

PARTICIPATORY ACTION PLAN FOR DYNAMIC CONSERVATION OF INDIA'S
AGRICULTURAL HERITAGE SYSTEMS (GIAHS)

CASE STUDY OF KORAPUT REGION IN ORISSA

REPORT SUBMITTED TO
FOOD AND AGRICULTURE ORGANISATION OF THE UN

SUBMITTED BY
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**PARTICIPATORY ACTION PLAN FOR DYNAMIC CONSERVATION OF INDIA'S
AGRICULTURAL HERITAGE SYSTEMS (GIAHS)**

TRADITIONAL AGRICULTURE IN KORAPUT, ORISSA.

TARGETED COUNTRY/REGION: Koraput District, Orissa, India.

2.2 Definition of output

1.Documenting diversity	Documenting Agro-biodiversity
	Documenting traditional knowledge systems with respect to Agriculture
	Documenting traditional knowledge systems with respect to Healthcare
	Documenting traditional conservation systems
	Overall Database development and maintenance
2.Conservation of Agro-biodiversity.	Development of traditional conservation systems- Sacred groves
	Development of modalities and implementation of in-situ on farm conservation of landrace diversity
	Establishment of ex-situ conservation modalities- Community genebanks
3.Sustaining Agro-biodiversity Utilization.	Developing and recording heritage descriptors of the Agricultural System
	Genetic resources evaluation and validation for community utilization
	Unique climate resilient genotypes identification, their conservation and utilization
	Enhancing agricultural productivity through patronage of potential genotypes, value addition and marketing (4C Approach)]
	Linking Agro-biodiversity with cultural biodiversity
4. IPRs and benefit sharing mechanisms	Harmonizing the Project objectives with various acts meant for genetic resources conservation, sustainability and benefit sharing
	Creating increased awareness and development of mechanisms (monetary/ non monetary) for benefit sharing
	Developing Geographical Indications for niche products
	Developing branded market products
	Benefit sharing out of commercialized products (Varieties/ Formulations/ Technologies)
	Capacity enhancement of ethnic communities towards IPRs and benefit sharing

2..a) Assessment of national and local policies laws and other national initiatives with relevance to their potential impact on GIAHS

Convention on Biological Diversity (CBD)

CBD is a dynamic international law (in force since December 29, 1993 and ratified by 188 countries as on 12th October 2004) founded upon three main objectives: (i) conservation of biological diversity, (ii) the sustainable use of its components, and (iii) fair and equitable sharing of the benefits arising from the use of genetic resources, including appropriate access to genetic resources and appropriate transfer of relevant technologies (Article 1). CBD has triggered a renewed impetus on the Contracting Parties or States to develop appropriate measures to regulate access and to promote benefit sharing in relation to genetic resources and traditional knowledge. The most relevant provisions on access to genetic resources, traditional knowledge and benefit sharing are stipulated in Articles 8 (j), 15, 16, and 19 of the Convention:

FAO- International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGR- (2001) and ABS process

The Treaty, which has come into force since 2001, aims at conservation and sustainable use of plant genetic resources for food and agriculture (PGRFA) and the fair and equitable sharing of the benefits arising out of their use for sustainable agriculture and food security. The Treaty provides for an efficient, effective and transparent multilateral system to facilitate both access to and fair and equitable sharing of benefits arising from the utilization of PGRFA on a complementary and mutually reinforcing basis (Article 10.2).

The CBD and ITPGR have to be followed to establish monetary as well as non-monetary benefits to the tribal communities while using their biodiversity resources for any commercial purpose.

Farmers' varieties

Processes have to be placed in this region to identify the unique landraces of different crops varieties to declare it as a farmer's variety under the PPVFR act and Biodiversity act of India. So far seven rice varieties were placed under DUS (Distinct, Uniform and Stability) characterization.

Registration of varieties

It is essential to register the farmer's varieties with the protection of plant varieties and Farmers rights authority to ensure the farmers stake in conservation.

Branded market products

Marketing of traditional varieties

Market survey and a study report by an intern, clearly revealed that the local people are unaware of the specific special qualities of traditional rice varieties. It was found that the number of traditional rice varieties

in the market is fewer than improved varieties. To overcome such challenges, certain approaches were adopted.

The nutritious qualities of unpolished rice were popularized through a door-to-door campaign. Grain was collected from farm families, milled and sold in the local market. Individual passbooks were issued to each farm family participating in the programme. Within a period of 34 days, more than 500 households were made aware of the advantages of unpolished rice and 25 qI of processed rice was sold under the programme at the rate of Rs 18.00/kg. It is planned to form a network through KKRGA which will take care of the marketing of unpolished, aromatic and other special kinds of rice.

GIs

Geographical indication (GIs) has to be processed for unique products from both plant, animal, forest. Giving a GI brand to any product in this locality will add value to the biological resources thereby enabling economic stake in conservation.

Policy Backup

Awareness & Capacity building, producer companies, societies

Continuous capacity building of tribal communities will be carried out on various aspects of conservation and use of local biodiversity. The young men and women will be trained on value addition and marketing of bioresources of the region. A strong capacity building programme will be undertaken to develop linkages with different companies to establish buyback arrangements. Local level cooperatives, societies and CBOs will be established to manage the conservation, cultivation, consumption and commercialization of local biodiversity. The awareness can be raised through media, poster, street play, village meetings, publications and other communication strategy.

Harmonizing different acts for conservation & enhancement

It is proposed to harmonise different acts provided by the central and state governments like PPVFRA act, Biodiversity act, forest act and other developmental oriented acts to ensure the conservation efforts made by tribal communities of the region. This will give both recognition and reward for conservation and enhancement.

Policy dialogues and dissemination

There is an urgent need to have policy dialogue at different levels like regional, state and national for wide dissemination of different conservation strategies. Steps will be taken for dissemination of information at various fora to create awareness on valuable genetic wealth of the region.

2. b) Assessment of entry points and alternatives to promote national recognition of GIAHS

The Koraput region in the state of Orissa, India, has a rich assembly of unique floral and faunal diversity. The genetic repository of the region is of great significance in the global context. About 79 angiosperm species and one gymnosperm are endemic to the region. Different tribal groups have conserved a large number of landraces of rice, millets, pulses and medicinal plants using diverse traditional cultivation practices in tune with the topographical and ecological conditions of the region. Koraput has also been identified as an important centre of origin for rice genetic diversity. In view of the rapid changes in the traditional practices coupled with natural and anthropogenic pressure require immediate attention for conservation of these unique species and genotypes for perpetuity.

