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# Global Study on CBM and Empowerment - India Exchange Report

TEAM

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## 1. Introduction

The Global Community Biodiversity Management study project began in 2009 with the objective of analyzing the contribution of Community Biodiversity Management (CBM) as a methodology for empowerment, for strengthening the scientific basis of CBM, and for analyzing the experiences of community management of agrobiodiversity in four countries that are known for the critical role they play in the global plant genetic resources (PGR) debate: Brazil, Ethiopia, India and Nepal. Ethio-Organic Seed Action (EOSA), Ethiopia; MS Swaminathan Research Foundation (MSSRF), India; Bioversity International, Tropical Fruit Genetic Resources Project, India; Local Initiatives for Biodiversity, Research and Development (LI-BIRD), Nepal; the Brazilian Agricultural Research Corporation (Embrapa) and the Federal University of Santa Catarina (UFSC), both in Brazil, collaborate with Wageningen University and Research Centre/Centre for Development Innovation (Wageningen UR/CDI) on this study. These organizations provided one or more sites for the CBM study in each of the four countries. In the case of India, two working sites were provided by MSSRF, and one site was provided by a partnership between Bioversity International and the College of Forestry, in Sirsi.

In order to facilitate South-South co-learning within the CBM Global study, exchange programmes were organized. It is hoped that the exchange of knowledge, experiences and ideas will contribute to understanding and working with CBM in different social, political, ecological and economic contexts, and to developing a global, shared understanding of 'CBM and empowerment'.

This report is the outcome of the India exchange programme that took place from 10<sup>th</sup> to 30<sup>th</sup> October, 2010, and which involved members or representatives from the Federal University of Santa Catarina (Brazil); Local Initiatives for Biodiversity, Research and Development (LI-BIRD, Nepal); and Ethio-Organic Seed Action (EOSA, Ethiopia). Through this report, participants express their observations and the lessons learned during the site visits and from discussions between team members, as a collective process.

This exchange report follows the same structure proposed to all the countries. This structure consists of a brief introduction, followed by the methodology and two main sections, namely, site characterization and CBM in context. The characterization of each site was carried out by providing a general profile with a description of the local context, followed by a detailed discussion about CBM process and practices. The context section has 15 topics that cover a wide range of subjects relevant to CBM and empowerment, and to understanding the diverse range of situations that can be found in the Indian context. Among the key issues discussed in the report are the diversity of sites; the historical, cultural, ecological and economic drivers of each site; understanding empowerment and collectiveness; gender, social inclusion and equality; land ownership and competing claims; and political policies that impact on genetic resources conservation. At the end of the report a general synthesis is provided, which reflects the general views of participants and future priorities of the CBM study within the Indian context.

## 2. Methodology

The India exchange programme was defined by the terms of reference of the CBM study, which also guided the other three exchange programmes. All the members of the visiting teams had already experienced being the host of exchange programmes, which made the process easier. We briefly reviewed the terms of reference, and shared out the roles and responsibilities amongst the team members in order to address different topics in a comprehensive and empirical manner, through interactions with communities, farmers, community leaders and stakeholders.

We visited three different sites: Jeypore, Kolli Hills and Sirsi. Briefings on each of the sites were provided by the scholars of the host organization. These dialogues were a very good way of familiarizing us with the site profiles.

In order to understand the organizational policies, roles and responsibilities of the host organizations in facilitating CBM, and the position of the organizations in the plant genetic resources and access and benefit-sharing regimes, Dr Geetha Rani and Dr Oliver King, experts from MSSRF, were consulted.

In each of the CBM sites, we reviewed available literature on the sites, including published papers; books; maps; documents related to the implementation of projects in the sites; material concerning the socio-economic and political scenario; and policy reviews of the country, etc.

Field visits to the respective sites included transect walks; the physical verification of records; photography and observations; focus group discussions with actors and stakeholders, such as farmers' organizations (central village committees, self-help groups, forest village committees, farmers' clubs, gene/seed/grain bank committees, among others).

Each team member was responsible for gathering information on an assigned topic and all team members were responsible for ensuring that all the topics were being covered and for supporting each other during the process of data collection.

After each site visit we had a team discussion about the experience. During these discussions, we established bullet points on each topic, clarified any doubts and verified the information gathered.

Upon conclusion of all the site visits, each team member was responsible for drafting two or three of the topics. Team members worked in pairs on those topics that needed more careful treatment. After the first draft of the report had been developed it was shared with the team. After reading the report we discussed all the topics again, in order to modify and aggregate all points of view and any additional relevant information for each topic.

## 3. Site Characterization

### 3.1 Jeypore site

#### 3.1.1 General context:

Jeypore is the southernmost small city under Koraput District of Orissa State (Province) in India. This region is known as Jeypore Tract in rice literatures and is a secondary centre of Origin of Rice. Rice is the major crop grown in this area followed by millets, pulses & oil seeds.

We visited two tribal villages in Jeypore: Nuaguda and Taliaguda. MSSRF has been working for 10 years in Nuaguda, (MSSRF has already withdrawn its activities for last 3 years) and for 5 years in Taliaguda. Both villages are characterized by a high level of illiteracy (90%).

Taliaguda has 30 households, consisting of 71 men, 54 women and 23 children under 18 years of age. The landholding size varies from 0.5 to 2.0 hectares (ha) per household. Most households are from the *Bhumia* caste (households=27) while the remaining households are from the “Blacksmith” caste (n=3). The “Blacksmith” caste is part of the Other Backward Class category (*OBC*).

The main crops cultivated in Taliaguda are rice, finger millet, little millet, vegetables, pumpkin, maize, black gram, green gram, sorghum and Niger seed. The community has 15 varieties of rice and 6 varieties of finger millet and they harvest *Dioscorea* spp., young bamboo shoots and firewood from a forest area that is located 5km from the village. Every household has some chickens; some households have a cow and goats.

Nuaguda has 35 households, consisting of 50 men, 65 women and 20 children. The households are mainly from the *Bhumia* caste (n=30) and some are from the *Paroja* caste (n=5). Landholdings vary from 0.2 to 5 ha per household; 7 to 8 households are landless. Landless people earn their living by renting or sharing land, or by working as wage labourers.

The main crops cultivated are rice, finger millet, maize, and vegetables. This is a region where farmers used to cultivate a huge diversity of rice, but they lost almost all of their rice varieties over the years and were left with only 5 landraces. Following the re-introduction of some of these local varieties the community now has 30 local rice varieties. The community harvests firewood, grasses, young bamboo shoots and some tubers from a forest area that is less than 2 km from the village. In order to use this area, the families have to pay a fee of Rs2/year to the village forest committee.

#### 3.1.2 CBM process:

CBM activities in Jeypore began in 1998 with a project on the conservation, utilization and enhancement of biodiversity. Through participatory rural appraisal and frequent discussions with the farming community, MSSRF scientists were able to pinpoint the loss of rice landraces as being a major issue of concern in the site and, consequently, prioritized the cultivation of local rice landraces.

Discussions were held with the community on traditional methods of rice cultivation. The lack of availability of quality seed was found to be the most limiting factor. The farmers were informed that modern agronomic practices advocate optimal plant population as a crucial step towards obtaining optimum yields. In that context, a consensus was reached between the researchers and the farmers on modifying the traditional methods of rice cultivation but retaining indigenous technical knowledge inherited from their ancestors. The farmers were provided with intensive training in modified methods of rice landrace cultivation in their fields up to the transplanting stage, following which, they

continued with weeding, irrigation and harvesting procedures based on the instructions given in the training sessions. Individual farmers who participated in the programme realized the greater advantages of using the modified methods of cultivation. Continued training was provided to the farmers on other topics such as quality seed production, vermicomposting and other associated crop management practices to bring the landraces back to a profitable return. Subsequently, farmers and scientists started to work closely together on the characterization of re-introduced and existing rice landraces for quantitative traits. Work continued on the selection, multiplication and promotion of the best performing rice landrace varieties.

### **3.1.3 CBM practices:**

Community awareness-raising: street plays (drama groups) were held in the villages and documentaries were shown during the vacations.

Biodiversity and seed fairs: seed fairs were organized at the beginning of the CBM process. The seeds of local varieties were collected for use in diversity blocks and village seed bank establishments.

Documentation of agrobiodiversity: MSSRF before initiating the CBM activities in these villages has documented the existing agrobiodiversity of the region and recorded the associated traditional knowledge through PRA techniques. The documentation involves number of land races of different crops (cereals, pulses, oil seeds, vegetables etc) and varieties present in a given locality and its diversity.

