SATOYAMA INITIATIVES
IN BADRAMA LANDSCAPE

Odisha Forestry Sector Development Project Phase-II
Forest & Environment Department
Government of Odisha

CONTENT

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FORWARD

The Odisha Forestry Sector Development Project, Phase-II is being implemented by the Forest and Environment Department, Government of Odisha with the financial assistance from Japan International Cooperation Agency (JICA). The Project has a mandate to implement the sustainable biodiversity conservation and management in two wild life Divisions i.e Bamra and Rajnagar.

In Bamra wildlife Division the concept of Satoyama is being implemented for the first time in india. The concept of Satoyama is management of landscapes that include both human production activities and natural habitats, where human influence is an essential aspect of the local ecosystem. The term "Socio-ecological Production Landscapes (SEPLS)" refers to all such landscapes. Project initiatives are based on the principle that such landscapes, when properly managed, can benefit biodiversity and human livelihoods, rather than biodiversity and human conflicts, being in a state of opposition, thus leading to "society in harmony with nature".

Under this initiative 10 villages in the Badrama sanctuary landscape under the Bamra Wild life Division were identified to implement the concept of Satoyama. The Intervention was strategically designed around biodiversity management in the landscape and livelihood improvement of the community people. Thrust was given to involve community from the beginning and to empower them to participate in the planning, implementation and monitoring. In each target village, EDC was formed and Micro-plan has been prepared in each village by the community with support from the line departments and the project. The micro-plans were approved by the gram Sabha. Taking the micro plan of the village, the activities were designed and implemented.

This document presents the highlight of the interventions, outputs and results through the evidence of photographs. Though last two years, the Project team and PMC has made immense effort to bring the said visible changes, the contributions of Shri Saroj Pattnaik, IFS (Retd.) Biodiversity advisor, PMC and Shri Chhayakanta Mishra, Livelihood Expert of PMC are praise worthy.

It is hoped that this document will be the first step towards the long journey of the implementation of Satoyama landscape approach. Several activities which were planned and could not be taken due to the Pandemic will be implemented soon. This experience and success of people's participation in managing biodiversity and livelihood activities will go a long way and I wish this to form a part of the policy of biodiversity management with community Participation. My hearty thanks are due to the local communities for in their Badarama landscape constructive engagement in the Satoyama initiative.

BACKGROUND

"Satoyama" - A Japanese term for landscapes that include both human production activities and natural habitats, where human influence is an essential aspect of the local ecosystem. The term "Socio-ecological Production Landscapes (SEPLS)" refers to all such landscapes. Satoyama Initiative is based on the principle that such landscapes, when properly managed, can benefit biodiversity and human livelihoods, leading to "society in harmony with nature".

Satoyama models are designed to develop a common awareness on the value of nature and to create models for sustainable rural society in harmony with nature. This Initiative provides a conceptual framework for the sustainable landscape management through six core approaches as below.

1. Resource use within the carrying capacity and resilience of the environment.
2. Cyclic use of natural resources
3. Recognition of the value and importance of local traditions and culture
4. Multi-stakeholder participation and collaboration.
5. Contribution to socio-economies
6. Improvement of community resilience.

The Odisha Forestry Development Project proposes to introduce the above concept of landscape management in Badrama landscape for revitalization and sustainable management adopting SATOYAMA framework i.e. "socio-ecological production land scape. With the capacity development, the community members would be encouraged to map and reflect the indicators of landscape resilience and how it can be improved adopting the methodology developed under SATOYAMA initiative. The local communities require a complete understanding of the status and change in conditions in their landscapes in order to strengthen resilience. Changes would be captured in the sphere of ecological, agricultural, cultural and socio-economic aspects. The concept of SATOYAMA has been implemented in 10 villages in Badrama landscape. The skill and capacities of the community members will improve their environmental and economic conditions, thus increasing the social and ecological resilience of their landscape and biodiversity, ultimately making progress towards realizing a society in harmony with nature.

About Badrama Landscape

Notified in 1987, Badrama Wildlife Sanctuary forms a part of Bamra Wildlife Division in Sambalpur district. The parts of the declared sanctuary area come under the jurisdiction of Badrama and Jamankira wildlife ranges. There are 5 sections and 24 beats. The Sanctuary comprises of 12 reserve forest blocks. The state capital Bhubaneswar is 364 Kms away from the Sanctuary, and the nearest town Sambalpur is 37 Km away. National highway 6 passes through the Sanctuary.