Baseline Information

Koraput is a high land plateau with a number of hills and hillocks forming part of the Eastern Ghats. The altitude ranges between 150 and 1,500 m above the MSL. The mean average annual rainfall is about 1,521 mm, facilitating a potentially productive agro climate. The forest types range from semi-evergreen to dry deciduous. The whole area is drained by five major rivers namely Vasundhara, Nagavali, Indravati, Kolab and Machakund and several tributaries and small perennial streams. The district has the highest population growth in the state, which is primarily a tribal district with more than 70% of the total population belonging to one of the 52 tribal groups. Some of the numerically large tribes in the district are *Khond, Bhatada, Paroja* and *Bhumia, Bondas*, etc..

Koraput region is endowed with impressive biodiversity. The Jeypore tract (undivided old Koraput district), is identified as a secondary center of origin and a centre of genetic diversity for rice. The topographic diversity of the Koraput region has resulted in a wide diversity in ecosystems under which rice is cultivated: upland (unbunded as well as bunded), medium land (irrigated and rain fed) or low land condition. Within each ecosystem, innumerable rice varieties are grown depending on the local preferences for morphological characters (plant height, pigmentations, grain shape and size, presence of awns), cultural practices (broadcasting, transplanting, food preparation (cooked rice, popped rice, puffed rice), palatability (aromatic, non-aromatic) etc. The official net sown area is around 25% of the total area of the region and is concentrated in plateaus and wide river valleys. In the hilly areas, permanently cultivated fields are as low as 10% of the landscape. About 33% of the cultivated area is irrigated and rice occupies around fifty percent of the cultivated area. The upland rice and finger millet are cultivated in about one third of the cultivated area.

To supplement income and sustain livelihoods, people depend on forests for fuel wood, construction of houses, agricultural implements, timber and medicinal herbs. The tribal groups mainly depend on the low value non timber forest produce for their subsistence. The food that is gathered from forests includes roots, tamarind, tamarind seeds, leaves, jackfruit and seed and mango stones. The hills are converted to fields by the tribal groups to practice slash and burn agriculture, which is also called as shifting or "Podu" cultivation.

Significant practice of indigenous knowledge system by the tribal groups can be seen in their various agricultural practices. Considering the ecological limitations, tribals cultivate the crops that are best suited forming the food habit. Tribal on the hills consume more small millets compared to tribal groups in the plain. Using indigenous knowledge they assess the viability before sowing, maintain the soil fertility and conserve the landraces of rice and other crops. The "Sacred grove" is an effective method of preserving plant genetic resources which is a social mechanism through which a forest patch is protected. The practice is deep rooted and even today some forest patches are left to local deities as a traditional custom. With large-scale destruction and rapidly dwindling forest cover in the Koraput district, it is highly noteworthy that in a large number of villages, the local communities have initiated the process of protection of degraded forest patches to allow them to regenerate since early 1970. A large number of sacred groves in their primeval form are distributed throughout the Koraput district.

Goods and Services Provided

The region is a reservoir of rich floristic diversity consisting of about 2,500 species of flowering plants, angiosperms, well known gymnosperms and 30 species of ferns. Due to isolation and physical barriers, nearly 4 percent endemism in the plant species has been reported in the region. About 79 angiosperm and one gymnosperm species belong to 58 genera and 25 families with Fabaceae and Acanthaceae being the dominant are endemic to the region. Rice is a predominant crop in the Jeypore track both in terms of land as well as production with more than 40% of the land under paddy cultivation. The other crops grown are maize (*Zea mays*), finger millet (*Eleusine coracana*), green gram (*Vigna radiata*), black gram (*Vigna mungo*), mustard (*Brassica juncea*), sesame (*Sesamum orientale*) and groundnut (*Arachis hypogea*), etc.. The tribal people in the hills grow little millet (*Panicum sumatrense*), foxtail millet (*Setaria italica*), niger (*Guizotia abyssinica*), pigeon pea (*Cajanus cajan*) and horse gram (*Macrotyloma uniflorum*) etc..

The **agrobiodiversity** recorded in the region include: 340 landraces of paddy (24 aromatic, 27 flood resistant, 2 deep water, 1 drought resistant and others having resistance to insects/ pests, and puffing types, etc.), 8 species of small millets, 9 species of pulses, 5 species of oil seeds, 3 species of fibrous plants and 7 species of vegetables. The tribal groups have rich traditional knowledge about forest species too. They identify and use plants for food, fodder, firewood, medicine, etc. for their subsistence. The Jeypore area is rich in genetic resources of medicinal plants with the occurrence of more than 1,200 species. Some of the endemic medicinal plant species are in use in ethno-medicinal practice for curing gastrointestinal disorders, malarial fever and fractures etc. Bioprospecting of such precious germplasm is likely to lead to the development of new drugs.

Threats and Challenges

Owing to shifting cultivation, not only the valuable forest wealth is destroyed but also the vegetative cover of the land is disturbed and soil is exposed. Rain water running down the slope carrying the fertile topsoil is causing hill and gully erosion. The impact of change in the microclimate of the region is also evident. Due to large scale degradation of the natural habitat, water scarcity has become a reality. In fact, the region with about 1,600 mm of rainfall per year experiences drought conditions for almost 7 to 8 months a year. During the last few decades, there has been a rapid increase in the deforestation rate leading to large scale

degradation of forests which has come down to less than 30%. Indiscriminate collection has led to severe depletion of bioresources including unique landraces and medicinal plants.

The majority of the people of these villages are tribal and illiterate and are facing the challenges of unemployment and poverty.. The family size is often large and the average farm holding is small. The socio-economic indicators in the area are comparable to the worst in the world with the percentage of people below the poverty line ranging from 72% to 83%, compared to 47% for Orissa and 26% for India. Unlike the rest of Orissa and India, the poverty incidence in this area has increased in the last two decades.

Jeypore tract being the center of origin and genetic diversity of rice has drawn the attention of rice biosystematics, geneticists and conservationists for the last half a century. In recent years the place has again gained importance with regard to farmer's rights and on-farm conservation, which are new dimensions in genetic resources conservation. Large repository of medicinal plant resources can also be beneficially used for economic empowerment of tribal and rural communities.

High yields from local landraces of rice having been established, their cultivation has been encouraged for sale in the market. Some are sold as grain and others after value addition as puffed rice or as other attractive food items. Awareness about market demand for local landraces with special characteristics like fragrance, taste and medicinal properties has been created. Some farm families have been encouraged to take up organic farming, which has reduced the need for purchase of expensive inputs and leading to renewal of interest in the cultivation of native varieties As a result, the area under local landraces has increased. Organic cultivation and marketing of local landraces and medicinal plants have had an impact on local incomes. Work is in progress to promote further production of seed and grain of Kalajeera rice for marketing under a brand name.