Community Gene-Seed-Grain Bank: We observed some differences between Taliaguda and Nuaguda. While a seed bank has been constructed in Nuaguda, the community in Taliaguda does not have a purpose-built structure in which to store the seeds and so the seeds are kept in a family house. In both communities, the seed banks are managed by a village seed bank committee that is comprised of four members: a president, a secretary, vice-president and vice secretary. In the Taliaguda village, the interest rate for seeds is 50%, while in the Nuaguda village the interest rate for seeds is 20% for village members and 50% for outsiders. In Nuaguda, to be a member of the seed bank, a household must contribute 2kg/per year of grain. Having land is not a pre-condition to being a member of the seed bank. When the village seed banks have any excess seed they either sell the seed as grain or provide loans to non-members. All the necessary information concerning the varieties, seed and grain is recorded in a book at the seed bank. This documentation was initially carried out by MSSRF staff but is now the responsibility of village members.

Diversity block: A diversity block was conducted and 25 varieties were included: 10 from the community and 15 were brought in by MSSRF from the larger Jeypore Tract. The local varieties were planted in individual plots. When the time came to select the varieties, a meeting was organized and the farmers went to observe each and every plot that had been planted with local rice varieties to select the desired characteristics. The farmers intend to continue this diversity block for participatory varietal selection and participatory plant breeding. Some initial participatory varietal selection had been started but it was not continued.

Participatory varietal selection: Out of 102 varieties collected from Jeypore Tract by MSSRF, 24 varieties were selected by farmers for further evaluation. Through this process 24 landraces (10 from the village and 14 by MSSRF), one upland variety, two medium land and two lowland rice landraces were selected. MSSRF facilitated the prioritization of varieties for each land category through PRA, field visits and evaluation of agronomic data.



Reintroduction of rice landraces: When MSSRF explored the village, only 10 landraces were found. MSSRF decided to introduce for cultivation another 15 landraces, which were collected from other areas of Jeypore Tract. Apart from this MSSRF has collected a total of 102 varieties. These 102 landraces were reintroduced in demo villages for cultivation.

Diversity kits: Just after PVS, the seeds of 102 landraces of rice were multiplied by the community and quality seed was produced. The seed was distributed as a kit to nearby villages and to other demo villages to grow in large areas.

Participatory conservation system: It was decided by the communities to keep the rest 19 varieties as a conservation stock in the village for future use. The community took a decision that at least one variety should be cultivated by one farm families to conserve the genetic diversity of the village. This process is linked to the Community Gene-Seed-Grain Bank of the village.

Quality seed production: The seeds of the selected 5 landraces of rice for three land categories (Upland, Medium Land and lowland) were produced in a large scale by the farm families of Nuaguda village to cater the demand for quality seeds in adjoining villages.

Rice processing centre: A small rice processing unit was established in Nuaguda village to de-husk the paddy to rice to reduce the drudgery of tribal women, those process the rice manually either by hand or by leg. The processing unit was provided by MSSRF and managed by the community.

Value addition: MSSRF coordinated the establishment of the Kalinga Kalajeera Rice Growers Cooperative Society (KKRGCS). 27 villages participate in the KKRGCs. The Orissa Rural Marketing and Development Society (ORMDS) is a partner of this process. This institution is helping the farmers with their marketing plan. Farmers in the two villages participate in the KKRGCs. Value addition of indigenous aromatic Kalajeera rice by tribal people is supported by MSSRF. The product is branded as “Basna Rani” literally means the queen of aroma. The value addition involves large scale cultivation, quality seed production primary processing, storage and organized marketing of unprocessed rice, processed rice and seeds.

## 3.2 Kolli Hills site

### 3.2.1 General context:

Kolli Hills is located in the Namakkal district, in the state of Tamil Nadu. The site occupies an area of 442 km<sup>2</sup>, and includes about 15 settlements, the inhabitants of which are mainly from the *Malayali* ethnic group. A few *Semedu* caste households also live in the settlements. The communities used to cultivate a huge diversity of millet, which included the landraces of 5 main millet species: finger millet (*Eleusine coracana*), little millet (*Panicum sumatrance*), Italian millet (*Setaria italica*), common millet (*Panicum milliaceum*) and kodo millet (*Paspalum scrobiculatum*). About 30 years ago, socio-economic changes significantly reduced the cultivation of millets. The introduction of cash and perennial crops were major drivers for this change, as cassava (*Manihot esculenta*), pineapple (*Ananas sp.*), coffee (*Coffea arabica*), black pepper (*Piper nigrum*), banana (*Musa paradisiaca*) and clove (*Syzygium aromaticum*) were introduced. Other reasons for this reduction were the installation of government distribution centres offering food items at a low price and the difficulty of pounding the millets.

In Kolli Hills, farmers' landholdings vary from 0.5 to 10 acres, with an average landholding of 2-3 acres. Most of the farmers have legal rights over their land (i.e. are in possession of land ownership documents). However, there are also landless people. Some of these landless people use forest land.

The person who clears the forest land first is unofficially deemed owner of the land. These lands are not formally registered but farmers are able to use them for cultivation.

### 3.2.2 CBM process

MSSRF started working in the site in 1994, with a pilot survey on traditional knowledge, agricultural practices and natural resources management. This survey was initially intended as a means to understanding local biodiversity but work has since become more focused on biodiversity in sacred groves. A documentation project was carried out in order to understand the people, their culture, systems of values, traditional knowledge, farming systems, forest conservation practices and livelihoods. Potential areas for development interventions and action plans were identified, of which millet was chosen as a strategic crop.

Since 1999, MSSRF has been working using the 4Cs approach (conservation, cultivation, consumption and commercialization). This approach guides the work with millet and pineapple, as well as the promotion of organic pineapple and natural resources management. It also aims to enhance community awareness. For example, with regards to millet, using the 4c approach resulted in an enhanced awareness on the *in situ* conservation of landraces and food security, and production for home consumption. Organic pineapple producing SHGs are working together in partnership with private organic certification agencies and export companies with the aim of exporting organic pineapple through the process of certification, thereby greatly enhancing the income of the community.

The participatory characterization of millet and input-based trials were started in association with knowledgeable farmers. Creating an economic stake in conservation was identified as an important pathway. Continuous capacity-building of the local community in the conservation and utilization of millet was carried out. The setting-up of institutional working modalities was achieved by the formation of small farmers' groups that vary from 12 to 20 members, usually called self-help groups (SHGs), or farmers' clubs (FCs). Currently there are 36 SHGs and 4 FCs, among which 22 are women only, 17 are men only, and one is mixed.

Capacity-building was offered to these groups through training workshops on different subjects, such as best practices on agriculture (intercropping, quality seed selection, vermicomposting, soil preparation); recipes using millets; value addition; and mill management and finances. These group activities helped to develop social skills.

The institution of KHABCOFED (Kolli Hills Agrobiodiversity Conservation Federation) was established in 2009. The establishment of KHABCOFED is a very important step towards scaling-up community collective action, and for consolidating community roles in planning and implementation. This new institution, which has two committees and a general assembly, encompasses all the farmers' clubs and SHGs, and includes 500 members. The management committee is made up of 80 members: a leader and a representative of each of the farmers' clubs and self-help groups. This committee meets twice a year. The executive committee has 12 members: 7 executive members, a treasurer, a secretary, a vice secretary, a president and a vice-president. This committee is made up of 7 women and 5 men; the only important position occupied by a woman is the vice-presidency.

### 3.2.3 CBM practices:

Community awareness-raising has taken place within a number of CBM activities in the site, from the first survey that was carried out on traditional agricultural systems, to activities for promoting landraces and their use for home consumption. Awareness-raising activities were also carried out to

promote organic cultivation and to preserve cultural aspects related to natural resource management, for example sacred groves.

Diversity block: One diversity block has been planted as a demonstration plot. Farmers can take a look at the different species and landraces in order to choose the best ones for them.

Biodiversity documentation: MSSRF have documented the biodiversity of the site, agricultural systems and cultural beliefs related to it. The community seed banks maintain their own registries of seed and landraces.

Village seed banks: Millet is stored in village seed banks. The banks are well organized and autonomous with different management schemes being practiced by different villages. Grains and other crop seeds are stored in the bank by each household.

Diversity kits: One of the first interventions of MSSRF was a “multiplication and distribution” of the seed of millet landraces. A few of the farmers were paid to multiply millet landraces, which were then distributed to all the interested farmers.

Diversity blocks were used to create awareness among farmers on millet landraces and species and to enable them to choose the desired characteristics, species and varieties.

Value addition: These activities are the most salient ones in Kolli Hills. For millet, the value addition activities involve SHGs and FCs for processing millet and adapting it for commercialization. One “Natural Food Shop” has been established and is being managed by a women’s SHG. With regards to pineapple, value addition was made through the organic certification process.

Millet processing centre: Many SHGs and FCs manage millet processing mills, which are used mainly for home consumption. The processing is carried out for group members, or as a service for other community members, and the money earned from this goes to the person responsible for managing the mill and/or is shared by the group.

Agro-forestry system: Some farmers, facilitated by MSSRF, have started agro-forestry practices, including the cultivation of pineapple, pumpkin and jackfruit. Farmers are beginning to form agro-forestry groups with the idea of establishing nurseries. Currently the plants are being provided by MSSRF.