Badrama Wildlife Sanctuary spread over an area of 348.170 q. Kms in Sambalpur district is a Dry Deciduous Forest and has very rich floral and faunal composition. Though Sal is the predominant species it has its associates in the form of Asan, Mundi, Dhaura, Bija, Jamun, Kendu, Kusum, Mango, Sisoo, Chara, Genduli, Salai, Sidha, Karada, Harida, Bahada and Ainla etc as treespecies while the shrubs and climbers are represented by Korei, Kulahari, Palas, Lodha, Muturi, Lata palas Siali etc while main invasive species is *Eupatorium odoratum* in relative blanks.

The mammalian fauna comprise of leopard, jungle cat, leopard cat, elephant, gaur, sambar, chital, barking deer, mouse deer, Indian pangolin, civet cat, grey mongoose, jackal, Fox, sloth bear, wild boar, hanuman langur, rhesus monkey, Malabar giant squirrel etc, the birds are represented by pea-fowl, red jungle fowl, parakeets, brahminy kite, pariah kite, grey hornbill, pied horn bill, open billed stork and crow pheasant etc while the reptilians and amphibians are represented by 4 species of tortoises, monitor lizards, chameleon, gecko, snakes of different types like python, rat snake, keel back, cobra frogs and toads etc. But sighting of wild animals is rather poor except for elephants, wild boar, barking deer, mouse deer, sloth bear, hare, pea fowl and red jungle fowl.

The key issues adversely affecting biodiversity of the Badrama landscape are as follows

Water scarcity and soil erosion: There are several seasonal hill streams which flow down from the higher reaches of the sanctuary and create several valleys down the slopes. They hold water for 4 to 6 months of the year, while rest of the year they remain dry or very few pools of water remain for slightly longer periods. During the rainy reason these hill streams cause soil erosion with its run off and damage the agriculture fields of the forest dwellers.

Forest fire: Being a tropical forest and people's dependence on the forest for its NTFP and fuel wood etc is quite high. Every summer there is forest fire, which not only desiccates the soil, but also burns the leaf litter preventing formation of top soil and making the soil prone to erosion. It also kills many organisms, ground dwelling animals and birds and destroys their eggs and nests and kills there young ones, It creates scarcity of foraging materials too. The soil fertility is also very badly affected.

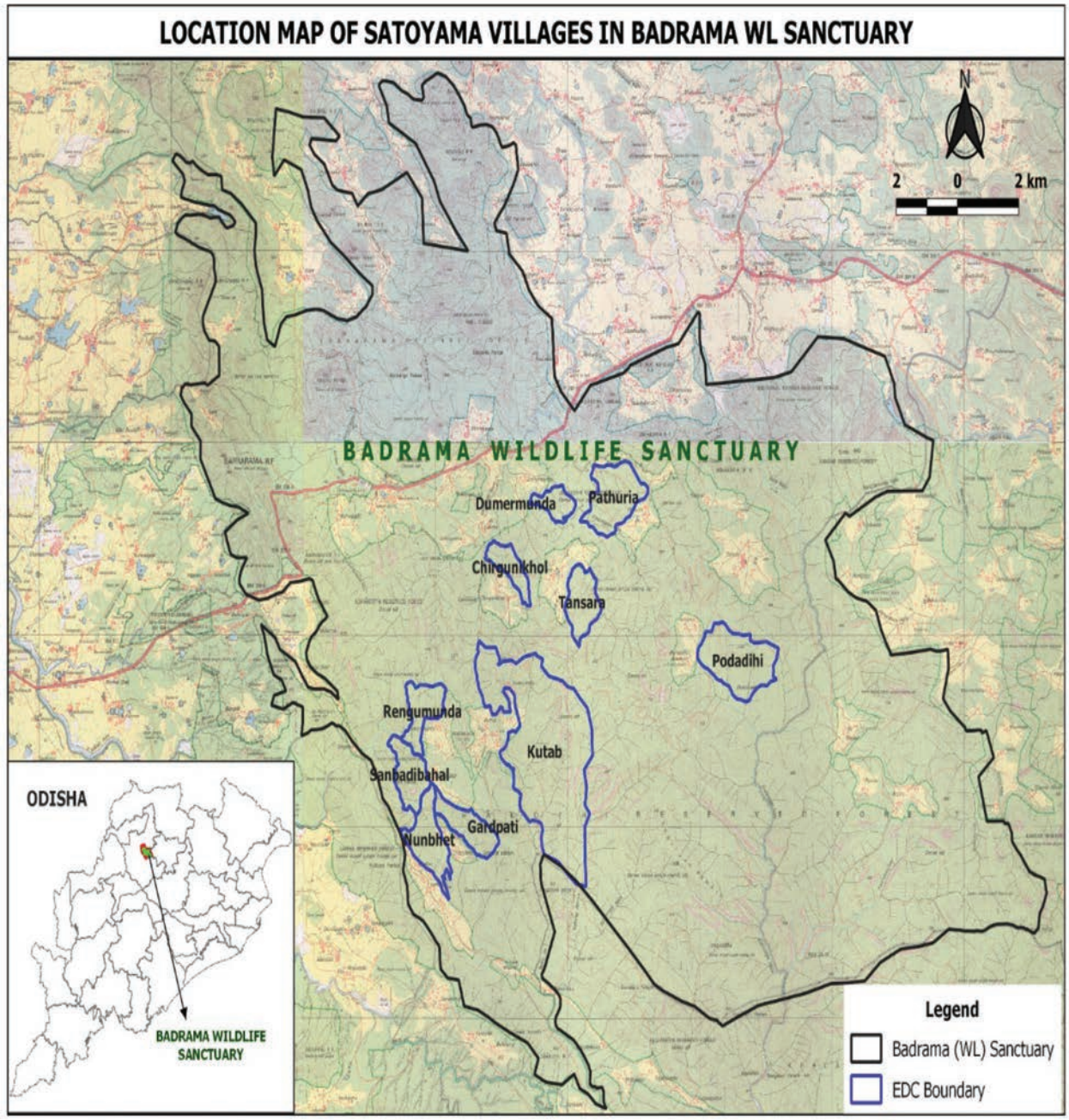
Cattle grazing: Though grazing is prevalent here, it appears to not have not much adverse impact. However, this need to be fully controlled.