Global Importance

The MSSRF's efforts in creating a partnership in conservation of biodiversity and reduction of poverty involving tribal women and men in Jeypore, Orissa was one of 25 projects that were awarded **the "Equator Initiative's Innovative Partnerships Award"** for Sustainable Development in Tropical Ecosystems at the World Summit on Sustainable Development held in Johannesburg in August 2002. The extraordinary biological and agricultural diversity of the Koraput region (endemic species, centre of origin of rice and number of landraces) is significant in the global context and needs to be protected as a heritage of mankind.

The protection of Plant Varieties and farmers Rights Authority (PPVFRA), Government of India has awarded the tribal farming communities of Koraput district with **Plant Genome Savior Community Award** for their efforts in conservation and enhancement of genetic resources of Rice.

2. c) Proposed long term scientific and technical programme for dynamic conservation of GIAHS

Vision: Dynamic conservation of traditional Agricultural Heritage System in Koraput district, Orissa, India

Specific Objectives

Documenting diversity

- Documenting Agro-biodiversity
- Documenting traditional knowledge systems with respect to Agriculture
- Documenting traditional knowledge systems with respect to Healthcare
- Documenting traditional conservation systems
- Overall Database development and maintenance

Conservation of Agro-biodiversity

- Development of traditional conservation systems- Sacred groves
- Development of modalities and implementation of in-situ on farm conservation of landrace diversity
- Establishment of ex-situ conservation modalities- Community genebanks

Sustaining Agro-biodiversity Utilization

- Developing and recording heritage descriptors of the Agricultural System
- Genetic resources evaluation and validation for community utilization
- Unique climate resilient genotypes identification, their conservation and utilization
- Enhancing agricultural productivity through patronage of potential genotypes, value addition and marketing (4C Approach)
- Linking Agro-biodiversity with cultural biodiversity

IPRs and benefit sharing mechanisms

- Harmonizing the Project objectives with various acts meant for genetic resources conservation, sustainability and benefit sharing
- Creating increased awareness and development of mechanisms (monetary/ non monetary) for benefit sharing
- Developing Geographical Indications for niche products
- Developing branded market products
- Benefit sharing of commercialized products (Varieties/ Formulations/ Technologies)
- Capacity enhancement of ethnic communities towards IPRs and benefit sharing

C. DESCRIPTION OF EXPECTED OUTCOMES, OUTPUTS, ACTIVITIES AND FINANCING

Developing descriptors for heritage genetic resources

The activity needs to develop a descriptor to document and characterize the valuable genetic resources of the region for both plant and animal genetic resources both at individual, landscape and ecosystem level. It is proposed to develop a user friendly descriptor containing at least 20 attributes, which can cover all the aspects of the genetic resources like physical, social, cultural, environmental etc. The descriptor may be developed in consultation with experts from agriculture, forest, animal science, plant science, anthropologist, social scientist etc to cover all aspects.

Documenting traditional knowledge systems w.r.t Agricultural systems and Healthcare systems

The farm community is rich in nomenclatures of different weather phenomena and their effects on both plants and animals. For generations, the wise have been passing on the information they have acquired in their time, through observation. This pertains to the overall performance of rain during a given year. The onset of heavy rain, withdrawal of rains before time and short and long spells of rain during the season are all related to the behavior of insects, reptiles, amphibians, birds and mammals. Flowering and fruiting of plants and even the setting of seeds has a connection to this. The clouds, ring of clouds around the moon in monsoon sky, thunders and lightening are also some of the parameters.

The following information about rain and its connection with agriculture has been collected from group discussions with various tribal groups and villagers. It may or may not have any scientific basis. Depending on the region, however, different tribal communities interpret these indicators in their own way. They are also very careful in interpretation of existing IKS under the changing eco balance in the region. Following IKS has been recorded from tribes, I am sure there is still a long list.

Documentation of Intellectual Property Rights

The tribal and rural families of this area have been developing and conserving the plant genetic resources from time immemorial with their traditional knowledge. Today's landraces, which are cultivated, are the product of careful and continuous selection by tribal women and men, allowed to evolve naturally with the changing environment and agricultural practices. These tribal women and men have largely remained unrecognized and unrewarded (Swaminathan, 1996). A project was formulated to document and characterize the landraces of rice still conserved and cultivated by these tribal/rural women and men, to safeguard their intellectual property rights, enabling them to derive economic benefit from their past and present contributions to the conservation of genetic resources and has been shaping the operational content of the concept of farmer's rights developed by FAO under the leadership of Prof. M. S. Swaminathan.

Documentation of knowledge on Medicinal Plants

The tribal people believe that diseases are caused if an evil spirit gets into the body of a person and the person must get rid of the evil spirit to cure himself. According to them a traditional tribal doctor (*Deshari*) can do this by several ways which involves healing through black magic, massage, water treatment and

mostly administration of traditional herbal medicines. It is noteworthy that even many of the tribal people who are exposed to modern education hold such notions that *Deshari* is the sole person who is best in healing. The profession of a traditional tribal doctor (locally known as *Desari* in southern Orissa) is generally traditional family occupation and he / she acquires this knowledge from his/ her father/ mother and ancestor. He, therefore, is only the custodian of the traditional system of healing practice and herbal treatment for health care for his tribe. So far, this knowledge has not been documented systematically and usually is passed on to subsequent generations orally, practical demonstrations and training. Unless this traditional knowledge is documented, it is anticipated that this would soon be lost to mankind as these tribal people are getting more and more exposed to modern ways of life. The knowledge and wisdom that have been inherited by these tribal people since centuries cannot be dismissed as baseless. In fact, valuable information for pharmaceutical research can be gathered if documentation of such information is done scientifically.

Documenting traditional community conservation system – Sacred grooves/ ex-situ conservation efforts

Conservation and Enhancement of Biodiversity In situ conservation

The forest areas under the control of the forest department are conspicuously exploited by the villagers as well as forest officials, separately as well as jointly. For example, forest officers allow traders and villagers to take the forest produce, fuel wood, and timber on suitable gratification. Besides, farmers take their requirements from forests on payment of a nominal amount unofficially to the forest guards. This is a common practice.

The trees and thickets' around the villages are also exploited by the. Villagers. Earlier, shifting cultivation was a common practice so much so that many of the hills and hillocks are already barren. Recently, the forest department has begun to develop a joint forest management approach to create awareness about preserving the forests, but this system is yet to take off.

Sacred groves and trees

Sacred groves are forest patches that are protected and left, undisturbed because of the presence of local deities. In the Jeypore area, there are two types of sacred groves. One is located on top of the hills away from human habitation and the other, on the outskirts of villages, as a sub-sacred grove. The latter is visited more often for worship of the deity. The main sacred grove is left undisturbed except during important festivals. Some groves are an extension of the protected forests. Some are surrounded by agricultural fields.