Ecotourism group: One of the farmers’ groups is responsible for the maintenance of a touristic site - a waterfall. The group earns good money from this activity and has been invited to manage another waterfall.

### **3.3 Sirsi site**

#### **3.3.1 General context:**

The Sirsi site is located in the central part of the Western Ghats, in the hilly district of Uttara Kannada, in Karnataka state, Southern India. The Western Ghats, a range of hills that stretch along 1500 km of the Western coast of India, are one of 34 global biodiversity hot spots and are well known for their high percentage of endemic flora and fauna. Around 80% of land in the Uttara Kannada district is covered by forest. There are many ethnic groups in the region, eg. *Nayaks*, *Havyaks*, *vokkaligas*, etc. Most of these ethnic groups are culturally linked to the forest and rely heavily on forest resources and agriculture. The main cultivated crops are arcanut palm (betel nut), irrigated rice, banana, coconut palm and black pepper. However, cardamom, cocoa and vanilla are also part of the production

systems. The main non-timber forest products (NTFP) extracted from the forests include *Garcinia gummi-gutta*, *G. indica*, wild mango, wild nutmeg, cinnamon, rattan, *Terminalia sp.*, and *Phyllanthus emblica*. Curiously, the farmers of this region have a unique legal right to harvest leafy green biomass from a specified area of usufruct forest adjacent to their farms, for use as green manure. NTFPs contribute to about 33% of family income; wild-harvested fruits make up about 60-70% of the NTFPs.

### 3.3.2 CBM process:

In the early 1990s, the state government of Karnataka implemented the Joint Forest Planning and Management (JFPM) project with the intention of encouraging the communities' participation in the conservation and sustainable utilization of biological diversity in the Western Ghats. The principle of this participatory forest management is based on a relationship of 'co-management' and 'give and take', between the two major stakeholders, village communities and the Forestry Department, mediated in most cases by a non-governmental organization. As per this system, the Karnataka Forestry Department (KFD) and local communities share the responsibility of jointly planning and managing areas of forests, as well as the benefits arising from the protection of the forest. Over 500 village forest committees (VFCs), community-based grassroots organizations, were formed in the Uttara Kannada district to facilitate the implementation of JFPM. In fact, the Uttara Kannada district is one of the leading districts in the state for the implementation of JFPM. In order to facilitate the JFPM activities, the general auctioning of NTFPs to the forest contractors was excluded from the VFC areas, so that the communities could harvest as well as sell these products. The VFCs have started planting prioritized plant species in degraded areas, in consultation with the KFD. Any benefits arising out of this activity will be shared between the KFD and VFC. Every VFC has a revolving fund, which is raised jointly by the government and the communities and which is utilized for different activities. Today, because of the JFPM, there is a relatively high level of social learning among the communities and a scaling-up of collective community action has taken place.

During discussions, the communities expressed their concern about the disappearance of valuable timber and NTFP species that were lost because of the state's earlier policies. Before British rule, local communities had an age-old relationship with the forests and managed them under a set of traditional rules and regulations, suggesting a higher level of understanding of local biodiversity.

### 3.3.3 CBM practices:

Biodiversity and seed fairs: Two fairs were organized, one by the Department of Agriculture and the other by some religious organization. Although such fairs often raise the level of understanding among communities, no clear linkages to CBM were observed.

Diversity blocks: This practice was initiated owing to the interest of innovative farmers, especially in mango and *Garcinia*. The mango harvest is highly seasonal and is restricted to the summer months (March-May). However, the desire to harvest better mango types over a longer season has driven these farmers to collect better mango varieties that mature in different months. This also ensures a longer flow of money to the farmers. Furthermore, a fairly high number of wild mango types (which are highly aromatic and which are harvested when they are still at a slightly unripe stage in order to make pickles) are also collected and maintained by the farmers as they carry a high price and are of traditionally acclaimed household use. One specific farmer whom we visited was inspired by an earlier attempt made by a fellow farmer. On a diversity plot, spread over 6 ha, mango and *Garcinia* trees were planted separately to facilitate individual treatment and observation. About 54 mango varieties are being maintained in the diversity plot, of which about 12 are pickling types and 42 are fruit types. Most importantly, about 22 of these varieties are local and endemic to the district. All of the mango trees in the diversity plot were grafted from the original parent in the wild. Several *Garcinia gummi-*

*gutta* and *Garcinia indica* have also been included in the diversity block. The farmer has identified three different varieties of *Garcinia indica* (bright red, big red, and pale yellow). For *Garcinia*, the farmer tested two methods of propagation, seed origin and graft origin. Seed-origin individuals were preferred because grafted individuals turned out to be more of a bushy type. Over the past 10 years, the farmer has been training several other interested farmers on these issues.

Biodiversity and management documentation: Different organizations working in the area have documented the biodiversity and the practices of extraction and use of forest genetic resources.

Diversity kits: Until now, this practice has not been implemented. However, an on-going project on tropical fruit trees aims to establish nurseries and distribute grafts of mango landraces. We also witnessed demonstrations of grafting techniques being carried out by a member of a women's group.

Custodians: The custodian farmers act like genebanks, they have access to a high diversity of mango varieties and have the habit of exchanging scions and making grafts.

## 4. CBM in context

### 4.1 Diversity of sites

During the transect walk in Jeypore and Kolli Hills we noted a high diversity of cereals, pulses, oil seeds, vegetables, fruits, trees and flowers. In Sirsi, we observed a greater diversity of perennial fruits and trees than of annual crops. The team also noticed a number of differences in terms of food habits in the sites. Each site has a different staple food. Likewise, the three sites vary in terms of ecology, the cropping pattern and the types of crops grown. From our discussions with the communities and scientists working in Sirsi, we learned that 80% of the site is covered with forest, and as such forest plays an important role in the livelihoods of the farming community in the area. In the Kolli Hills site, a substantial area of land is also covered by forest. In comparison to Sirsi and Kolli Hills, the Jeypore site is less covered with forest.

In Jeypore, the major crops grown are rice, millet and vegetables. However, the major crops grown in Kolli Hills are cassava, peppers, bananas, and coffee, oranges and different types of millet. In Sirsi, the major annual crop grown for home consumption is rice. Many perennial crops, like arcanut, coconut, bananas, peppers, mangoes and cloves, are grown in Sirsi for commercial purposes, home consumption, and for rituals related to various religious festivals. In addition, the income generated from the sale of non-timber forest products (NTFPs) makes an enormous contribution to the livelihoods of the community. Rice and vegetables are sources of cash in Jeypore, whereas the communities of Kolli Hills and Sirsi generate more cash from perennial crops. The team noticed variations in the economic status of the communities in the CBM sites. The socio-economic condition between Jeypore & Kolli Hills is different. The tribal in Kolli Hills are richer than Jeypore in terms of assets or infrastructures and type of crops grown. In Kolli Hills the tribal mostly grow cash crops and in Jeypore tribal grow subsistence crops like rice. However, at Sirsi the communities are of varying economic status and there are a number of CBM practices that address the needs of the poorer tribal communities. In all of the three sites we visited, the majority of inhabitants were Hindi. Sacred grove areas, religious worship and others religious issues that are linked to the conservation of biodiversity are present in all of the three sites.

As the name indicates, Kolli Hills is located on a higher elevation than Jeypore and Sirsi. We observed in Jeypore that tribal farmers in areas where MSSRF carried out interventions ten years ago, are able to express themselves, and understand the activities in which they are involved, better those from areas where interventions were begun only five years ago. In comparing the three sites, efforts towards value addition are being made more in Kolli Hills than in either Jeypore or Sirsi. Grassroots institutions (self-help groups, DNA clubs, farmers' clubs, the Panchabati Grayma Unayan Samiti Federation (PGUS), Kalinga Kalajeera Rice Growers Cooperative Society (KKRGCS) and KHABCOFED) have been established and formally institutionalized by major institutions both in Kolli Hills and Jeypore. In Sirsi, such organizations are present but have not yet been formally organized as legal entities. In our view, the farming communities in Sirsi and Kolli hills have developed more of a commercial mentality than the Jeypore farming community.

## 4.2 Historic drivers for empowerment

One of the most important global policy frameworks for conservation strategies was negotiated during the United Nations Conference on Environment and Development held in Rio de Janeiro, in 1992. One of the major outcomes of the conference, in terms of underlining the role of indigenous and local communities with regards to *in situ* conservation, is the Convention on Biological Diversity (CBD). There is a general understanding in the team that the M.S Swaminathan Research Foundation started its mission under this global policy framework. Historic and cultural drivers for CBM empowerment in India will be briefly discussed below. Due to the limitations of time and space, India's immense historic, socio-economic and cultural diversity cannot be comprehensively described here, but as an eye opener we would like to present our observations as well as the information we collected from published literature related to CBM activities in Jeypore, Kolli Hills and Sirsi.