Human-wild animal conflict: As several villages and their hamlets are located in different valleys within the sanctuary who mainly grow paddy and vegetable besides some horticultural crops, they are often in conflict with wild animals like elephants, wild boar, rhesus monkey and pea-fowl as they often destroy their crop as they also love to consume these crops.

The Pilot (in Nunvet)

In the project proposal of OFSDP-II, it was envisaged to implement the initiatives in a cluster of villages lying within the Badrama Wildlife Sanctuary of Bamra (WL) Division. The broad demographic details of all villages were collected which greatly facilitated the selection of (the) pilot village of the cluster. A cursory visit to the villages and interaction with the EDC's, SHGs and Panchayat representatives gave clearly understanding about each of them. Out of them, Nunvet village surrounded by hills all around with lush agricultural fields irrigated through a hill stream move across the village was selected. The village had sizable population 307 persons of 77 families distributed in 5 hamlets. The village was more acceptable as people of 4 of 5 hamlets have vowed not to drink and support field functionaries of the Forest Department. There was a camping shed of the forest mobile squad in the village. The people generally cultivate paddy with back yard gardens for vegetables, the surplus production of vegetables is sold at Padiabahal Weekly market. They do not practice stale feeding of their cattle and they are all of local breeds with very little milk production. People also rear goats and local variety of poultry. The traders come to the village to purchase goats, poultry and jackfruit from them. Ploughing of fields is done by bullocks only without any other machinery. They also use traditional 'Belan', wooden roller for thrashing the harvested paddy and use 'dhinki' for other purposes though this can be used for dehusking Instead of milling. Considering the large cattle population of the village, their dung, urine and food waste, which can be used both for composting and for making bio-insecticide with some training. Thus, they can produce totally organic rice, which has good demand in the market. This can also enrich the soil which has been degraded due to continuous use of chemical fertilisers and insecticides to raise hybrid paddy. When EDCs meetings are convened at least the response of the villagers was overwhelming.

These factors and few others were considered for taking up this village as a pilot village. The intervention of activities in Nunvet has bring immense learning and yield good results. With the experience of pilot, another 9 villages were taken to cover a sizable landscape for implementation of Satoyama model.


