

Final Report
Capacity building of Kamar and Birhor on Women
Empowerment for Sustainable Livelihood based on
Integrated Landscape Management: Developing Models and
Strategies for Sustainable Livelihood for Tribals in
Chhattisgarh and Jharkhand



Submitted by

IBRAD Centre of Excellence

FINAL REPORT

Capacity Building of Kamar and Birhor on Women Empowerment for Sustainable Livelihood based on Integrated Landscape Management: Developing Models and Strategies for Sustainable Livelihood for Tribals in Chhattisgarh and Jharkhand

Submitted by



IBRAD Road, Kestopur, Prafulla Kanan, Kolkata 700101

Email: info@ibradindia.org, Phone: 033 66210310/320

Website: www.ibradindia.org; tribaldevelopmentibrad.org

ACKNOWLEDGEMENT

The project 'Capacity Building of Kamar and Birhor on Women Empowerment for Sustainable Livelihood based on Integrated Landscape Management: Developing Models and Strategies for Sustainable Livelihood for Tribals in Chhattisgarh and Jharkhand' was assigned to IBRAD COE, Kolkata by the Ministry of Tribal Affairs, Government of India for implementation among the Kamar and Birhor tribes in the states of Chhattisgarh and Jharkhand respectively. The project was of 18 months duration and the activities were initiated in the middle of July 2019.

The project was implemented among the Kamar and Birhor PVTGs who were so far not engaged intensively for agriculture/horticulture based activities. It required to change the cultural practices of the community which is both challenging and time consuming. Moreover, there has been COVID 19 Pandemic in between that restricted the movement of the project staff. But we could implement the project despite all the challenges with the support and cooperation at different levels.

We would like to express our gratitude to Sri Arjun Munda, Hon'ble Minister in Charge for sharing his valuable thoughts about the concept of sustainable tribal development that has enabled us to strengthen our approaches.

We are deeply indebted to Dr. Navaljeet Kapoor, Joint Secretary, MoTA for his continuous guidance, monitoring and providing opportunities to interact through different webinars for expanding our ideas for implementation of the project. The way he has monitored the project milestones and deliverables and provided his valuable inputs to keep the project on track has truly been amazing.

The portal created for the COEs to upload the documents and the support from the team of MoTA and their technical guidance makes us confident and efficient.

We express our sincere thanks to the officials of the forest departments and Tribal Development department of Jharkhand and Chhattisgarh for their support and cooperation. The Divisional Forest Officers, Range Officers and the Forest Guards of Hazaribagh East division and Saranda Divisions of Jharkhand and Dhamtari, Gariyaband and Baloda Bazar Divisions of Chhattisgarh have been actively involved in implementation of the project and some convergence is also initiated by them.

Participation of the professors, Vice Chancellors, academics and researchers during the National Conventions and their interaction with the Kamar and Birhor communities have been inspiring. It had helped in understanding the broader issues and challenges and design the way forward. We are obliged to them for their guidance and support.

We are grateful to the local panchayat functionaries for taking interest in the project.

And last but not the least we express our sincerely thanks to the members of Kamar and Birhor tribes without whose active participation it would not have been possible to implement the project. The active involvement of the people in participating in the training and implementing the skills learnt in their land has been encouraging.

Contents

	<i>Executive Summary</i>	i - iv
Chapter I	Introduction	1 - 5
Chapter II	Methodology	6 – 11
Chapter III	The Study Assumptions	12 – 17
Chapter IV	Interventions and Outcomes	18 -62
Chapter V	Learnings and Way Forward	63 - 67
	<i>References</i>	67- 68

EXECUTIVE SUMMARY

The Project and Focus

IBRAD Centre of Excellence for Sustainable Tribal Development has been assigned a project on “Capacity Building of Kamar and Birhor on Women Empowerment for Sustainable Livelihood based on Integrated Landscape Management: Developing Models & Strategy For Sustainable Livelihood For Tribals” by the Ministry of Tribal Affairs. The project was of 18 months duration. Though the first installment of the grant in aid was released on 26.8.2019 the activities were initiated from the middle of July 2019. The project focuses upon capacity building of the tribal community through skill development for conservation based sustainable livelihood development, women’s empowerment and developing tribal Community Resource Persons (CRP) as Social Change Agents.