### *Jeypore*

Based on our discussions with the community, and with MSSRF scientists, we learned that the Jeypore tract in Odisha was once known for its rich biodiversity of rice landraces. As a result, the region was considered to be a secondary centre of origin for Aus ecotypes of rice. During the discussions we also observed that resource poor and illiterate smallholder farmers were the guardians of huge numbers of local landraces of rice. These landraces give a very low yield under the traditional methods of cultivation, which were handed down through the generations. During the so-called "Green Revolution" in the 1970's, the state government planned to improve the living conditions of these tribal farmers through modern methods of cultivation. They were capacitated with the knowledge to cultivate high yielding rice varieties and were provided with the necessary inputs at a subsidized rate. Besides this, farmers who used improved varieties were guaranteed the sale of their produce from these varieties back to government. Recognizing such economic benefits, farmers started producing these new varieties of rice leaving their landraces aside. Such schemes speeded up the erosion of rice landrace diversity and associated knowledge. The rice landraces, which numbered 1750 in the 1950's, dwindled to 324 in 1998. The M.S Swaminathan Research Foundation was very concerned with the rapidity with which this rice diversity was being depleted from its centre of origin and concentrated its efforts on rescuing the vanishing rice landraces as well as improving the livelihoods of tribal farmers.

### *Kolli Hills*

In the Kolli Hills site, millets, particularly little millet and Italian millet, are usually pounded with a mortar and pestle to de-husk the multiple seed coats and extract the grain. Finger millet was processed into flour using stone grinders. Women are particularly involved in the manual de-husking and grinding of millet. However, on top of other household responsibilities, such activities were found to be drudgery for women. In a pilot survey, carried out by MSSRF scientists in 1994, in Kolli Hills, on traditional knowledge, biodiversity management, cropping pattern and natural resource management, it was recognized that the range of diversity of millet landraces was declining. The introduction of perennial cash crops (cassava, banana, coffee, etc); the drudgery involved in pounding millet; the lack of market channels; the development of roads; and the availability of cheap rice under the public distribution system, were major factors which have affected the cultivation and consumption of minor millets in the area. Recognizing the hard work required by the women and the dwindling of the millet diversity in the area, MSSRF organized self-help groups and provided them with processing units for the removal of stones and seed coats. The provision of millet de-stoners and de-huskers significantly contributed to a revival of millets in the area. Capacity-building of the local communities; village level seed banks; farmer-farmer seed exchange systems; and the dissemination of information through various forms, were carried out with financial support obtained from the Swiss Agency for Development and Cooperation. The drudgery involved with processing millets was curbed by the use

of small-scale machinery for processing millets. The formation of different grassroots institutions, like self-help groups (SHGs) and farmers' clubs (FCs), enhanced the production, consumption and commercialization of millets and, consequently, the sustainable conservation of natural resources. In addition to these efforts, the government policy supports SHGs in obtaining loans and government subsidies, which play a fundamental role in the sustainability of the SHGs. The work of more than a decade and half led to the establishment of the Kolli Hills Agro-diversity Conservators Federation (KHABCOFED), an important body for all SHGs and farmers' clubs.

### *Sirsi*

In India, before British colonization, the forests belonged to the community. With a growing demand for timber from the colonizers, the forests were transferred to government control. The forest dwellers and neighbouring agricultural communities were deprived of their rights to use the forests and forest products. As a consequence, the local communities became gradually alienated from the forests. The first legislation passed was the Indian Forest Act of 1865, which empowered the government to declare any forest as government property. With the implementation of the forest laws, the collection of forest products by the public was to a great extent restricted, because the government perceived that the people were responsible for the large-scale destruction of the forest. This situation did not change significantly even after independence. The draft bill of the Indian Forest Act of 1980 concentrated on the commercialization of forests and blamed the forest dwellers for the destruction of the forest. At the time, the government faced resistance from all quarters and attempts were made to regain control of the forests. However, with the inception of Joint Forest Planning and Management (JFPM), there has been a radical change in attitude in the state forest departments, which have begun to involve local people as the main stakeholders of these important natural resources.



### 4.3 Cultural drivers for CBM (Empowerment)<sup>1</sup>

There are many cultural drivers for empowerment but the major ones we observed in the sites are religion; traditional food prepared using local landraces; and the dependence of the communities on forest and forest products for their livelihoods. Local dishes are prepared for religious festivals and temple deities using different landraces because of their specific characteristics. Forest products are used in the rituals of many religious festivals. There are also a number of religious beliefs in the community concerning so called “sacred groves”. Some of the beliefs and taboos associated with sacred forests include: the felling of trees inside the grove is prohibited; people should slaughter goats or chickens 32 feet away from the deity; people who attend death ceremonies should not enter the grove for the following 21 days; people should not enter to the grove with footwear, and so on. Some households keep several trees as holy trees, in the name of their devotee, and worship them. Such cultural beliefs have sustained and conserved most of the endangered tree species, which were not possible to conserve in those forests protected by the government.

#### *Jeypore*

Jeypore is not only rich in agrobiodiversity but is also rich in diversity, in terms of culture. Different dishes are prepared for temple deities during religious festivals, using local rice landraces because of their specific characteristics, such as their good cooking qualities and medicinal properties. Tribal farmers in the region preserve Machhkanta rice for the Manabasa and Lakshmi Puja festivals; Kalajeera and Deulabhoga rice for temple deities; Tulsi rice for the Chaitra Parva festivals, and so on, as they have a particular flavour and aroma that makes them unique from modern varieties of rice. However, the festivals, and as such the food habits, differ between the various ethnic groups. Therefore, despite the similar environmental conditions, different ethnic groups cultivate different rice varieties. As the tribal farmers of Jeypore are very poor, they cultivate a variety of landraces that have different periods of maturity and which are adapted to low inputs and marginal environments. The stems of landraces are taller in height than those of modern varieties and are much preferred for thatching purposes. The different types of land – upland, midland and lowland – encourage the cultivation of different types of rice. The tribal communities in the area have a culture of seed exchange, which they inherited from their ancestors. We also observed the presence of elderly people who can pass indigenous technical knowledge on to the younger generations.

#### *Kolli hills*

The types of crops grown by Malayali tribes in Kolli Hills are, in one way or another, used for religious worship. Many different dishes are prepared for the various religious festivals, using the various local landraces of millet, particularly the Italian millet. For the “Kungay” religious festival, local people offer their goddess black banana and black paddy. Although the temple is located in Southern Kolli Hills, the farmers collect black banana rice from the East and black paddy rice from the North of Kolli Hills. Every household has the habit of selecting and storing seeds, collecting them from the mother panicles and storing them in a variety of traditionally made structures. Some people keep herbal plants, while others keep sand and soil, in their storage structures in order to protect the seeds from pests and diseases. Herbal plants are not only kept in seed storage structures but are also spread across the paddy fields to safeguard them from pests and diseases. Some of the beliefs and taboos associated with sacred forests include: the felling of trees inside the grove is prohibited; people should slaughter goats or chickens 32 feet away from the deity; people who attended death ceremonies should not enter the grove for the following 21 days; people should not enter the grove with footwear,

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<sup>1</sup> Note that the team has analyzed the context of the cultural driver of CBM instead of the cultural driver of empowerment. Therefore the title has been modified.

and so on. Beliefs connected to the sacred forest have sustained and conserved many of the endangered trees species, which were not possible to conserve in the government forests.

### *Sirsi*

During our discussions with farmers' groups and different stakeholders working in the area of Uttara Kannada, we learned that the livelihoods of the farming community depend on forests and forest products. Forest products are part and parcel of every meal in the community. Forest products are also used for the rituals of many festivals. On the occasion of Bomihunime (earth day), we witnessed farmers preparing a number of sweet dishes from different species of fruits. Half of the dishes are spread on rice and the other half is consumed. It is believed that spreading dishes in this way reduces insect attacks on this particular occasion. During our discussions we were able to see that the livelihoods of farmers in this site are closely linked to the forest resources. Forest products are required during marriage ceremonies, religious worship and death ceremonies. During the Ganesha festival, fruit and leaves are tied onto the door. On this occasion, keeping the leaves of some of the trees on the doors is considered a sign of prosperity. Religious and cultural beliefs, such as sacred forests, the Tiger God and Buthaba, exist where people are not allowed to fell the trees. Pickles made from mango are part of any South Indian dish and are also used for ritual purposes. They also have a high market demand locally. Keeping in mind the demand and cultural value mango has, one innovative farmer maintains different local as well as improved varieties of mango. If this man had not conserved all this diversity, it may well have been lost. As a result, the farmer is considered a 'custodian' of mango diversity in the area. On the other hand, some households maintain trees in the name of their devotee and worship them. Some communities have the culture of sharing labour during grass cutting, rice transplanting and harvesting, and manure transportation.

#### 4.4 Drivers for CBM

We observed two major groups of CBM drivers: external and internal. The main external drivers include the crisis of lost diversity that followed the Green Revolution; and the international policies that were developed as a consequence of this, for example the Convention on Biological Diversity (CBD). Both the loss in biodiversity and the international policies influenced NGOs and universities to work with the *in situ* conservation of plant genetic resources.

