people to get a share from the entire Forest Land area.

Marketing of NTFPs : The JFM programme is no doubt oriented towards the subsistence needs of local communities, but once the produce of forests increases through proper protection there is every likelihood of production increasing beyond what can be consumed within the village itself, and hence the importance of marketing. Moreover many NTFPs have traditionally been used by the gatherers to generate cash incomes. However, old restrictions imposed in the past on their processing and sale are still in place. The poor have no right to process these items and sell them freely in the market.

As the commercial importance of NTFPs increased in the past, the state government nationalized during the 1960's and 70's, almost all important NTFPs. In theory, this right was acquired ostensibly to protect the interest of the poor against exploitation by private traders and middlemen. In practice, such rights were sublet to private traders and industry. Thus, a hierarchy of objectives developed: industry and other large end-users had the first charge on the product at low and subsidized rates; revenue was maximised subject to the first objective which implied that there was no consistent policy to encourage value addition at lower levels; tribal and the interest of the poor was relegated to the last level, or completely ignored.

Strategies

Agreement

There is an immediate need for the Gujarat Forest Department and the people's institutions (JFM groups) to enter into an agreement so that clarity on matters such as roles and responsibilities and benefit sharing of both intermediary as well as final harvested products is made. This will also provide a *locus standii* for the communities so that they will continue to take part in the regeneration of the forests more enthusiastically; The Gujarat Forest Department had circulated a draft agreement in 1994 -95. Several important amendments to the same have been suggested by the primary and secondary stakeholders for consideration by the department. The final document of the agreement is still awaited.

Recognition of the JFM groups as Project Implementing Agency (PIA)

The forest department should recognize the village level PIs / TGCS as the village level implementing agencies and allocate necessary funds directly to these institutions (similar to the lines of watershed committee's). The TGCS in turn should be responsible for the maintenance of all the books of account, which can be monitored by the forest department.

Rights to collection & Marketing of NTFPS

All rights – collection, processing and marketing -of the NTFPs should be given to the JFM groups. De-nationalization of the major income generating forest products namely *Timru*, *Mahua* and Bamboo should be made and the department should continue with the minimum support prices to support the marketing of these materials. An alternative approach could also be to ask the private contractors to deposit in the accounts of the TGCS a minimum cess proportionate to the amount of NTFP harvested from the JFM forests.

(Presently it is the private contractors who are reaping the benefits of the people's conservation efforts through increased collection of the NTFPS and the villagers are just employed as laborers in the harvest of the same. Field records has shown that post-JFM and under favorable climatic conditions there has almost been a 40 – 50% increase in the NTFP yields – especially in the case of Timru leaves collection).

Clarity in the role of the Panchayati Raj Institutions (PRIs)

The Panchayat is a local self-governance body. Its primary responsibilities include provision of primary infrastructural facilities apart from its role as an administrative body. Implementation of the various activities lies with the beneficiaries. For e.g. the farmers come together to form milk cooperatives to manage the marketing of their products, similarly the Seva Sahkari mandli is responsible for the sale of inputs / outputs of agricultural products. Similarly the responsibility of protection, increased production, judicious and sustained use of forests should lie with the village level institutions e.g. the TGCS or the FPC coming under the precincts of JFM initiated by Gujarat Forest Department. Unlike Panchayats, powers to the FPC are not given under any law; the state government resolutions recommend FPC as mere functional groups. These FPC would therefore find it difficult to manage resources on a long term basis. Their relationships with the statutory village Panchayats will need to be sharply defined or an act passed in the state legislative assembly providing statutory rights to the JFM groups.

Sharing of Benefits

The present GR on JFM states 100% ownership over intermediary products but the definition of intermediary produce is not stated clearly. In case of thinning and pruning, the ratio of sharing of the materials arising (Intermediary produce?) is only 25 %. This should be amended and provisions made to give 100% benefits of these operations (thinning & pruning) to the members of the FPC. Similarly the sharing of the proceeds from the final harvest in the ratio of 50:50 on net returns after deductions of the expenses incurred should be amended to 50% of the gross and no expenses should be deducted.