Within the sacred groves are found many kinds of fauna such as peacocks, squirrels, mongooses, foxes, hyenas, and wild bears. The presence of a termite mound indicates the undisturbed nature of the sacred grove. Products from the sacred groves such as fruits and flowers are offered to deities. Strict discipline is maintained within it; drinking, desecration, and hunting are prohibited. Felling of trees or harvesting forest produce for family use is also prohibited. There is a strong belief that the deity will punish the offender. Taboos associated with the sacred groves are, therefore, rarely violated. The tribal people have many sacred trees which are respected and not destroyed. Sometimes stone or wooden images of local deities are installed under- particular trees. Such trees, though not in the

sacred category, also become sanctified and are therefore protected. There are sacred groves or sacred trees in almost every pocket in the region. Sacred groves are thus a kind of socially approved conservation practice that caters to the religious needs of the people. In Indian culture, religious beliefs continue to play an important role in the conservation of flora and fauna though scientific ethics may not approve any such approach for the conservation of biodiversity.

On-farm conservation

In this region, many land races of different crops are cultivated by tribals. Farmers have been growing traditional varieties for generations and, in this sense, there has been on-farm conservation. In the course of the present study we have recorded

- 340 varieties of paddy,
- 8 species of minor millets,
- 9 species of pulses,
- 5 species of oil seeds,
- 3 species of fibrous plants,
- 7 species of vegetables.

In recent years, the Agriculture Department of Orissa has set a goal for 100 'Per cent coverage of the area with" high yielding varieties. And the achievement of the agriculture extension officers and village agriculture workers are to be judged on this basis. In other words, the entire Agriculture Department of the State Government and its extension agencies have no regard whatsoever for any kind of on farm conservation of any landrace of any crop. A large number of traditional varieties, therefore, have already disappeared and it is feared that the remaining ones will also be lost in one or two decades. However, the Agriculture Department has not been able to achieve full "success" either because- of the remoteness of the area or because marginal farmers are not willing to adopt the modern high input varieties. The landraces or the traditional varieties are, therefore, grown only by farmers in remote areas or by marginal farmers.

The people have valid reasons for not adopting the modern high-yielding varieties. The traditional cultivars grown by these farmers do not need any external input of seed, fertilizer, and pesticide as the cultivars are generally adapted to low inputs and resistant to diseases and pests, especially under low dosage of fertilizers. The mixed cropping practiced by these farmers provides an indirect insurance against failure of any crop, spreads labour over a longer period of the year, and ensures availability of food over the 1 year. !Mixed cropping -is also a good method of retaining soil fertility.

Multiple cropping is followed specially in upland areas. All vegetable crops are cultivated by women and maintained by them; the other crops a-e cultivated jointly by' men and women, but post-production aspects of agriculture are taken care of by women. Thus women play an important role in the separation of seed material, de-husking, milling of grains, and storing of seeds.

On-farm (*in situ*) conservation of landraces, therefore, needs a different management approach and it is highly desirable that the old practices continue. .

Herbal gardens: Traditional medicines are widely used in the area. Plants and animal parts are used by herbal doctors of the village, who cultivate some of the plants around their houses. It is proposed to document all the existing conservation garden available in this region.

Linking agrobiodiversity with cultural biodiversity

Tribal Magico- Religious Rites in Agriculture

The pressure of a prospective production has been the worry, at both the family and agriculture level. It is not surprising to find villagers busy with one ritual or the other, everyday. The whole process of agriculture production and food collection events go through several magico-religious rites, which are sometimes celebrated as festivals. This starts from forest clearance and continues for land preparation, seed sowing, safeguard promises of crops until threshing floor puja after good harvest. A vital part of the tribal culture is, celebration of New Year crops and fruits before the community starts eating. This is global in tribal world.

Elwin (1955) conducted a detailed and exhaustive study about the religious aspects of the Sabara tribe of Koraput, covering even their magi co-religious beliefs about agriculture and food collection. Several other authors have also generally dealt on the subject in their works.

Elwin (1950) detailed the agriculture and general ceremonies of Bondo tribe. They have complex magico-religious rites in seed conservation, fertility and production. Almost all the animals they have at home have been promised as offering to one deity or another. This made it difficult for Elwin to purchase poultry from the Bondo village during his stay there.

The magi co-religious effect on soil fertility, particularly the production and color of turmeric among the Kondhs of Orissa has been exhaustively reported by former British officials. The prevalence of human sacrifice, every three years in a cluster of villages, was rampant up to 1863 in Koraput, Ganjam and Phulbani districts. This ceremony was called *Meriha*, which still exists as 'Buffalo sacrifice'. Their magi co-religious relationship with agriculture production is still a complex subject, particularly among the isolated, and primitive tribes of Koraput and Bastar. These needs to be considered seriously, I especially when development plans are prepared in these spheres.

Threshing Floor: The threshing floor is believed to be the most important place, which determines the outcome of the harvest to the family. There are a lot of taboos attached to this site selection, cleaning, and painting it with cow-dung paste. After a brief ceremony including sacrifice of a small animal, even may be a rat, the farmers begin crop harvest. The Gadabas do not allow women into the threshing floor during rice threshing. Most tribes do not allow any person other than their family male members to enter the threshing floor. Some tribes allow women to transport the harvest material through head load. However, no tribe allows women to fill the basket or bags with grains, and carry home from the threshing floor.

Therefore, it is very important for outsiders, like scientists hoping to collect seed sample, to seek prior approval to enter the threshing floor. Serious feuds and displeasure can appear under such circumstances.

A great harvest is enjoyed with a ceremonial offering like pigs (if the tribe likes pigs), or a rat, which looks like a pig. The pig is the symbol of fertility and prolificacy to the tribe. Some sacrifice fowl.

Some tribes perform special ceremonies for storing seeds. This is a serious affair for the family.

While ragi and millets are thrashed with sticks, paddy threshing is done by making the cattle and buffaloes walk over it. The women are allowed in ragi threshing. After a new crop has been harvested, and before its produce being enjoyed in a meal, each family of the village participates in a community ceremony.

Seed Germination Bali Puja

Seed germination in Bali puja is followed in tribals like Bhumia, Bhattra, Konda Poraja, Pengo and others. This is collective function in which villagers from many villages gather at one point. Each family, or clan, brings seeds and bamboo packets to the Bali puja. This lasts for nine days. After the germination and luxuriant growth of the said seeds, final celebration is performed.

Some tribes, like Bhattra, perform the Bali puja once in every twelve years. It is an elaborate function and lasts for four months. The process is followed as described earlier.

Before sowing the first seeds of the season, the family consults the *Disari* for an auspicious day and time. They even follow particular direction to face while sowing seeds. The men only sow seeds in the fields. They start with *dhupa* and offer flowers. In some tribes eggs, which are considered to be symbols of fertility, are also offered.