Another common point was the establishment of small groups of farmers, mainly women's groups, for example the SHGs. These groups are the result of a national policy implemented around 15 years ago, in order to strengthen people-based self-governance at a grassroots level. Different government bodies have their own policies to promote this kind of SHG, as an aim to empower marginalized people and women.

The most important internal driver for CBM is the diversity: of the rice in Jeypore; of millet, in Kolli Hills; and of non-timber forest products (NTFP), in Sirsi. Moreover, another important internal driver for all Indian sites is religion. Local religious practices are closely linked to biodiversity. In Jeypore, some aromatic landraces of rice are used for specific festivals. In the Kolli Hills and Sirsi sites, there are some areas of forest that are conserved by the community because they believe that those areas are homes to religious entities. In addition to religion, there are other cultural affinities that promote landraces. In Jeypore, local landraces of rice are preferred for use in thatching.

The caste system seems to have an influence on *in situ* conservation. Different castes have different agricultural practices, cultivate different landraces and have different food habits. This cultural diversity contributes to agrobiodiversity.

The predisposition of collective work is another CBM driver that was noticed in all the Indian sites. The communities have informal groups where they share knowledge, labour and seeds, and agricultural inputs. In Sirsi, the community keeps up to date with the forest situation through informal systems of monitoring and managing the forest. This predisposition to work collectively is reflected in their organization of dramas and festival groups.

In Kolli Hills, the specific CBM drivers include the long distance to the markets; the lack of transportation facilities; the lack of value addition; the drudgery of pounding millet; and storage issues. In Sirsi, the presence of progressive farmers that domesticate and manage the diversity of tropical trees are reference points for the community, they act as custodians of the diversity and knowledge, and they can be considered drivers for CBM.

## 4.5 Definitions of empowerment

There are different strata in Indian society, based on caste and religion. In the past, these different groups could not mix. Nowadays, however, this attitude is gradually changing. Ways to change this stratified pattern include developing national policies regarding quotas of different castes and genders in government bodies, and also by promoting the establishment of organizations (Central Village Committees), and securing financial support, for marginalized groups. As a consequence, these programmes of integration (for example in Community Gene-Seed-Grain bank management Committees) have resulted in the self-recognition of marginalized groups, which can, through the development of autonomy and self-determination, contribute to empowerment.

In the Indian context, empowerment is: “The process of developing the self-determination and autonomy of marginalized people from their self-recognition.”

In the CMB context, empowerment is related to the management and *in situ* conservation of plant genetic resources: how to access the resources and ensure the benefits obtained from their use are shared equally and fairly.

The CBM practices to empower these marginalized farmers, in India, have been carried out through the establishment of SHGs, farmers’ clubs, village centres and villages committees. The involvement of the farmers inside those groups, combined with training, helps them to develop useful skills. This capacity-building process increases the self-confidence and the collectiveness of every farmer. It also increases their self-determination to think and act on their own initiative.

CBM practices in India focus on the development, or strengthening, of farmers’ organizations. Once the farmers establish these organizations they are able to access the structure developed by the government for their empowerment. Examples of these structures are the national policies of quotas for different castes and genders in government bodies and the financial support made available to marginalized groups.

So, empowerment in the CBM context, as observed and practiced in India, means:

“The process of strengthening the pre-existing self-recognition, knowledge-sharing and organization of farmers, generating self-determination to access the structures established to develop autonomy, making the management and the conservation of plant genetic resources possible in a collective and inclusive way”.

#### **4.6 Community within the term CBM: Is this collective management**

Community and collectiveness change a lot from site to site within the Indian context: it can involve a tribal community or a village, as in the Jeypore site; or a number of small groups, linked to each other by the market chain, as in Kolli Hills; or a group of people who share access to knowledge and similar forest extraction practices, as in the Sirsi site.

In the Jeypore site, collectiveness has been built-up within the tribal village. Even though there are some small groups inside each village, they are interlinked through the centre village committee, or the village seed bank committee, organizations that function as umbrellas aggregating all the other groups.

This collectiveness was developed by an external institution (MSSRF) and until now has been supported by this institution. The CBM practices are important for the organization of the community and for awareness-raising on collectiveness in the community.

In the Kolli Hills site, collectiveness is being created through the organization of SHGs and FCs. During discussions we learned that they are an important way of obtaining loans from banks and of saving money. These groups are interlinked with the market chain: some groups are involved in the cultivation of millet, others in processing it, and others in value addition and the markets. The KABCOFED is one institution that was created to unify these groups, reinforce the market chain and make the products marketable.

Independently of the SHGs, within the village collectiveness has evolved from cultural aspects: the villagers usually share labour, exchange seeds, grains and knowledge. In that way, most things learned by the SHGs are shared with the rest of the village, for instance, some cultivation techniques and access to seed through the community seed banks.

One of the limitations to constructing collectiveness is that most of the farmers' groups are gender specific - ie. formed only by men or women. This is one of the requirements for obtaining bank loans. KABCOFED can be an important way to construct collectiveness despite this gender issue.

In the Sirsi site, knowledge-sharing and the use of forest areas seem to be the most important aspects of collectiveness. Forest areas belong to the government but their resources are used by the community. The management of these resources is carried out in a collective way, formally or informally. The village forest committee is a formal institution in which communities can make decisions on the use and management of forest resources.

Collectiveness is also being created around some innovative farmers. A number of farmers are custodians of mango diversity and knowledge, and as such help link the community as they are recognized and sought after because of this diversity and knowledge.

## 4.7 Inclusion, equity and gender

We observed that within the communities everyone can participate in an organization, in a formal or informal way. We observed two aspects that can influence inclusion and equity inside the communities: gender and the caste system. The influence and importance of these aspects changes from site to site.

The influence of the caste system was an aspect that was difficult to get information on, due to the existence of some taboos. This aspect is not a major issue in sites where almost all the community members are from the same tribal group or caste. In the Jeypore site we learned that even though people from different castes can work together, they cannot share some things, like food and labour. In the Sirsi site, we observed that people from higher castes have more influence in the decision-making process, because they have more knowledge.

The influence of gender also changes from site to site. In Jeypore, we noticed that there were more mixed groups than men-only/women-only groups. But in the Kolli Hills site it was more common to see men-only, or women-only groups. In Jeypore and Kolli Hills there are umbrella groups that cover all these gender groups. In these communities the majority of the groups are called self-help groups (SHGs). These SHGs facilitate capacity-building, obtaining loans and saving money. There is a diversity of SHGs that have been created to help women in the process of empowerment, and they play an important role in increasing the capacity and the participation of women in the decision-making process. Women are on their way to achieving empowerment but more knowledge and power are needed for them to occupy an equal space in the decision-making fora, where they need to be able to engage in dialogue with men.

Below we provide further details of the gender issues:

### *Jeypore*

Everybody has a role in the community but there are differences in the activities in which each community member is involved. We observed differences in activities that were carried out by men and women. Women are responsible for 70% of agricultural work. On the other hand, men are responsible for the sale of agricultural crops in the markets. Women are only able to sell produce in the local markets as they need to be close to the family. With regards to decision-making, we noticed that both women and men participate in the process. In some cases, the men are stronger, while in the others the women are stronger. In the community, there are some SHGs that are for women only. In the community associations (PGUS, central village committees, KKRGCs), women have some “reserved” spaces. There are also some community members that work outside the community, this is more common for men. At times there is a problem of land demarcation by the government. Sometimes there is a conflict between the revenue department and the forest department on land demarcation issues. Within the tribal community there is no conflict on land issues. The average landholding size is varying from 0.5Ha to 5 Ha. One important point of merit for the women farmers is that they have received prizes in recognition of the diversity of landraces that they conserve. There is a high level of alcoholism amongst men in these tribal communities, further increasing the role of women in agriculture.

### *Kolli Hills*

We observed that women and men work separately in different groups. There are 40 community groups, among them 22 are made up of women only, 17 are made up of men only and just one group is mixed. Some activities are mainly carried out by men, for example, marketing activities. Women are involved in value addition, so they don't need to travel far away. In these community groups, the work

is shared, members work for a certain amount of time and then change with other members. Each group defines how this work-share will be organized, and we observed that it can change from group to group. Some women's groups depend on men, because women cannot travel to sell and also do not yet fully understand how to manage all of the machines. Other women's group have the knowledge and the capabilities to manage the machines and do all their work without help from the men. Before the implementation of CBM activities and the formation of the SHGs, women were not able to leave the house, because their husbands did not allow them to. Nowadays, the women receive training, gain knowledge and are able to leave the house. At times these landless people took land on lease or share basis to cultivate. SHGs enable women to earn their own money. In the KHABCOFED, men are dominant; women need more knowledge and power to be able to occupy equal space.