Scaling up of JFM

To further strengthen and scale up JFM in the state, the forest department should provide financial support to the community based organizations / NGOs for carrying out various awareness generation and capacity building activities, in addition to protection of forest areas;

Capacity Building of the Panchayats

Since the ownership of NTFPs has been handed over to the Panchayats they are supposed to be handling the procurement, collection, distribution and pricing of the various NTFPs. The Panchayat needs to be guided on how to procure tenders, fixing support prices etc. Consultations and inputs from the Gujarat State Forest Development Corporation (GSFDC) and other organizations should be taken before finalizing or nominating the traders for the sale and purchase of these NTFPs. The forest development corporation and Zilla Panchayat should help the gram Panchayats to develop their skills in these aspects.

Scope and potential of Religious agencies in Biodiversity conservation

Religion is a long-term politics and plays a key role to communicate both the rural and urban mass. The Biodiversity conservation aspect is nothing new to any religion to any part of the India. But under present circumstances people are not realizing the cream of religion but merely following. In this context realizing the significance of biodiversity from religion point of view to a common people is urgently required. Some religious bodies and leaders have already taken bold step in this. Some of the religious institutions are enjoying the benefit of land lease and managing *Gaushahlas*, wastelands, and grasslands. Some are already doing well in watershed activities also However, bringing science and religion for identification of latent areas of interventions would be advantageous. The following actions can be possible with sensitizing the religious leader and followers.

- **Promotion of cultivation of Indigenous wild related agricultural species and COMMUNITY SEED BANK:** In this arid region the species like *Echinochloa* sp, *Phasaplum* sp, *Brachiaria* sp, *Setaria*

sp etc are now started gradually disappearing in the farm land and seeds of these species are in last leg in some of the villages.

More so these species are sacred to some communities on special religious occasions. The communities are facing the problem in getting these species, as these are available in the market at limited points. The case study on community agriculture and other such practices explained in this report further provides scope for reviving these species by a bit change in species selection. This is the critical subject where exactly the influence of religion is expected. Thus the religious bodies and conservationists need to interact closely.

- ***Apart from this their involvement is much meaningful and helpful in Creation, protection and rejuvenating the sacred groves.***
- Thus these institutions can take up the **site improvement activities of grasslands**. There is also a scope for **promotion of organic framing and vermiculture** through the organic waste generated in their field.
- Every year on 14 January, (Uttarayana Day) large numbers of birds are becoming the victims of Kite play particularly in large cities of Gujarat. What one can expect from the religious leaders to minimise the loss is their **advise to the communities against wrong notions and ill practices**.

Conservation of Special species Promoting Nursery for Special species:

Communities already noticed the erosion of the species and showed their concern to conserve some special species in their surroundings. However, this is practicable if the Forest department recognises the relevance of these species regeneration along with the regeneration activities on the large tracts of forest areas. The species which have already lacking natural regeneration requires special attention and artificial regeneration efforts should be carried out. In order to assist the regeneration, creation of nursery of special species through community participation and interested individuals can be done.

Special status to Dhandasan.

Dhandasan case study is an island of equitable access and sharing, and model for use of traditional knowledge and Wild Biodiversity: conservation. The more efforts to understand the community knowledge and reapplication as per requirement of the sites elsewhere for replication of the efforts can be think over.

SUMMARY OF CCA GUJARAT

Gujarat is a state blessed with a variety of Community Conserved Areas (CCA) such as forests, community agriculture, coastlands, grasslands and wastelands and domestic species. The key objective of community resource management has had been to support, manage and sustain its own livelihood systems, at individual, community and society levels. People also attempted to conserve, protect and develop the natural resources for ensuring its continued availability to the posterity too. However, anthropocentric development has led to hastening the process of degradation of the environment. Nevertheless, examples of community participation in natural resource conservation continue to exist. Unlike the current style of policing approach of administration, CCAs do strongly believe and practise the self imposed rules and structures within the framework of sustainability. Strengthening/supporting such community efforts stands a fair chance of bringing about a positive change to meet the growing demands.