LOCATION MAP OF SATOYAMA VILLAGES IN BADRAMA WL SANCTUARY
N
2 0 2 km
BADRAMA WILDLIFE SANCTUARY
Dumermunda
Pathuria
Chirgunikhol
Tansara
Podadihi
Rengumunda
Kutab
Sanbadibahal
Gardpati
Nunbhet
ODISHA
BADRAMA WILDLIFE SANCTUARY
Legend
Badrama (WL) Sanctuary
EDC Boundary

Demographic detail of the Satoyama landscape

The targeted EDCs are within the radius of 20 kilometers, Chirgunikhol being the nearest village from the road and the Range office with 4 km distance and Podadihi is 20km away from the Range Office. The target EDCs are generally small villages, with the household size of 23 in Sana Badibahal to 77 in Nunvet. Nearly 80% of the population are of Scheduled Tribe. The pilot area has a favourable sex ratio i.e., 1000 male: 1050 female. The literacy level is low, while 117 families out of 487 families are illiterate and only 11 individuals have passed +2. The major occupation of the community members is agriculture. In addition to agriculture, people largely depend on wage labour for their sustenance. The average land holding at community level is around 2 acres and around 10% of the households are landless. A broad demographic profile is as follows;

Sl. No	Village Name	Total HH	ST HH	OBC & others HH	Total family Members	Total Male Members	Total female Members	%age of ST	Other %
1	Rengumunda	32	20	12	129	60	69	63	37
2	Kutab	77	40	37	296	152	144	52	48
3	Sana badibahal	23	18	5	108	56	52	79	21
4	Tansara	68	65	3	271	130	141	96	4
5	Podadihi	51	49	2	204	88	116	96	4
6	Pathuria	68	52	16	251	123	128	77	23
7	Gadapati	25	25	0	101	53	48	100	0
8	Dumermunda	26	26	0	108	52	56	100	0
9	Chirguikhol	40	35	5	177	90	87	88	12
10	Nunvet	77	54	23	307	147	160	70	30
Total		**487**	**384**	**103**	**1952**	**951**	**1001**		

Variety of activities are designed and implemented in the target villages. Initially one village Nunvet was taken to test the activities and scaled up to other 9 villages. The key interventions in the pilot villages of Badrama landscape have been under the following broad categories

1. Preparatory Activities	Community Development Activity
	Distribution of Smokeless Chullahs
	Micro Plan formulation
	Detailed Biodiversity Study
2. Natural Resource and Biodiversity Management	Fire line Clearance and maintenance
	SMC and DLT Activities
	Avenue Plantation

	Invasive weed Clearance
	Medicinal Plants (nursey and Garden)
3. Man- Animal Conflict	Solar fencing and Solar light post, Wild Animal Driving Equipment
4. Habitat Improvement	Waterbodies for Animal (Game Tank)
	Bird Bath: Construction & Maintenance
	Artificial Nest
5. Environmental Conservation	Efforts to make target villages Plastic Free
6. Livelihood Improvement	Promoting organic farming of traditional Paddy, introducing Mustard, millet and legume, Kitchen Garden
	Promotion of Off-Farm activities: Mushroom cultivation, Bee keeping, Pisciculture
	Non-farm Activities: preparation of organic compost and Bio-pesticide
7. Retaining and Improving Socio-Cultural fabric	Awareness Programmes
8. Institution and Capacity Building	Sensitization of EDCs, Training and exposure on Mushroom cultivation, Training on Bee Keeping, Training on preparation of organic compost and bio-fertilizers

1. Preparatory Activities

In the very first interaction with the villagers of Nunvet, they pointed the last village out the following deficiencies in the village which they wanted to be urgently addressed.

Community Development Activities

i. An all-weather road to the village as the present road from Kadalipal becomes inaccessible during the rainy season and even the ambulances cannot negotiate. While RD Dept. is making the road all weather, few stretches passing through the sanctuary are not allowed to be improved. All the villages along the road apply with consent of respective Grama Sabha to allowe its improvement under FRA. The road was improved with funding from RD Department through convergence.

ii. Completion of Anganwadi Centre: All the works pointed out by the villagers including plastering, flooring and other works has since been completed at cost of Rs. 1.30 lakhs to the complete satisfaction of the villagers. The funding was made from the project funds.

iii. Repair of the derelict check dam: A concrete check dam was constructed by the RD department some years back has been damaged due to the strong current of the hill

stream. Villagers of Nunvet wanted it to be repaired for ensuing irrigation for major part of the year. But it was appraised to them it will be taken by the concerned department. The concerned officers of the block have been appraised and the it is repaired.

iv. A multi-purpose building has been designed for each village and site for the same have been identified and concurred by the EDC concerned. They shall be used for holding interaction with project team, holding EDC meetings, trainings and for showcasing the activities undertaken by the EDCs/SHGs etc. these can also be cultural centres of the villages concerned.