### *Sirsi*

With regards to the extraction of forest resources, work is divided out: men are responsible for gathering and harvesting, and the women are responsible for work at home, such as processing. Marketing activities are also carried out by men. The only income related to extraction that goes directly to the women is the sale of handcrafted mats made from palm leaves. The profits made from this activity are very low, so men do not have any interest in it. There are women's SHGs, where women can receive training, for instance: mushroom cultivation, financial management, soap making and *Garcinia* juice extraction. The VFC has a 50% quota for women on the management body. However, men are dominant in the decision-making process, although they emphasized to us that they are influenced by their wives at home.

#### 4.8 Competing claims: land ownership, CBM and empowerment

Although there are variations in household landholding size within and between the sites, we did not find any discrimination of the farmers based on landholding size with regards to CBM practices. There were landless people in all the sites we visited. These landless people are involved in CBM activities such as the collection of NTFP, the mobilization of savings, and different income generating activities. Some families own different types of land and cultivate different types of crops based on land types. Those individual households that have different types of land maintain a greater diversity of crops in their farmland.

In the Jeypore tract of Odisha, as in other parts of the country, the land belongs to farmers and their family members. The team observed that there are also farmers without land. These farmers earn their living by doing handcraft works and by working as labourers either on farms or in the nearby towns. On the other hand, from the discussions we had with MSSRF scientists, the team learned that there are no problems with land ownership, or conflicts related to the land.

The Kolli Hills site is inhabited by a Malayali Gounders tribe, who are said to have migrated from the plains of the Kanchipuram district about five centuries ago. During the process of settlement, they cleared the forests and have since been utilizing the land for the cultivation of food crops, such as little millet, Italian millet, kodo millet, finger millet and common millet. The amount of land used for millet cultivation has been shrinking over the last three decades for a number of reasons, including the introduction of cash crops like cassava, coffee, and peppers; the drudgery involved in processing millet; the lack of market linkage for millet; and the availability of food grains at a reasonable cost through the public distribution system etc. The interest of the farming community towards commercial crops is putting pressure on traditional agricultural systems, resulting in the abandonment of millet cultivation.

The size of farmers' landholdings varies from 0.5 to 10 acres with an average landholding size of 2-3 acres. Most of the farmers have a legal entitlement over their land (in the form of a land ownership document). There are also people in the region with no land. Some of the landless people are using forest land. The person who first clears the forest land is unofficially deemed owner of that land. Such land is not registered but is used by farmers for cultivation. The sacred groves in the sites are becoming less important due to the weakening of culture and the decrease in interest of young people. Although it seems that there are no conflicts in land ownership, some instances of encroachment in the forest land were observed.

Landless people also obtain benefits from CBM activities, for example, they collect firewood and fodder from the common forest for livestock, as well as collecting and selling the NTFPs. In addition to this, they are able to obtain bank loans and mobilize different income generating activities. Since most of the CBM activities in this site are related to millet production, value addition and marketing, farmers with more landholdings were found to reap more benefits than those with smaller landholdings or the landless. However, no discrimination based on land ownership was found with regards to CBM activities.

In the Sirsi site, about 80% of the area is covered by forest. Most of the farmers (70%) are small landholders with an average landholding size of 3 acres and are dependent on forest resources for their livelihoods. The farmers live in close proximity to the forest and are involved in the collection and marketing of forest products. The forest reserves, which are owned by the Forestry Department, are the major source of forest products for the livelihood of the community. The forests are managed in a participatory way with the involvement of both the government and the local communities. Local



communities and the Forestry Department jointly manage the areas of forest reserve and legally share the benefits arising from the protection of the forest. Since CBM activities in this site are related to the management and utilization of forest resources there is no major issue regarding land ownership for the CBM process.

In the Sirsi site, individual households are involved in some biodiversity management practices like diversity blocks, the establishment of nurseries on their own land, and the collection of forest products from private forests. In some parts of the site, strips or patches of forest that are traditionally used by farmers to collect mulching material for arcanut orchards, are legally provided by the Forestry Department to the owner of the orchard, although the felling of trees and construction works are strictly prohibited in the allotted areas. This promotes the conservation of the forest and soil water management in the individual farmers' orchard.

## 4.9 Governance and CBM

### *Jeypore*

The Jeypore site is a hotspot for the genetic diversity of rice. In the 1950's, there were 1750 rice landraces. By 1994, this number had dropped to 324 and some recent reports indicate that the number had in fact dropped to 102 landraces of rice varieties. To curb this rapid genetic erosion, MSSRF concentrated on its work with the village development committee (VDC). The election of the committee is made only once, through general assembly. Most issues, including the village development fund, are decided on by the VDC. However, the committee must obtain approval from the general assembly when important decisions are being made. The village development committee provides loans for investment and on occasions like marriage, death and religious festivals and also for agricultural purposes. The role of MSSRF is to facilitate the CBM processes and practices, and the capacity-building of the farming community in quality seed and storage.

### *Kolli Hills*

MSSRF is the organization that initiated CBM activities in Kolli Hills. MSSRF facilitates the farmers in establishing market linkages at local and regional levels; marketing minor millets; and scaling-up millet production. SHGs and FCs were formed to institutionalize the market operations. These groups meet every month and make decisions on obtaining and repaying loans; saving and lending; planning activities for the upcoming month; and income and expenditure. At present all these groups are under the umbrella of the Kolli Hills Agrobiodiversity Conservation Federation (KHABCOFED), which was registered on the 12<sup>th</sup> February 2009, with the government of Tamil Nadu, under the Society Act of 1975. Two representatives are selected from each based on consensus and agreement among the group members. During the selection process, priority is given to the level of education as well as to the interaction, coordination and negotiation capabilities of the individual. This elected group of members forms the management committee. And from these members an executive committee of 12 members is selected. The executive committee meets monthly and its responsibilities include solving conflicts between the SHGs and FCs, and looking after loans. The selection of executive members is carried out in different strata. Three regional cluster meetings are held at general level.

Specific groups are involved in particular CBM activities or enterprises, ie; value addition; marketing; managing waterfalls; maintaining the community seed bank; organic farming, etc. These groups are being supported financially and technically by MSSRF and the State Bank of Tamil Nadu (NABARD). Decisions on day-to-day activities are made in the monthly meeting of the groups. However, in the event of a problem, the representative member presents the issue to the management committee in the executive meeting. In making decisions regarding technical matters, MSSRF play an important role. Although the decision-making process is participatory, empowerment is not the same between men and women and decision-making processes are dominated by active and educated people.

### *Sirsi*

The implementation of the Joint Forest Planning and Management Project (JFPM) by the Karnataka state government, in 1991/92, marks the starting point of CBM activities in the Sirsi site. The local communities jointly manage the areas of forest reserve with the Forestry Department and legally share the benefits arising from the protection of the forest. An NGO, Life Trust, together with the College of Forestry, facilitate strengthening the capacity of informal farmers' groups for the better management of forests. Since the inception of JFPM, different village forest committees have been formed for the management and utilization of the forest and its products. The executive body of the VFC consists of 11 members: 10 from the community, with representation by women and weaker sections of society,

and one from the Forestry Department. The VFC arranges monthly meetings and makes decisions regarding the micro-planning of the forest, rules of extraction, and utilization of the VFC fund. Representatives from local organizations like self-help groups, youth groups, cooperatives and farmers' associations are in the VFC and work together in coordination, but there is a lack of well-established linkages or comprehensible understanding between them, which in some cases makes it difficult to come to an agreement in making some decisions, like the mobilization of the VFC fund.

Some of the conservation activities, like maintaining diversity blocks and nurseries, or collecting forest products from private forest farmers, are carried out individually. However, they are informally organized and the farmers make decisions collectively, exchanging planting materials, sharing knowledge and information, including methods of harvesting forest products and fixing the prices.

## 4.9 Sustainability of CBM

### *Jeypore*

MSSRF established different grassroots institutions, like the village development committee (VDC), in 16 villages. These 16 villages are all under the umbrella of the Panchabati Grayma Unayan Samiti (PGUS) Federation. This federation is a registered legal entity in the Koraput district. It is a community-based organization for the conservation of Biodiversity (including Flora, Fauna, Ecosystem & associated traditional knowledge). Under the PGUS, a society called “Kalinga Kalajeera Rice Growers Cooperative Society” has registered one landrace variety of rice with the local name, “Kalajeera”. There is a high demand for this particular variety in the market. Before the formation of this society, middlemen used to buy Kalajeera rice from the farmers, paying them a low price and often paying them late. Now, through the facilitation of MSSRF, the farmers are linked to the Rural Marketing Department, which helps link the cooperatives sustainably to niche markets. Besides linking to markets, the department also plans to promote the variety around the country and abroad through exhibitions so that the farmers get a premium price and are encouraged to continue producing this variety.