The present study is an effort to document examples of CCA across different ecological regions and species covering the changing scenario of administration, economic conditions, competition for natural resources and development and, the legal and political aspects. The following category of CCA is explained below with some prominent/ representative case studies from different parts of the state that comprise Sacred groves and species in the tribal belts, Gauchara, Goshaalas, Chabutara and community agriculture by religious communities, vidis of Banni area, and the modern day version of the community management practices like JFM and Wasteland Development Programme.

The case studies are no by means complete or exhaustive, but are only indicative of the efforts of the community. It is also recommended that an in-depth study may be carried out for a holistic and synoptic understanding of the CCAs.

Sacred groves

There has been no systematic study carried out in Gujarat on Sacred Groves. This is an attempt in that direction .On the part of the State Forest Department, there does not seem to be a clear management strategy. **Chusan pir** from Marine National Park is a unique example of a conservation effort by the Badela, Sanghar and Vadher communities of an entire island of mangrove vegetation which is also a breeding ground for many birds for the past 300 years. Again, studies from N-Gujarat indicate that remoteness plays a key role in preserving species composition, density and natural regeneration, whereby its value and virginity are intact. Socio-cultural benefits and spiritual attachments are factors of prime significance for a community. Intangibles such as social functions, occasional religious ceremonies keep the community's interest alive and faith going.

The sites managed under formal committees have ownership records while the rest not so hence found conflicts. Deforestation, modernization and drought are influencing the traditional practice and respect towards sacred groves.

Finally, proper identification and creation of sacred groves, their ecological role, mass awareness and creating livelihood opportunities to the community and setting priorities for research need to be given a fillip for conservation efforts.

Grassland

Community based experience of **Banni** is one of Asia's expanses of grasslands shows satisfactory results regarding reclamation, production and equitable use of the common property resources. The cooperative management system resulted not only in robust grass production but also improvement in its quality, in addition to enhancing drought resilience of the community.

Mangroves

The **Neja** case study is yet another example of community effort in conserving its village mangroves. The community initiated action 20 years ago when conflict arose with nomads who started exploiting the mangroves heavily for fodder.

The community also took up appropriate soil and water conservation measures, cultivation of salt resistant species which has checked ingress of salinity and solved drinking water problem.

Community Agriculture

A leading religious group supports community agriculture activities in **Yogeswar Krishi, Sridarshanam** and **Vriksha Mandir**. This is an example of non - conventional modern practice of community initiative for sustained development.

While Yogeswar Krishi is a small-scale community agriculture practice at village level, Sri Darshanam is a similar practice covering 20-25 villages carrying out common farming. In both the cases, the village as a unit takes care of protection. The initiative helps to gather and exchange skills aiming at socio-economic and cultural - spiritual equity.

The farming practice generally includes the use of local and indigenous species thereby ensuring agro biodiversity in balance. There is scope to re-cultivate the abandoned wild crops by interaction with these groups.

The concept of Vriksha Mandir is similar to sacred grooves. It inspires people to cultivate sacred attitude leading to develop and conserve sites.

Matsya Gandha is a similar voluntary practice, where coastal community provides both personal service and their boats for fishing. The activity is restricted to 220 days in a year. Although the activity does not directly aim at biodiversity conservation, it has an indirect impact. The subsistence collections and consumption pattern checks excessive harvest. The practice of the fisherfolk abstaining from fishing activity for 140 days in a year has helped regeneration of aquatic life.