The Anganwadi under construction

The Completed Anganwadi

Old Village Road, Nunvet

The New Concrete road, Nunvet

Proposed community Building (drawing photo)

v. Distribution of fuel saving and smokeless chullah

All households were provided with portable chullahs, that use only small twigs as fuel. Through most of the households had gas connection, it is difficult for most of them to buy new gas cylinders as refill. Hence, this was a boon for them and all womenfolk liked it very much. This was also a convergence initiative with the forest department. This reduced pressure on nearby forests as large quantities of fuel wood collection for using in traditional chullah was aimed to be stopped in the process and eliminate avoidable labour involved in collection of fuel wood and consequent the loss of biodiversity.

Distribution of smokeless Chullah

Demonstration on the use of the Chullah at Nunvet

vi. Micro planning by Community

Miro plans are being prepared at each targeted village/EDC level in a participatory way, involving stakeholders such as community members, representative GP and representative of line departments. The process will be facilitated by the project implementing team at the Range level. The prepared micro plans were put in the respective Gram Sabha's and got approval to be FRA compliant. This will be the guiding document for all the stakeholder associated with the development in the target villages.

Micro plan preparation at community level, Nunvet

Focus Group Discussion with villagers for Micro plan, Nunvet

vii. Biodiversity Study

The project proposes to undertake a quick biodiversity study. As the biodiversity study of the sanctuary was assigned to the biodiversity board by the Bamra division, project made a request to the study team to document the detail biodiversity situation of the targeted area taken under Satoyama initiatives. The concept of people's biodiversity register also discussed with the EDCs and processes are on for ensuring and enhancing people's participation in the project components.

2. Natural Resource and Biodiversity Management

i. Fire Prevention and Control

Forest fire is a major threat in this part of the state. Hence the EDC was motivated to see that there is no fire in the fire season in the area assigned to them and other forest areas nearby, so that they shall be rewarded at the end of fire-season. True to their promise they saw to it that there is no fire in the target area so far. EDC members were sensitised and pledge camps were organised to involve community in preparing and maintaining fire lines and also support in fire prevention.

Community Mobilization on fire prevention, Nunvet

Pledge programme for prevention and control, Gadapati

Fire line Creation

Community response to fire at night

As per FSI fire information there are 9 patches in our project village assigned area have been caught by fire. 6,2,1 point from Podadihi, Pathuria and Rengumunda assigned area respectively. They were prevented from spreading by the community.

ii. Soil and Moisture Conservation: Drainage Line Treatment

The catchment of the stream flows through the target villages has to be treated with check dams and other structures to conserve the soil and improve the moisture regime. The Nalas of the target villages have to be treated in a ridge to valley approach with structural interventions so as to contribute to the improvement of soil and moisture regime. The project envisaged to treat nearly 100 small, medium and big nalas with 500 Loose Boulder Check dam structures. In the first year the project spent around 8 lakhs in Nunvet which helped in treating 14 nalas with 96 check dams (LBCD) and other structures to prevent soil erosion and improve the moisture regime of the area. The resources for Soil and Moisture Conservation and Drainage Line Treatment activities in other villages are leveraged through convergence, especially from MGNREGA.

The Nalas Treated with LBDC structures, Nunvet

iii. Avenue Plantation

Avenue plantation activity conducted at 8 project villages with a total of 7.5 RKM and with 1875 saplings. In avenue plantation of Neem and Karanja plants was taken of along the main village road, so that while providing shade their leaves would help in preparation of bio-pesticides without much effort. A sample evidence-based document of the activities of Sana Badibahal village are as below

The proposed road for avenue plantation

Saplings sourced for the plantation

Pitting work done by the villagers

Villagers in action

Plantation work completed, Badi Bahal

Avenue plantation at Rengumunda

Village wise details of the avenue plantation

	Village Activity	Nunvet	Rengumunda	Badibahal	Kutab	Tansara	Chirgen-khol	Podadihi	Pathuria	Total
Coverage	Length in RKm	3	1	0.5	1	.5	.5	.5	.5	7.5
Type of Plant	Neem	700	200	100	200	100	100	100	100	1600
	Karanj	50	50	25	25	25	25	25	25	275

iv. Invasive Weed Clearance

It was seen that on the foot hills of the forest have been badly infested with heavy growth of Atundi (Combretum Decandrum) which has reached almost crown level of sal trees threating regeneration of other ground flora and growth of plants natural to the forest. EDC are to work towards controlling the spread of invasive weeds. The clearing of weeds will also help in controlling forest fire. Three villages (Nunvet, Gadapati and Rengumunda) where the invasive weeds are intensive, the project supported the EDCs to clear the weeds from their assigned area. In Nunvet alone an area of 160 m x 760 m from the foot hill was clear by members of EDC in the first year.