Therefore it is important to link the cultural diversity with the bio diversity to ensure the conservation tradition of the tribal people of the region. This not only conserves the variety of food crops, animal species but also contributes to maintain the diversity at an ecosystem and landscape level.

Development of a database

Looking at the above there is an urgent need to develop a database of existing plant, animal genetic resources of the region.

Peoples Biodiversity register

This process will help to document the local biodiversity and associated traditional knowledge in a village level, so as to protect the IPR. This also helps in monitoring the ecosystem health, change in landscape with the active participation of the tribal communities. It will encompass the total flora and fauna of a given region.

Traditional Knowledge Digital Library

The TK documented from this region has to be kept in a digitalized form to ensure future use. This will document the process of any conservation & development activities.

Evaluating and validating genetic resource use

Selection' and breeding : Among the tribal communities of this area, men and women take equal part in all agricultural operations in the field though hard work such as ploughing and digging are usually done by the male members and lighter but time-consuming work such as weeding and transplanting are taken up by women. The present day landraces of all field crops have been developed by mass selection of single ear-heads. On market days or while visiting other villages, people look out for a good crop and will barter some seed material with the farmer.

In the case of fruits and vegetables, the best-yielding and insect/ disease-free plants are usually

selected. They are well dried in the sun and kept in vessels made of leaves or in bamboo baskets or in straw bags or even in earthen pots. Maize cobs are generally hung from the roof.

The people of Koraput district hardly cultivate any tuberous crop. Edible tubers are collected from the forests and, unlike in many other areas, are completely dug out leaving nothing in the ground for regeneration. It is believed that new plants will come up from the seeds fallen on the ground and, therefore, that area is left undisturbed for a year or two.

Storage of seeds: The practice of on-farm conservation of crop plants has been in use for centuries. In agricultural tradition, the selection of good grain for storing as seed material for the next year's crop has been a woman oriented job. This is because agricultural activities that are house-bound are traditionally done by women. In the Jeypore Tract, the selection of seed from the harvest is done at the time of threshing. This is done for rice, minor millets, and oil seeds.

In the case of rice, seeds may be harvested even earlier (as panicles) if the family can spare labour and time. In *such* cases, selection of seed panicles is done by men and women. In recent years, the whole produce is harvested and good grains are separated for seed at the threshing floor.

Women play a major role in seed selection for minor millets and oil seeds. Since the outputs are very low, the produce is threshed at home by hitting it against a bamboo tray or a stone. Prior to storage, all seed material is dried in the sun under the supervision of an elderly woman. Seed storage is also a major job for women. Seeds of rice are stored in baskets made of straw rope (*dhooli*) or in baskets of bamboo. These storage structures are lined with cow dung; and after being covered with a lid, the whole structure is again plastered to avoid any loss. Seeds of minor millets, pulses, and oil-bearing plants are stored in cups made of sal (*Shorea robusta*) and siali (*Bauhinia vahli*) leaves called as *puda*. Before being stored, the seeds are dried and mixed with red earth and cow dung ash.

Maize and cowpea are respectively stored as cobs and pods only, as otherwise they get infested by insects. All the other minor millets are stored as seeds. These are sundried and kept in bamboo baskets plastered with cow dung and mud to protect them from mice, and hung from the ceiling over the kitchen or fire place so that the seeds remain dry.

Pulses are vulnerable to insect attack. They are stored in *puda* or in airtight containers. There are some indigenous methods for drying. For example, black gram is mixed with mustard oil and sun-dried. Drying is done twice or thrice a year or once in every two or three months. Horse gram is also susceptible to insect attack. Hence, the seed is dried carefully and repeatedly before storage.

Storage of vegetable seeds is mainly done by women. Single plant selection is practiced and fruits are left on the plant to ripen properly. Then they are sun-dried and the seeds are kept in a hollow bottle gourd or tied up in cloth and kept over a false ceiling. The role that men play in seed storage is in crafting the baskets of bamboo, straw, sal and siali leaves.

Landraces and new breeds : In the early 1950s, the late Dr. K. Ramiah (the renowned rice geneticist of India) proposed that the Jeypore Tract could be a centre of origin of cultivated rices. Accordingly, he formulated a project for collection and study of the traditional rice varieties of this Tract. This project, popularly known as Jeypore Botanical Survey (JBS) and executed by the Central Rice Research Institute (CRRI), collected 1750 traditional rice varieties during 1955-60. These are known as JBS Collections in rice

literature. The CRRI could only study the morphological and agronomic characters of these varieties. The Japanese scientist, Dr. H.I. Oka (1962), studied the cultivated and wild varieties of this area and propounded the view that the wild rices of this area have the potential to differentiate into *japonica* and *indica* and hence the traditional rice varieties of this area could 'be called incipient *japonicas* and *indicas*. The traditional cultivars so collected were hardly ever used in rice breeding during 1955-65 as the rice breeders of this period were greatly preoccupied in *japonica-indica* hybridisation. Subsequently, the attention of rice breeders was focused on semi-dwarf plant types. As the CRRI was reluctant to part with this material, it could not be utilised in rice breeding by scientists of other institutions. Even to this day, these land races are not represented. in a gene bank outside CRRI.

These landraces were never utilized in rice breeding even by the Rice Research Station at Jeypore, as this station always worked as a sub-station of the main Rice Research Station at Bhubaneswar, where the breeders have- shown little interest in these landraces. Recently, the Orissa University of Agriculture and Technology (OUAT) has established a Regional Research Station at Semiliguda in this area, but here too the breeders follow the mainstream of rice research in the country.

The Regional Research Stations at Semiliguda (Koraput district) and G. Udayagiri (Kandhamal district) as well as the High Altitude Research Station at Pottangi (Koraput district) have made excellent collections of local germplasm of niger, ginger, and turmeric and made some promising pure-line selections. These are very popular and have outyielded some of the best varieties of the country.

On farm, *Ex-situ* conservation for unique and climate resilient genotypes

The process is to revitalize and conserve valuable crop genetic resources through in-situ on farm and ex-situ conservation tradition of tribal communities for meeting future needs.

The following practices are suggested:

- Participatory Conservation Systems (PCS)
- Participatory Varietal Selection (PVS)
- Community Gene- seed- grain bank (CGSGB)
- Community Medicinal Plants Garden (CMPG)
- Ex-situ conservation of Rice Landraces

Participatory conservation System (PCS): it is essentially an approach bridging farmer (indigenous knowledge) and formal (Scientific) theory for conservation, sustainable use and benefit sharing. This activity aimed for conservation and valediction of landraces in the farmer's field. Landraces are grown as borders of the main crop in maximum 3-5 lines to save cultural expenses. This process created an attitudinal change among farm families towards conservation.