### *Kolli Hills*

There are good linkages between CBM practices in the Kolli Hills site, eg. diversity blocks (farmers’ trials), the village seed bank, seed production, processing, value addition and marketing. The farmers are well organized and have registered a federation with its own logo, which helps the marketing of several products. The SHGs and FCs are receiving loans from the National Bank and are mobilizing funds for different income generating activities. The CBM activities in this site have mostly been initiated by MSSRF and, for some of the activities, have been supported by donors and international organizations like the International Fund for Agricultural Development (IFAD), the Swiss Agency for Development and Cooperation (SDC), and Bioversity International. Technical support is provided by universities and research stations. A number of mechanisms and practices show that the communities in the sites are moving towards making their activities sustainable, for example, the internal control system and organic certification for locally produced pineapple; direct linkage and contracts between the farmers’ groups and companies for marketing organic pineapple; the village millet resource centres (VMRCs); monthly savings and the mobilization of funds, etc. There is an increasing demand for locally produced value added products, and the community owns property of high value (the land and buildings housing the mill and procurement centres are owned by the community). Besides the group members, other villagers also procure services from these activities (e.g. the mill).

The management of waterfalls by a group in this site is clearly sustainable. The aim of the group is to conserve the waterfalls and associated resources in the vicinity, and to get economic benefits from it. The group is now so well recognized in the region that the government has asked the group to manage an area of scenic beauty. Now the waterfalls and the scenic area are under the management of this ecotourism group, which pays a 20% tax to the government. On average, 10,000 people visit the waterfalls every year. The group charges Rs10 per adult and Rs5 per child. The group members are also involved in other social services in the community.

We noticed the important role MSSRF plays in supporting and facilitating the communities in most of the CBM activities and also that there is need for further social, cultural and economic empowerment to enable the community to achieve its autonomy.

### *Sirsi*

In Sirsi, the farmers are aware of the importance of local genetic resources and are conserving local mango landraces as well as *Garcinia* in their nurseries. They are also involved in the multiplication of planting materials of landraces and their distribution to villagers. Individual farmers produce different wild relatives of mango and *Garcinia* in their orchards and some collectors are involved in the collection of forest products from private land. The owners of this private forest land sell the forest products to the collectors at a low price. This shows the interest and involvement of farmers in conservation activities. However, there is a need for good market linkage and a network of farmers to enable them to obtain reasonable prices for the products, which would be an economic motivation for the conservation activities to be sustainable.

The management and utilization of forests by the VFC seem to be sustainable. The villagers are getting benefits from the forests and they are involved in planning the management of forests, like water harvesting, building ponds, planting trees, and collecting and marketing forest products. The joint involvement of the government with the local community for the management of the forests, and the well-organized benefit-sharing mechanisms, reflect a pathway towards sustainability.

The recognition, support and facilitation provided by other organizations, like the College of Forestry and Life Trust, to the farmers, for the management of forests, is a sign of future external funding, which will help to move the conservation practices towards sustainability.

#### 4.10 CBM and genetic resource policies

Among the international policies related to genetic resources, the CBD is undoubtedly the most important of the CBM study. India has joined the CBD and in order to implement it, has developed different laws, mechanisms and structures, the Biological Diversity Act of 2002 being the most important one. This Act provides a structure for addressing issues of *in situ* conservation, sustainable development and access and benefit-sharing. The structure consists of three main bodies: national authority body, state biodiversity body, and biodiversity management committee (at local level). The act also establishes the National Biodiversity Fund. These three bodies are responsible for managing the National Biodiversity Fund, and also for dealing with the People's Biodiversity Register. The National Biodiversity Fund is the structure that enables the mechanism of benefit-sharing to work. The People's Biodiversity Register is there to ensure the protection of traditional knowledge. Nowadays, with the support of NGOs and universities, India is trying to develop a national common database of traditional knowledge. The implementation of the CBD in India is very advanced and many structures and mechanisms have already been established. More time is needed to monitor and evaluate the implementation of the Biodiversity Act and to improve the mechanisms. The biodiversity management committee works well and can be a very powerful instrument for empowering people on community biodiversity management.

Another complementary act of Indian legislation, related to genetic resources, is the Protection of Plant Varieties and Farmers' Rights Act, 2001 (PPVFR). This legislation addresses some aspects of the CBD and also some elements of Trade-related Aspects of Intellectual Property Rights (TRIPS). The PPVFR Act establishes the national register of plant varieties. The National Gene Fund supports the conservation effort at grassroots level was initiated under the PPVFR Act. To be registered in this, plants must satisfy the DUS requirements (distinctness, uniformity and stability). With regards to CBM and local farmers, DUS requirements are not good because landraces are not usually stable or uniform. On the other hand, through this act, farmers are defined as cultivators, conservers and breeders. Among the structures for implementing this act, is the PPVFR Authority, which is responsible for the registration, characterization, documentation and indexing of all plant varieties, including farmers' varieties. Besides this, the farmers have the right to save, use, sow, re-sow, exchange, share or sell seeds, including the registered ones. They also have the right to register their varieties, and if their varieties are used for breeding, the farmers have the right to share in any related benefits. In addition to this, according to the PPVFR Act, farmers are protected against innocent infringement and are exempt from all fees. Compared with Brazil, Nepal and Ethiopia, India is more advanced on issues related to the implementation of farmers' rights in the context of farmers' varieties registration.

#### 4.11 CBM and farmers' rights

In India, we found several policies where farmers' rights are addressed, in one way or another. The Protection of Plant Varieties and Farmers' Rights Act of 2001, enacted by the government of India, tries to protect the rights of farmers and breeders regarding plant varieties. This act recognizes the roles played by individual and community farmers in the improvement and conservation of varieties and allows farmers to register those farmers' varieties that conform to the requirements of DUS. The Indian Council of Agricultural Research (ICAR) and other organizations are helping the farmers with this procedure. NGOs like MSSRF can help the farmers by providing technical support for registration. Across India, various organizations work in this sector and many crops have been identified for registration. With the support of MSSRF, farmers have applied to register a number of farmers' varieties of rice. However, national legislation has not yet recognized landraces for registration. The Biological Diversity Act of 2002, was enacted by the government of India to promote the conservation and sustainable use of Indian biodiversity and associated knowledge to ensure the equitable sharing of the benefits arising from the commercial use of biological and associated knowledge resources. According to this act, all citizens have the right to use biodiversity for conducting research within the country. Farmers' rights over seed are traditional rights that have been enjoyed by farmers throughout the history of agriculture and which include the right to save the seed from production and use the saved seed for sowing, exchanging, sharing or selling to other farmers. The PPVFR Act gives farmers the right to seed of all varieties but restricts them from selling seeds of a protected variety in packages or containers with labels bearing its registered name. In recognition of the important role farmers have been playing in the conservation of varietal wealth of crop plants, the PPVFR Act has a provision to reward and recognize individual farmers, or farming and tribal communities, for such contributions. During our interactions with the communities we learned that farmers have heard about farmers' rights to some extent but they do not know any details about them. They are using the seeds from their production and are exchanging the seed with other farmers in the community. They consider this as their right.

In some places, the farmers are aware of the policies related to genetic resources. For example, in the Nuaguda village (in Jeypore), when farmers were asked if they could provide us with seeds, the answer was negative. But when asked about whether they would give seeds to someone from another village, they answered yes. This shows that they recognize the differences between foreign people and other villagers regarding the donation of seeds. So, these farmers have a good understanding about custodian rights over genetic resources.

We also noticed that the farmers of Jeypore were more aware of farmers' rights. In all the sites there are some custodians who had gained extensive knowledge on landraces. This knowledge includes an understanding of which varieties are adapted to specific environmental seasons; as well an understanding of the growing seasons; the condition of the varieties; maturing seasons; resistance of the varieties to pests and diseases; the quality of the produce and their uses, etc. The knowledge that the farmers gained is the basis of the modern scientific improvement of genetic resources. Therefore, when scientists are given the right to own new varieties created by them, this right has to recognize the right of farmers over their varieties. The CBM process and practices that have been implemented by MSSRF in the Jeypore and Kolli Hills sites have empowered the farming community to understand and apply these rights to some extent.

#### 4.12 Relation between customary rights and custodianship

In all three sites, the communities have customary systems of exchanging seed, knowledge and labour, and also agricultural implements. This exchange takes place within the community or between communities. In a general manner, the CBM practices observed were well adapted to pre-existent customary systems. The one particular area that may need more attention is that of the rules related to the lending and borrowing of seed and grain to and from the seed banks, in order that they do not adversely affect the customary system. Another common point on this issue was the use of forest resources in a communal way.

In Jeypore, one important fact was that the village women received one international and a national awards. This is an example of how policies can value and recognize the custodianship of genetic resources.

In Sirsi, there are a number of guardians. These guardians are innovative farmers who are interested in mango diversity and because of this interest they keep a huge diversity of mango, often grafting many varieties. Those farmers, and other mango farmers, have their own way of managing the diversity of mango. This management can be really important in the process of maintaining and even generating diversity, and as such the development of studies and documentation on this management can be important for the *in situ* conservation process.