Joint Forest Management (JFM)

Gujarat has been considered a pioneering state in India in the context of JFM. It was among the first few states to have implemented the GOI Resolution of June 1990. It was also among the first few to set up a broad based state level working group with senior forest officers, NGOs representatives, academicians and individuals in NRM as members. Currently people's forum like SAKSHAM (Sanghatana Kshamata Manch) a state level Federations are footing ahead in NRM. Starting with three to four villages and a few hectares, Joint Forest Management (JFM) today encompasses more than 1300 villages and covers over 1,75,000 hectares in Gujarat.

Community Interest in Animal feeding and Care Taking:

The following community management practices have religious influences, where an idea emphasizes the sensitivity to have the rights of other non-human living beings to co-exist with us, even in a drought year. The cultural donations from individuals from and outside the village as well as voluntary donations sustain the activities in the above types of conservation efforts. Following are the particulars in brief.

Gauchara:

The gauchara institution has played an important role in ensuring maintenance of cows in a harsh environment with low and uncertain rainfall in many parts of Saurashtra. An indigenous institution for community care of cows - the Gauchara system- exists. According to certain elders of the Ahir community, the essentials of the form in which the Gauchara is practised today dates back at least three hundred years. The system is believed to have been created in response to the frequent droughts in the area and the shortages of fodder during the dry season.

Chabutara

Chabutara (a platform) is an institution that focuses on feeding birds particularly during food scarce seasons. The chabutara is a small, 10-12 ft high platform constructed with bricks with an open pan on the top where grains are kept. This practice is managed in some villages by nature loving individuals while in others by the communities.

The frequency of visits of common and rare birds increases during late-summer months and monsoon (May to August) when an alternative source of grains in the fields becomes scarce. One way this helps farmers in controlling pests through their natural predators. Reviving the spirit and norms of one of their oldest institutions and also provide drinking water facility near the chabutara after learning from the experiences of others are required.

Community Conserved Special Species: Mahuda, Guggal and Deva chikaliya.

For the last 35 years, people of **Dhandasana** and **Kanadara** village have been traditionally following the practice of collecting the flowers of **Mahuda** (*Madhuca indica*) on a community basis. The flowers and fruits are assembled at a place. Later, small packs are prepared out of these against the names of the right holders/members that are maintained in a register. This case exemplifies unique contributions of local communities under the able local leadership towards protection of trees and sharing of fruits and flowers, equitably.

Some communities have respect towards the species **guggal** who have made it obligatory and mandatory to plant its stump during marriage ceremony. Later, during monsoon they plant it in their farms or in open places. This practice facilitated the species to prosper.

It is a general belief among adivasis of **Bhiloda** taluka that catching and releasing of the bird **Deva chikaliya** (Indian Robin), particularly on the day of Uttarayana (January 14) is significant in forecasting monsoon. This way the species has more attention and care.

To conclude, it is imperative to encourage the community based initiatives to conserve biodiverse areas, a status on par with other natural heritage sites such as the national parks, reserved forests and water sanctuaries. Precaution should be taken to retain the sites' uniqueness and traditional values for better future. A further detailed, in-depth research study may achieve this objective.

ANNEXURE**Table 1: Sacred Groves: District wise study areas Banaskantha District**