Participatory Varietal Selection (PVS):

Through this process farm families are provided with choices of varieties to choose according to their preferences like yield, tillering, duration, size, color, taste etc.

Community Gene-Seed-Grain Bank:

This bank serves as an *on farm* center in which landraces and location-specific plant resources are identified by local farm families and conserved through a participatory process. The communities periodically cultivate landraces in their native habitats for retrieval of seeds. The bank ensures that seeds are stored without losing their viability. As a beginning, the following crops – rice, finger millet, black gram, pop sorghum and pigeon pea were chosen for multiplication, evaluation and purification with the active participation of tribal and rural communities.

Revitalisation of *in-situ* on farm conservation traditions and livelihood systems through community farming & conservation of agro biodiversity with people's participation. The approaches involved:

- Preparation of Community Biodiversity Register
- Participatory Plant Breeding
- Linking Primary conservers with the market
- Networking & capacity building

The farm families, on the basis of good agronomic and morphological characters have selected thirty-seven landraces so far and they are currently cultivated in a large scale. Popularisation of selected PCS varieties is now successful both from conservation and promotion point of view.

Through strengthening of local institutions like rice growers' association, Seed Bank Management committee, Village Development Committee & federations, SHGs, cooperatives etc helped in proper maintenance & management of Plant genetic resources in an effective manner.

***Ex-situ* conservation:** It is suggested to have an exclusive ex-situ conservation strategy for conservation of landraces of different crop or animal varieties through national gene bank with a black box arrangement. It is also proposed to have field gene banks in different micro-agro climatic zones of the proposed area.

Enhancing agricultural productivity of identified genotypes through scientific inputs in cultivation, value addition and processing and marketing (4C Approach)

Focus of all the activities at Jeypore tract is to create an economic stake in conservation through commerce, where market plays an important role in sustainable economic development of the region. Such a stake had to emerge within the frame work of socio-cultural and value system of tribal society. Initiatives were taken to support proper market system for some of the varieties which could play a crucial role in conservation & sustainable use of rice genetic resources. The major focus is on the institutional process involved in marketing of agricultural products particularly potential rice landraces.

A preliminary study was conducted to understand the relation between primary producers and consumers through a local level study and analysis related to landraces marketing. Some key results were:

- Poor market price for local varieties.
- Quality is not up to standard
- Dealers are interested only to selected aromatic landraces.
- Farmers were unable to retain large quantities exclusively for market
- Poor communication & transportation
- Quality & quantity of local varieties are not sufficient for outside marketing agencies.
- Emphasis on HYV by Government & NGOs.

The existing marketing chain was:

Producer > Village Trader > Trader > Commission Agent > wholesaler > retailer > Consumer.

Looking at the above issues MSSRF has made a strategy to make a Chain development for marketing of agro-biodiversity based products for the economic enhancement of tribal people.

The approaches made by MSSRF are:

- Participatory problem identification on marketing of agro-biodiversity
- Involving Community for programme implementation like PPB & PVS.
- Strengthening local Institutions like SHGs, Seed Bank committee, PGUS & KKRGCs
- Developing Appropriate Technology Packages for primary processing.
- Ensuring Qualitative Characteristics of the Produce
- Entrepreneurship Development through skill & capacity building
- Ensuring and developing market linkages with NAFED / ORMAS
- Creating an Economic Stake in Conservation through Reward and Recognition

Example of an initiative is given here under:

Kalajeera Enhancement and marketing- a success story

Kalajeera is an aromatic landrace (LR) of rice cultivated in lowlands. As the name implies, it is a black coloured, small and oval grain variety. It is traditionally used for consumption, particularly during festivals, marriages and birth ceremonies. It is also used to make puddings, Biryani, Pulau. The aroma, taste and other culinary properties of this variety are unique and highly preferred. The tribal custom prefers black-coloured offerings such as black hen, black mustard seeds and black paddy for propitiation of deities.

The tribal community in a participatory stock -taking of currently valued/used landraces, zeroed in on 26 land races. These landraces were grown in participatory plant improvement experiments using Farmer (F) and modified (M) practices of cultivation. MSSRF provided the modified practices up tuning the tribal practices with scientific input. The very high yields under M compared to F made people realize the value of M for landrace cultivation and decided to switch over to M on their own accord. During harvest, people were

imparted training on seed selection, thus ensuring quality seed material for the next season. At the end of the experiment, people in coordination with MSSRF scientists, preferentially selected 6 landraces to be cultivated on a large scale, 2 each for upland, medium land and low land. Kalajeera is one landrace selected this way for lowland cultivation. Its yield in farmers' small experimental plots of 120 sq.m under traditional and modified conditions clearly demonstrated the high grain and straw yields. People thus became seriously interested in its large-scale cultivation.

As a result of these interventions of MSSRF, the importance of Kalajeera is now increased both within the community and outside. Improved yields realized consistently in farmers' large plots naturally created an increased demand for Kalajeera seed. MSSRF had organized training to participatory farmers on purification and production of good quality seed. It has also enabled the establishment of gene-seed-grain banks, to cope with a demand driven self-reliant seed supply and seed security system. In Tolla, a tribal village farmers voluntarily provided lands for seed production of Kalajeera to extend the programme among more farmers. With technical guidance and using appropriate technology provided by MSSRF, the farmers were able to produce a stock of 29ql pure seeds from mother plants in 2003. In the year 2004, it was extended among 49 farmers cultivating in 29 acres. Simultaneously it was spread over to 83 & 127 farmers cultivating in 66 & 100 acres of land in 2005 & 2006 respectively. Initially the Kalajeera rice marketing was done locally in a door- to- door approach, to retailers, hotels etc. 16ql rice were sold at a price of Rs.20 to Rs.25 per kg. Marketing problems got compounded during 2006 when production of Kalajeera in Kharif 2005 went up to 45 tonnes and farmers, after reserving seeds and grains for their own use, offered 29.3 tonnes for sale. Neither was it possible to convert them into hand-pounded rice nor was it feasible to sell to local merchants who offered low price realizing the excess supply. Realizing the problems, MSSRF requested the help of the Government to arrange for marketing Kalajeera paddy through Government controlled channels. Government, in turn, directed the *National Agriculture Cooperative Marketing Federation of India Ltd* (NAFED) and ORMAS (Orissa Rural Development and Marketing Society) to procure Kalajeera at a favorable price. After satisfying about the quality, they offered a good price of Rs.17/-kg of paddy. This is the highest price secured for the first time by poor tribal farmers for a rice landrace. This success story of Kalajeera has attracted the attention of several villages under Jeypore, Boipariguda and Kundura blocks and it resulted in the formation of Kalinga Kalajeera Rice Growers Cooperative Society (KKRGCS).