Base situation with weed

Cleaning by the community members

Clearing by the community members

Forest after clearing the weeds

v. Medicinal Plants (nursey and Garden)

From the discussion of the community, it was evident that over time the medicinal and herbal plants have on the verge of languishing. The community till now is attached and dependent on the traditional MAP. The project has the mandate to promote these MAPs by promoting herbal garden in Kutab village. In addition to the local MAPs, other species of medicinal plants shall also be planted in the garden for the awareness of local people and visitors, particularly youngsters. A micro nursery of medicinal plant will also be attached to the garden. The site for the garden has already been finalised in consultation with the community.

3. Man - Animal Conflict

Photo-voltaic (solar) fencing and street lights

In order to prevent entry of large herbivores including elephants into the village and coming in the conflict with people and in consequence harm is caused to both. A three-strand fence of 2 kms with 10 street light was provided by the wildlife wing of the forest department as a convergence support in Nunvet. The Chief Wild Life Warden has been requested to provide similar support to all the target villages. It has been decided that 10% of the total expenses shall be borne by the concerned Eco Development Committees.

Photo-voltaic (solar) fencing, Nunvet

Light post of the Hamlet, Nunvet - day time

Light post in the night, Nunvet

4. Habitat Improvement

i. Digging of Game Tanks: It has been proposed to five game tanks near Nunvet, Kutab, Sana Badibahal, Tansar, Podadihi villages with support from MGNREGA and it should be taken up soon as the Covid-19 pandemic has delayed this.

ii. Construction of Bird Baths: Two hundred number of bird baths have been proposed and should be taken up soon as it has been delayed due to the pandemic.

iii. Fixing Bird Nests: The sanctuary has fairly good avian diversity. To support this, it proposed to fix bird nests for different species. Fifty of them have been prepared and waiting to be fixed. The delay is due to some frontline staff being infected with Covid-19 virus.

5. Environmental Conservation

i. Plastic Free Campaign

Use of plastics, particularly single use polythene is a threat to bio-diversity in a sanctuary, when it is injested by wild animals and domestic animals and cover forest surfaces, preventing regeneration. It is also transported by natural streams down below and affects aquatic and marine life forms. To free the village of these undesirable material, the EDC fully supported the to make the village plastic free. Here every pada was taken as a unit and

two volunteers (Eco-volunteers) for each pada with one man and one woman was entrusted to make the 'pada'(hamlet) free of plastic. They go round their assigned pada and collect all such material and deposit it in a bamboo bin for ultimate disposing on pre-dug pit. The district level officials who visited the village were simply astonished to see the village completely free from plastic waste. Each family was given one large and one small carry bag (Eco-bag) in order to stop using plastic bag. To add value to the initiative of environmental conservation, each household of all villages will be provided with two Eco Bags (Cotton Bag) for their day-to-day use, to prevent the frequent use of plastic bags. The project will also provide eco bags to the primary school goers in the target villages.

Community involvement in plastic free camp, Nunvet

Dustbin at hamlet, Nunvet

In every 3 months we organise plastic cleaning camps are assigned at each hamlet at Nunvet

In order to make the village free from polythene culture, motivational camps are conducted at Nunvet

Final Disposal Pit, Nunvet

Eco Bags inaugurated on convergence meeting with district level officials at Nunvet

6. Livelihood Improvement

Farm Activities

i. Revival of Agro-Biodiversity

The villagers depend predominantly on hybrid variety of paddy as paddy is their main cultivation. They used chemical fertilizers and pesticides for ensuring better yield at the cost of soil fertility, micro-organisms in the soil, though some of them are still using traditional equipment in cultivation. Though they all realized that due to this the soil quality is detoriating, they have not thought of alternatives. The project proposes to introduce traditional variety of paddy for cultivation and will popularize the preparation and use of bio-fertilizer (organic compost) and bio-pesticides. The elders of the village remembered that almost 20 years back they were cultivating a traditional 'Bhajana' paddy which was quite tasty and healthy. The project scouted for sourcing the seeds of this paddy and got hold of 1.6 Quintals of 'bhajana seeds' from Ujjwalpur area of Sundergarh Division, where some large cultivators still grew this paddy. The project helped the community to keep the traditional Agro-practices alive and promote the use traditional equipment like plough for land preparation, dhinki for de-husking paddy, tenda for watering the field, belan for harvesting the paddy. The project will attempt to keep these traditions alive by supplementing the repair of these equipment. During the pilot initiative, the project will bring 350 acres of land under organic farming practices.