Ta	Village	Area	Nearest place (Km)
Danta	Rinchadi, Jetvas	1 acre	Ambaji (5, 1)
Danta	Chokibar	NA	Ambaji (34)
Danta	Kundel	2 acre	Palanpur (40)
Danta	Jodhsar	NA	Palanpur (55)
Danta	Kheraniumbari	4 acre	Ambaji (30)
Danta	Rupavasa	.5 bigha	Palanpur (56)
Danta	Pipalavali Vav	NA	Palanpur (51)
Danta	Taleti	NA	Palanpur (51)
Danta	Padaliya	1acre	Ambaji (15)
Danta	Chauri	2 acre	Palanpur (50)
Danta	Dabhachitra	1.5acre	Ambaji (22)
Danta	Khermal	2 acre	Ambaji (35)
Danta	Viramveri	1 acre	ambaji (20)
Danta	Kanabia vas	1bigha	Palanpur (50)
Danta	Pataliya	1 acre	Palanpur (42)
Palanpur	Khemrajiya	NA	Palanpur (25)
Palanpur	Khapra	2 bigha	Palanpur (15)
Palanpur	Khuniya(Amirgad)	1 acre	Palanpur 20
Palanpur	Sarotra	2 acre	Palanpur 32
Palanpur	Chitrasani	NA	Palanpur 15
Palanpur	Balundra	NA	Palanpur 30
Palanpur	Pedagara	5 acre	Palanpur 20
Palanpur	Ghanta	NA	Palanpur 33
Palanpur	Gawra	NA	Palanpur 39
Palanpur	Isawani	1 acre	Palanpur 38
Palanpur	Ukarada	NA	Palanpur 20
Palanpur	Khara	2.5 acre	Palanpur 40
Palanpur	Dharmata	2.5 acre	Balaram (2)
Palanpur	Surela	2.5 acre	Palanpur (30)
Palanpur	Khunia	NA	NA
Palanpur	Dungarpuri	NA	NA
Palanpur	Bajotiya	NA	NA

Table 2: Newly Identified Sacred Groves in Balaram-Ambaji and Jessore Sanctuary

Sr.No	Sacredgrove	Village	Taluka
1	Kalomagro (Mataji)	Khadhorumri	Danta
2	Maneknath	Vekdi	Danta
3	Mahadev	Khermal	Danta
4	Guru maharj ni dhuni	KheraniUmri	Danta
5	Hanuman Temple	KhadhorUmri	Danta
6	Virbapji	Hadad	Danta
7	Bhakhorbapji (virbapji)	Motapipodra	Danta
8	Chamundamata	Kunvarsi	Danta
9	Salfiyobhakhor	Bhadrmal	Danta
10	Vagod	Khari	Danta
11	Zer	kundol	Danta
12	Sembali Mahadev	Vasi	Danta
13	Sitlamata	Ghareda	Danta
14	Ramapir	Dipdi	Danta
15	Rokdiya Hanuman	Machkoda	Danta
16	Chamunda mata	Bhilachal	Danta
17	Kuteswar	Karza	Palanpur
18	Rameswar Mahadev	Rajpuriya	Palanpur
19	Vav Mahadev	Khara	Palanpur
20	Mansarovar	Jethi	Palanpur
21	Ashapuri	Piplavalivav	Palanpur
22	Rakhpal	Harivav	Palanpur
23	Kalkamata	Deri(Vavdhara)	Palanpur
24	Amleshwar	Ranol	
25	Hanuman Temple	Hariyavada	
26	Sitlamata	Hariyavada	
27	Maha kalimata	Hariyavada	

Ref: *SRISTI, AHMEDABAD, 2001*

GLOSSARY

BAIF	Bharatiya Agro Industrial Foundation
CPLR	Common Property Land Resources
DSC	Development Support Centre
FD	Forest Department
FPC	Forest Protection Committee
GEC	Gujarat Ecology Commission
GUIDE	Gujarat Institute of Desert Ecology
IUCN	International Union for Conservation of Nature and Natural resources
JFM	Joint Forest Management
JVUSM	Jhanjharmata Vruksh Utpadan Sahkari Mandli Ltd
MFP	Minor Forest Produce
MoEF	Ministry of Environment and Forests
NGO	Non-Government Organization
NRM	Natural Resource Management
NTFP	Non Timber Forest Produce
PI	Peoples Institution
SD	Sri Darshanam
SG	Sacred Groves
SMC	Soil and Moisture Conservation
SRISTI	Society for Research and Initiatives for Sustainable Technologies and Institutions
TGCS	Tree Growers Co-operative Society
VIKSAT	Vikram Sarabhai Centre for Development Interaction
VLO	Village Level organization
VRTI	Vivekanand Rural Technology Institution
WLS	Wildlife Sanctuary
YK	Yogeshwar Krishi
ZSI	Zoological Society of India