2. d) Communication strategy

- *Press conference at Jeypore by Professor Swaminathan and experts in the field.*
- *Wide coverage through print and electronic media*
- *Development of a brochure on importance of GIAHS in local and English language (attached in annexure-1)*
- *Development of a flier highlighting the on going activities for recognition under GIAHS (attached as annexure-2)*

2 e) Final Report of the agreement

A. GEOGRAPHIC EXTENSION

Orissa is a land of biological diversity marked by the presence of a large number of traditional rice varieties or land races of rice and several other crops. The forests consist of many economically useful plants including timber yielding species and plants of medicinal importance. The wildlife in the region is represented by mammals such as leopards, panthers, black sloth bears, hyena, jackals, wild dogs, and bears besides many species of reptiles and birds.

The southern part of Orissa, known by its earlier name Jeypore Tract in rice literature, is considered the centre of origin and genetic diversity of rice, particularly of the 'aus' ecotype. Southern Orissa comprises Koraput, Rayagada, Nabarangpur, and Malkangiri districts. It lies between 17° 48' N and 20° 7' N latitude and between 81 ° 24' E and 84° 2' E longitude. The largest district in Orissa till 1992, Koraput was divided into four districts-Koraput, Nabarangpur, Rayagada and Malkangiri in 1992. Here in this book, Koraput district denotes the undivided Koraput district. The total area of Koraput district is 26,961 sq. km., with 42 blocks. The population density is 111.5 persons per sq. km., against the state average of 236. The tribals comprise about 55.86 per cent of the total population (Census 2001). The district population has continued to grow at about 20 per cent between 1981-91 and 1991-2001. The population of Koraput district is 35.87 lakh (Census 2001), against the Orissa state total population of 367.071akh. Koraput has a forest area of 8, 87,000 ha. The total forest area in the state is 57, 18,000 ha. Orissa has a total Slash and burn cultivation coverage of 1, 84,018 ha, of which Koraput district has 30,651.16 ha of Slash and burn at present.

The region can be divided into four natural divisions:

- Rayagada and Gunupur sub-divisions (these are I. the most fertile sub-divisions of the region)
- Malkangiri sub-division (it is relatively a flat plain and inhabited by many primitive tribes such as Bonda, Paroja, Koya, Gond, and Didayi)
- The 606 metres plateau
- The 909 metres plateau

The important rivers here are Nagavalli, the Vasundharj), Indravati, Kolab, and Machkund. The Machkund hydroelectric project supplies power to the State. Multipurpose hydroelectric projects have also been constructed over the Indravati and the Kolab.

The climate varies from subtropical to temperate. The maximum mean temperature is 38°C and the minimum, 11.2°C. The region receives rain during the south-west monsoon (July to September). The average annual rainfall is 19.8 cm. Humidity is generally high almost throughout the year.

B. TARGET CROP OR CROPS

The target crops identified for on-farm conservation are rice (*Oryza sativa*); minor millets- ragi (*Eleusine coracana*), suan (*Panicum miliaceum*), kangu (*Setaria italica*) and jowar (*Sorghum vulgare*); pulses- pigeonpea (*Cajanus cajan*), horsegram (*Macrotyloma uniflorum*), cowpea (*Vigna unguiculata*), blackgram (*Vigna mungo*), greengram (*Vigna radiata*), rice bean (*Vigna umbellata*), dolichos bean, *bhodei* (*Oxalax scandens*), *simba* (*Vicia faba*), *jhata* (*Vigna ricciardiana*), *bilo* (*Vigna adenantha*); oilseeds – niger

(*Guizotia abyssinica*), castor (*Ricinus communis*) and sesame (*Sesamum indicum*); vegetables-*kakharu* (*Cucurbita maxima*), *kalara* (*Momordica charantia*), *tomato* (*Lycopersicon esculentum*), *janhi*(*Luffa acutangula*), *lau*(*Lagenari siceraria*), *desialu*(*Dioscoria alata*), *saru*(*Colocasia esculenta*), *khada saga*(*Amaranthus gangeticus*) and *poi* (*Basella alba*); Spices- chillies (*Capsicum annum*), coriander (*Coriandrum sativum*), garlic (*Allium sativum*), ginger (*Zingiber officinalis*), turmeric (*Curcuma longa*).and medicinal plants such as *Aegle*, *Caesalpinia*, *Costrus*, *Cissus*, *Embellica*, *Gymnea*, *Hypericum*, *Piper*, *Pogostemon*, *Psychortia*, *Rouvolfia*. *Sarcostomma*, *Solanum*, *Strychnos*, *Terminalia*, *Tinospora*, *Tylophora*, *Vanda* etc are also considered. The resource diversity of the heritage region is given as Annexure 4.

C. BENEFITS AND BENEFICIARIES

The benefits arising from the project are conservation of agro-biodiversity, sustainable utilization of the genetic resources and equitable sharing of benefits among the communities of the region.

The beneficiaries are largely the population of tribal communities/inhabitants in this region particularly the small, marginal and medium and large farmers with the average size of operational land holding of 1.6, 0.59, 2.8 and 6.01 hectares respectively.

D. SUPPORT TO NATIONAL POLICIES AND PLANS, AND TO RELEVANT REGIONAL OR GLOBAL INSTRUMENTS

In 1994, an initiative was taken to give recognition to the efforts of farmers as conservers and cultivators, resulting in the formulation of the Protection of Plant Varieties and Farmers' Rights Act 2001 (PPVFR) in the drafting of which MSSRF played a major role. In addition to acknowledging the important role played by farmers as cultivators, it also recognizes the role of tribal and rural farming women and men as conservers and enhancers of agro-biodiversity, and legally provides for their recognition and monetary reward. The PPVFR Act allows temporary ownership rights on plant varieties to those who have developed them, including farmers or a community of farmers. The biodiversity Act 2002 establishes sovereign right over biological resources, it seeks to promote their conservation and sustainable use and gives an entitlement for equitable sharing of benefits from commercialization of biodiversity or associated traditional knowledge to those communities, who had conserved or created it. As India being the signatory to CBD and International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), the present project proposal would support the global instruments. The CBD (Nagoya protocol) and ITPGR have to be followed to establish monetary as well as non-monetary benefits to the tribal communities while using their biodiversity resources for any commercial purpose.