> Production of bio-fertiliser (organic compost) and bio-pesticide: - With right training and preparedness of the villagers to adopt this they were given hands on training to produce both bio-fertilizer and different types of bio pesticides, taking advantage of their large cattle population. They shall be motivated soon to also use kitchen and garden wastes for composting. This has eliminated the need for chemical fertiliser and insecticides, thus saving their either hard earned income used for buying them.

The farmers also adopted the SRI method in cultivating the paddy. The concept of cooperative labour is still prevalent in the village. The villagers still use bullocks to plough their fields, 'tenda' for irrigation, 'Belan' for harvesting of paddy and 'dhinki' for de-husking. Attempt was made to keep these traditions alive by supporting the repair of these equipment.

Community Mobilization on Organic Paddy

Training on organic compost preparation

Site preparation for Bhajana paddy

Procedure of organic compost and insecticide preparation

Mother Bed preparation

Line planting

Application of compost

The experimental fields

Cutting the ripen paddy

Bringing the paddy to home

Use of Belon for harvesting

Dehusking paddy through Dhinki

Weighing and Packing the Rice for sale

Sold to TRIFED

For the year 2019-20 there were 14 Bhajana farmers from Nunvet village.These farmers have cultivated over a land of 2.41 acres with a yeild of 2459.5 kg(approx) of paddy.After meeting all the demand and personal consumption finnaly 72 kg rice have sold to TRIFED a cost of RS 80/-per kg against price of Rs.30 for the hybrid rice. Last year 2020-21, we

extended the organic paddy cultivation to 6 more villages with 123 farmers over 12.78 acres. The Coverage of Organic paddy cultivation, 2020-21 is as below

Sl. No.	Name of the Village	No. of Farmers	Area of Cultivation	Supply of seed (in Kg)	No. of farmers prepared organic compost	Yield (in Kg)
1	NUNVET	20	2.41	11.3	20	1375
2	GARDPATI	9	.74	19.5	9	670
3	BADIBAHAL	15	.97	27.5	12	821
4	RENGUMUNDA	17	1.76	58.5	17	1323
5	KUTAB	19	.84	29.6	13	565
6	DUMERMUNDA	16	2.54	56	16	1110
7	TANSARA	27	3.52	169	11	990
TOTAL		**123**	**12.78**	**371.4**	**98**	**6854**

Cultivation of Legumes and Millets: In order to improve livelihood and to improve fertility of the land, the villagers are being encouraged to grow Rabi black gram after harvesting paddy, taking advantage of the residual moisture in the soil. But this has not happened so far as training could not be provided as movements are almost stopped due to pandemic.

Promoting Millet: There are many poor families with small land holdings on the uplands. In order to improve their livelihood, it is planned to encourage millet farming. Only very few families have taken to this. More motivation is required to make this happen in larger scale.

ii. Introduction of Mustard

Through convergence with ITDA, mustard seeds were provided to 17 farmers of seven project villages. Each farmer was provided with seed support of 2 Kg. to undertake mustard cultivation in 0.5 acres of land each. As a result there was 8.5 acres of additional land area under mustard cultivation. Village wise coverage of mustard cultivation through project support is summarized in the following table. Mustard cultivation through ITDA convergence, is undertaken in seven villages out of 10 project villages. In addition to ITDA convergence, there is also convergence with block funds for promoting Rabi mustard crop at Nunvet village. There are 11 beneficiaries, and each beneficiary is supported with 4 Kg. of mustard seed for undertaking mustard cultivation in 1 acre of land. As a result of that additional 11 farmers have adopted rabi mustard cultivation in 11 acres of agricultural land.

Orientation for Mustard cultivation

Mustard Seed Distribution

Successful crop of Mustard

iii. Moa Badi (Kitchen Garden)

In order to make the households self-reliant and not much dependant on farther market for vegetables, we planned the concept of MO BADI (backyard garden) for every households in our project villages. 186 of beneficiaries has grown 'nutri gardens' in convergence with the block to improve nutrition and sell the surplus. Two guava, three lemon and five papaya seedlings were provided to each house hold (482) to be planted in MO BADI. This year it has been decided to supply vegetable seeds to the households as per their needs for the backyard farming.