### **4.13 CBM and access and benefit-sharing over genetic resources**

The Biological Diversity Act of 2002 was enacted by the government of India to promote the conservation and sustainable use of Indian biodiversity and associated traditional knowledge, and for ensuring the equitable sharing of the benefits arising from the commercial use of biological and associated knowledge resources. The act establishes a three-tier mechanism to monitor, regulate and approve access to and sustainable use of biodiversity and to promote its conservation. At national level there is a National Biodiversity Authority (NBA), which has overall regulatory and administrative control over national biodiversity. In each state there are State Biodiversity Boards (SBB) to promote, administer and regulate biodiversity under the policy framework established by the NBA. At the Panchayat level there are Biodiversity Management Committees (BMC) for documenting, conserving and monitoring biodiversity and regulating its use. According to this law all Indian citizens have access to genetic resources for conducting research within the country. Also, local healers have access to these resources for any commercial use without approval from the SBB. The Panchayat concerned can levy a collection fee for accessing biodiversity for commercial use within its control. Those who are not citizens of India, or institutions that have either not been wholly incorporated in India, or that have been incorporated in India but without any Indian participation in share capital or management, do not have the right to access or use Indian biodiversity or associated knowledge without prior approval from the NBA. Moreover, approval by the NBA is essential for any research on any Indian biodiversity conducted by Indian citizens or institutions, in collaboration with any non-Indian person or institution. According to the rules, each local body under the BMC should promote the conservation and sustainable use of biodiversity. The BMCs prepare and maintain a biodiversity register showing preservation habitats, lists and details of landraces, traditional varieties, folk varieties and other varieties of crops, breeds of animals and other living forms. The state government assists the local bodies in biodiversity conservation by providing grants from the Local Biodiversity Fund.

These systems and provisions enforce the potential for CBM activities. Farming communities are recognized by the government and research organizations by creating awareness and building capacities. The communities that maintain genetic resources are receiving awards, which motivate them to continue with CBM practices. Organizations like MSSRF have been organizing orientations and trainings on legislation related to plant genetic resources at local level, which helps to raise the level of awareness of grassroots institutions. In the Sirsi site, we observed that farmers and the government jointly manage the forest and there are well-defined benefit-sharing mechanisms between the two parties (government and farmers) regarding those benefits arising from the forest management.

#### 4.14 CBM, empowerment and *in situ* conservation

We observed positive links between CBM, empowerment and *in situ* conservation in the sites. CBM practices are in a more advanced stage in Jeypore and Kolli Hills than in Sirsi, where we observed that the process of empowerment and CBM is more of an internal than external process. In all sites it is possible to see how CBM is contributing to the empowerment of individuals and communities, and also to *in situ* conservation.

One of the CBM practices present in all sites that we recognized as an important component of empowerment and *in situ* conservation, is the organization of local institutions. In all the sites it is possible to see that the organization of local institutions contributes in an important way to the local decision-making process and to achieving community autonomy. These local institutions play an important role in the empowerment of women, who are participating more and more in community decisions. In these institutions, the communities are building their capacity to make decisions related to the management and conservation of their resources.

##### *Jeypore*

CBM practices are closely linked to *in situ* conservation, and MSSRF enhances the capacities and abilities of the communities to conserve and improve their landraces. The Community Gene-Seed-Grain Bank is an important practice for *in situ* conservation. We noted some results in the legal empowerment of farmers and the recognition of the role they play in the conservation of agrobiodiversity. Two women farmers (representing the tribal communities of Jeypore) received awards in recognition of the important role they play in maintaining landraces.

##### *Kolli Hills*

We observed that the organization of CBM practices into 4 “C”s (cultivation, conservation, consumption, commercialization) is contributing to the *in situ* conservation of millets and also towards achieving food and financial security of the communities. The organization of different work groups that are linked by the market chain is contributing to the economic empowerment of communities. Some training and capacity-building in value addition are also contributing to this process of empowerment. Empowerment is only possible because the methodology utilized involves multiple spheres that contribute to the development of individual skills, local level organizations and financial improvement.

##### *Sirsi*

We observed that CBM in this site is an internal process, driven by the perception of the degradation of common forest resources. In order to manage the forest areas properly, local organizations have been established, both formally and informally. The presence of universities carrying out research, strengthening local CBM practices, can play a major role in the empowerment process and in the sustainable management of those resources. Besides this, another important aspect we observed in Sirsi is the presence of some innovative farmers. These farmers are interested in conserving different varieties of mango and *Garcinia*, disseminating grafts and organizing training on different agricultural practices. Such innovative farmers can play a major role in conservation, because they are recognized by the community and have knowledge and varieties to share with the community. It is really important that the CBM practices involve these farmers.

## 4.15 General synthesis

The present exchange visit and study entitled “Global study on community empowerment for *in situ* conservation of plant genetic resources for food and agriculture” in India, comprised of four visiting members from three different countries (two from Brazil, one from Ethiopia, and one from Nepal). The exchange team had the opportunity to visit three CBM sites, namely, Jeypore in Odisha, Kolli Hills in Tamil Nadu, and Sirsi in Karnataka states. We observed some CBM activities and had interactions with different farmers’ groups and their leaders, prominent scientists, district officers, NGOs and other stakeholders who have stakes in community biodiversity management in India. Given the limited time available for this study, and the language barriers - we had to communicate directly with the communities and their leaders, and the huge diversity of plant, animal and culture that India has, it is very difficult to comprehensively document everything here. With this understanding, we will briefly highlight our understanding of CBM activities in India in the general synthesis, below:

### *Jeypore*

The conservation activities are strongest in this site. Economic empowerment is the next step that is being developed, through the commercialization of Kalajeera rice. The empowerment of women in this site is really advanced.

### *Kolli Hills*

The major focus of CBM activities is on economic empowerment, mostly involving small groups linked by the market chain. Within this context, the next step forwards should be the development of a communal system of monitoring and evaluating the present activities. The creation of KHABCOFED may already be the beginning of such a system, which must link all local farmers’ institutions and act as a forum to share experiences while monitoring and evaluating the CBM practices of all the groups. The Kolli Hills community has been through intense capacity-building, but they need to enforce this development, in order to gain autonomy and be more empowered.

### *Jeypore and Kolli Hills*

CBM activities could focus more on the forest resources. The forests of the Kolli Hills community are being encroached on. Discussions and capacity-building about sacred forests are being carried out in order to raise awareness about the importance of these groves, but sacred forests are not the only threatened ones.

The management of waterfalls and an area of scenic beauty by the local villagers in the Kolli Hills site is impressive. The members of the group are receiving good economic benefits for their work. However, there is a need to expand the group members. Mechanisms like payment for environmental services should be developed so that the local villagers who are maintaining the waterfalls and the scenic area can also benefit even though they are not members of the group.

### *Sirsi*

There are a number of innovative farmers that are involved in the domestication of wild varieties of mango and *Garcinia* in the Sirsi site. These farmers are producing the fruits in a large volume and are selling them to the collectors for a relatively low price. There is a need to organize such progressive and innovative farmers, and to provide technical support and linkage with the markets.

### *General*

In the three sites we visited, the drivers for CBM empowerment are both external and internal. However, it is worth mentioning that the long-standing and strong historical and cultural background

of the Indian community contributed greatly to the conservation of landraces of different crops and the conservation of natural resources.

During its mission, the team understood that in Jeypore and Kolli Hills, the marginalized groups of society (tribal communities) are the guardians of genetic diversity of rice and millet along with their indigenous technical knowledge. Therefore, these community groups have been recognized nationally and internationally and are being motivated to maintain this diversity in the future. A lot of effort has to be made, particularly with regard to the Kolli Hills conservator community.

The formation of grassroots institutions, like self-help groups, the central village committee (CVC) and the village forest committee (VFC), which attempt to create economic stakes in conservation activities, will play an important role in sustaining CBM activities. With immense efforts by the members, and with the relentless facilitation and backstopping of MSSRF, these grassroots institutions can develop into bigger institution, like the PGUS, KKRGCs and KHABCOFED. An existing conducive government policy supports the formation of such groups and will sustain the system and help these institutions be better organized.

It was very interesting for the visiting team to be able to understand the efforts that are being made to maintain gender equality in the different sites we visited.

Among many other successful stories in the CBM activities in India, the team would like to highlight the very good impression made by “Sacred Groves”, where patches of forests have been conserved by the community for reasons connected to religion and cultural beliefs that were inherited from their forefathers. Such kinds of cultural heritage should be passed on to the coming generations. However, from the discussions we had with scientists from MSSRF, the determination and strength of the younger generation is not the same as their parents, and here the team feels the continuity of such protected areas may not be sustainable and needs the attention of concerned stakeholders.

The team had good impressions of the activities being carried out in Sirsi on the conservation and utilization of forest and forest products. The development of marketing awareness is important for this site. One way that could lead farmers to directly market their products as a group, avoiding middlemen, is by forming self-help groups. In such a process, farmers can become empowered to negotiate for better prices.

Finally, the team learned that India has clear policy frameworks with regard to the management of biological diversity, plant genetic resources and farmers’ rights, breeders’ right and access and benefit-sharing among the four CBM partner countries.