A. ROLES AND RESPONSIBILITIES OF INSTITUTIONS INVOLVED

The MSSRF is the lead institution along with National Bureau of Plant Genetic Resources and OUAT as the consortium partners for the successful operation of the project. The responsibilities will be shared between the consortium partners as indicated below:

Conservation

- Developing descriptors for heritage genetic resources (NBPGR)
- Documenting traditional knowledge systems with respect to Agricultural systems and Healthcare systems (MSSRF/NBPGR/OUAT)
- Documenting traditional community conservation system – Sacred grooves/ ex-situ conservation efforts (MSSRF/NBPGR)
- Linking agrobiodiversity with cultural biodiversity (OUAT/MSSRF)
- Development of a database (MSSRF)

Sustainable utilisation

- Evaluating and validating genetic resource use (NBPGR/MSSRF/OUAT)
- Onfarm, Ex-situ conservation for unique and climate resilient genotypes (MSSRF/NBPGR/OUAT)
- Enhancing agricultural productivity of identified genotypes through scientific inputs in cultivation, value addition and processing and marketing (4C Approach) (MSSRF/OUAT)

Equitable sharing of benefits

- Benefit sharing (monetary / non-monetary) (MSSRF/NBPGR/OUAT)
- Farmers varieties (OUAT)
- Registration of varieties (MSSRF/NBPGR/OUAT)
- Branded market products (MSSRF)
- Geographical Indications (GIs) (NBPGR/MSSRF)
- Capacity enhancement (MSSRF/NBPGR/OUAT)
- Policy dialogues (MSSRF/NBPGR)

B. PROJECT MANAGEMENT TEAM There will be a team of experts to monitor the progress from time to time, to suggest midterm corrections and advise future work.

C. MONITORING AND REPORTING PLAN

A project implementation committee headed by Chairperson, MSSRF and expert members drawn from various research institutions/government departments will be monitoring the progress of the project. Monthly/quarterly and annual reports from the consortium partners will be obtained and scrutinized by the committee. Periodical visits by the committee to various centers which are implementing the project. Annual reports will be published for wider circulation and visibility.

D. VISIBILITY PLAN

The visibility of the various project activities would be ensured by the project implementation committee and the project partners. Regular publications, media reports, talk shows, seminars, consultation workshops will be organized during the tenure of the project.

E. CAPACITY TO CONDUCT LIMITED PROCUREMENT

The project management team consists of well experienced scientists of high caliber who will be able to run the project without many difficulties.

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Annexure-1: Brochure on GIAHS (To be attached)

Annexure-2: Flier on GIAHS

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 2010-2015
 WORLD
 BIODIVERSITY
 CONVENTION

Globally Important Agricultural Heritage Systems (GIAHS)





GIAHS is an initiative to establish the basis for international recognition, dynamic conservation and adaptive management of agricultural biodiversity, knowledge systems, food and livelihood security and cultures throughout the world.

The Koraput region in the state of Odisha, India, has a rich assembly of unique floral and faunal diversity. The genetic repository of the region is of great significance in the global context. The region is a reservoir of rich floristic diversity consisting of about 2500 species of flowering plants, angiosperms, well known gymnosperms and 30 species of ferns. About 79 angiosperm species and one gymnosperm are endemic and spread over 58 genera and 25 families, Fabaceae and Acanthaceae being the dominant families. The Jeypore tract (undivided Koraput district), is conceived by rice researchers as a centre of genetic diversity and secondary center of origin of rice.

Koraput is primarily a tribal district. More than 70% of the total population belongs to one of the district's 52 ethnic groups. Some of the numerically large tribes in the district are Khond, Bhatada, Paroja, Bhumia, Bondas, etc.

Rice is the predominant crop in the Jeypore area –both in terms of land as well as in terms of production. More than 40% of the land is under paddy cultivation. The other crops grown are maize, finger millet (*Eleusine coracana*), green gram (*Vigna radiata*), black gram (*Vigna mungo*), mustard (*Brassica juncea*), sesame (*Sesamum orientale*), groundnut (*Arachis hypogea*), etc. The tribal people in the hills grow minor millets, littlemillet (*Panicum miliaceum*), foxtail millet (*Staria italica*), niger (*Guizotia abyssinica*), pigeon pea (*Cajanus cajan*) and horse gram (*Dolichos biflorus*).

There are several initiatives undertaken by the local Non-Governmental Organizations such as M.S. Swaminathan Research Foundation (MSSRF) to develop bottom up approaches for the management of the bioresources and link them with enhancement of the quality of life of the people. Considering the extraordinary biological and agricultural diversity of the Koraput region which need to be protected as a heritage for humankind, FAO has taken an initiative in conservation and adaptive management of globally Important Agricultural Heritage systems.



Activities:

- ★ Using Koraput agricultural system as an example, formulate a prototype scientific programme for GIAHS
- ★ Multi stake holders process to develop conservation of the heritage system
- ★ Assessment of national policies and laws emphasizing the most relevant ones to GIAHS concept
- ★ Assess entry points and alternatives to promote national recognition of GIAHS
- ★ Develop a communication strategy to increase public awareness and visibility of GIAHS

Supported by: Food and Agriculture Organisation

M.S. Swaminathan Research foundation, Jeypore, Odisha



ANNEXURE -3 PROJECT BUDGET For Adaptive Management of Koraput Region as GIAHS

EXPECTED OUTCOMES	OUTPUTS	AMOUNT (US\$)
1. Documenting diversity	Documenting Agro-biodiversity	75,000
	Documenting traditional knowledge systems with respect to Agriculture	50,000
	Documenting traditional knowledge systems with respect to Healthcare	50,000
	Documenting traditional conservation systems	25,000
	Overall Database development and maintenance	20,000
2. Conservation of Agro-biodiversity.	Development of traditional conservation systems- Sacred groves	40,000
	Development of modalities and implementation of in-situ on farm conservation of landrace diversity	1,00,000
	Establishment of ex-situ conservation modalities- Community genebanks	50,000
3. Sustaining Agro-biodiversity Utilization.	Developing and recording heritage descriptors of the Agricultural System	40,000
	Genetic resources evaluation and validation for community utilization	4,50,000
	Unique climate resilient genotypes identification, their conservation and utilization	1,00,000
	Enhancing agricultural productivity through patronage of potential genotypes, value addition and marketing (4C Approach)]	6,50,000
	Linking Agro-biodiversity with cultural biodiversity	1,50,000
4. IPRs and benefit sharing mechanisms	Harmonizing the Project objectives with various acts meant for genetic resources conservation, sustainability and benefit sharing	1,00,000
	Creating increased awareness and development of mechanisms (monetary/ non monetary) for benefit sharing	6,00,000
	Developing Geographical Indications for niche products	5,00,000

	Developing branded market products	2,50,000
	Benefit sharing out of commercialized products (Varieties/ Formulations/ Technologies)	3,00,000
	Capacity enhancement of ethnic communities towards IPRs and benefit sharing	2,50,000
Amount of Financing Required		30,00,000