A sample "Mo Badi"

Women Promoter in her Badi

iv. Spine gourd Promotion

The neighbouring forest had wild spine guard (kankada). Few house hold in the village were seen planting them and getting good income as it has excellent ready market as compared to hybrid ones. More households were encouraged to take it up as EDC supported it.

Mobilization for spine gourd

Cultivation of spine gourd by women farmer

v. Promotion of Micro nursery: (Custard Apple)

By looking into the advantages of custard apple in terms of its market value and as a non-browswable plant, it was decided to plant about 50000 seedlings in our project villages in partnership with the villagers in coming years. For the purpose we identified interested SHG 's for custard apple nursery. This year 7 self-help groups from 4 villages namely Nunvet, Dumermunda, Gadapati and Rengumunda took the charge of nursery for 20000 seedlings. The case of Maa Bhairabi SHG of Nunvet managing a custard apple micro nursery with 10000 seeedlings is below

Nursery Site at Nunvet

Germination of seed

Seed Dibbling, Micro Nursery, Nunvet

Germination, Nunvet

Nursery preparation at Gadapati

Off-Farm Activities

i. Mushroom Cultivation by the SHG members

Out of 5 SHGS in Nunvet village 2 SHGs expressed their interest to take up mushroom cultivation with adequate training and necessary input. They were provided hands on training

and exposure to take up mushroom cultivation. The activity was taken in convergence with ITDA and each SHG was supported with Rs.1.25 lakhs.

Mobilization

Training

Exposure Visit

Stock of raw materials (Paddy straw)

Structure for Mushroom cultivation

Preparation for laying bed

Harvesting of Mushroom

Sale of Mushroom

ii. Honey Bee rearing

Honey Bee Rearing: Some village elders evinced keen interest in bee keeping. Hence on request of Odisha Forest Development Corporation has supplies 72 bee boxes for the purpose as a part of their corporate social responsibility. Training has been Imparted to the interested individuals. But sourcing of bee colonies posed problem before the flowering season. This will be introduced and scaled with the support from Khadi and Village Industries Board.

Sensitization on Honey bee, Nunvet

Training on Honey bee rearing, Nunvet

7. Retaining and Improving Socio-Cultural fabric

i. Animal Vaccination

The domestic animals, particularly the cattle are very important for the people's livelihood here and there is a large cattle population, besides they live in a sanctuary, where they have the potentiality of infecting the wild animal population, if they are affected by any communicable diseases. Hence their health is of paramount importance. In all the target villages, the animal health camps was organised with the help of A.H Department.

Awareness on vaccination

Vaccination of Large ruminants

Vaccination of large ruminants

Vaccination of small ruminants

In the year 2020-21 to prevent the spreading of diseases among animals in forest area vaccination camps (convergence with veterinary dept) were conducted at every project villages. Vaccination the cattle with FMD and Septicaemia was done in proper succession. The domestic livestock is of utmost importance for the people of there villages as they are dependant on them for their agriculture and economy.

ii. Human Health Camp

As there is no hospital, ANM centre in any of the village in the pilot area, health camps are organised with convergence of the health and family welfare department, Government of Odisha.

Health Camp, Nunvet

iii. Promotion of welfare activities

The project has constructively endeavoured for promoting welfare activities by facilitating different pension schemes for the eligible beneficiaries. The excluded eligible beneficiaries were identified by the Project and in due consultation with the Welfare Department, Govt. of Odisha, 64 eligible beneficiaries were covered under social security schemes such as old age pension, widowhood pension, and pension for differently abled persons etc. During Kovid-19 led lockdown, wage employment is provided to seven skilled as well as thirty semi-skilled / unskilled returnee migrants.

8. Institution and Capacity Building

Institution building and training in form of sensitization, orientation, exposure and Training are regular part of the pilot initiative. Addition to the trainings, regular meeting of

Health Camp, Nunvet

the EDCs are being held and discussions happened on the upcoming interventions, management of ongoing activities and also on issues in implementing activities and way to resolve those issue are discussed.

Training on line planting

Calculation of yield with sample cutting

Training on Organic-compost Preparation

Training on Bio-compost Preparation

Training on Organic-compost Preparation

Training on SRI and Line planting

Training on Mushroom

Exposure on Mushroom

Training on Honey Bee rearing

Demonstration during Honey bee training

EDC Meeting, Nunvet

EDC Meeting, Kutab