The target groups and locations

The activities are initiated focusing two tribal groups, Birhor in Hazaribaghand West Singhumdistricts in Jharkhand and Kamar in Gariyaband, Dhamtari and Baloda Bazar districts in Chhattisgarh. Based on the situation analysis and the interest of the community the interventions were made in Demotand and Dhengura villages in Hazaribagh. Later on it was extended to Tatibavillage in West Singhum district in Jharkhand. In Chhattisgarh the interventions were made in Kesodar, Kauabahara and Aurai villages in the districts of Gariyaband, Dhamtari and Baloda Bazar respectively. The habitations of these PVTGs lack the exposures and interventions for sustainable livelihood development which is also revealed through the baseline studies conducted.

Issues and Challenges identified through Baseline study and PRA exercises

- Degradation of natural resource base and impact on livelihood

The Baseline study and the PRA exercises conducted in the villages revealed the issues and challenges of the livelihood and nutrition security of the tribal communities, impact of the natural resource degradation and access issues to the natural resources like bamboo for the Kamars and natural fibresfrom the forest for the Birhors that are used for their traditional livelihood including bamboo crafts and rope making due to degradation of the natural forest areas. The time distance for both the collection and marketing of the produces has increased manifold.

- Degradation of natural resources and vulnerability

The Birhors especially have now shifted from the natural fibre to the nylon fibres that are collected from the used cement sacks that they purchase from the market. Thus the free raw materials from the forests are substituted by the materials that they have to purchase. Such stressed conditions are forcing them more to depend on unskilled wage based activities resulting into increased vulnerability.

- Changing aspirations

There have been overt changes in the aspirations among the younger generations and their parents as well who do not want to pursue their traditional livelihood.

- Land use pattern

The land provided in the resettled colonies of Birhors in Jharkhand are not being used for agriculture or horticulture activities and are remaining as fallow even if the land is adjoining to their habitation and there is sources of water nearby. Similarly among the kamarstoo large parcels of lands remain as fallow without any productive uses.

- Breakdown of social institutions and social order

There is break down of the traditional social order. Consequently the society lacks harmony, collective goals and actions as well as control mechanism. Outsiders take the advantage by grabbing their land and using them as labor in their agriculture field or for other activities by paying a much lesser ate compared to the market rate.

Methodology and approaches

Participatory methods using the Participatory Rural Appraisal (PRA) and SWOT analysis, Focus Group Discussion, Participatory Observation methods, in depth interviews are used. Besides baseline household survey is conducted.

Application of Digital Technology

The unprecedented COVID 19 pandemic have slowed down the process of physical contact with the community. This has resulted in evolving methodology of application of digital platform through use of Whatsapp, webinars, video clips for reaching the community and other stakeholders.

Study Assumptions

Based on the study the following Assumptions are made for testing in the field through action research inputs for bringing changes:

- 1. The problem of natural resource degradation can be reversed by developing social cohesion, collective action and regulatory mechanism of the social institutions*
- 2. The Inbuilt mechanism for continuous learning will build competency for skill development and to develop sustainable livelihood options*
- 3. Sustainable livelihood opportunities can be developed using the locally available resources that are unused and by engaging the women and youth*
- 4. The competent and empowered community will be able to measure the “Trade Offs” and make judicious and sustainable use of resources*
- 5. Development of the targeted communities cannot be achieved in isolation ignoring other communities living in the same villages*

The Interventions and Outcomes

The interventions are designed based on the Assumptions made to develop capacity of the Kamar and Birhor community for Sustainable Livelihood Development through Integrated Landscape Management and Women Empowerment. Different concepts and theories of social, psychological, management, agriculture and biological sciences are synthesized and integrated to design the intervention steps.

Assumption 1: The problem of natural resource degradation can be reversed by developing social cohesion, collective action and regulatory mechanism of the social institutions

In order to develop social cohesion, collective action, develop social institutions and implement social regulatory processes following activities are planned and implemented

- Inception workshops

Inception meetings with the line department officials, panchayat functionaries and community members together to discuss on the project objectives, interventions and finalise the plan of action to facilitate the process of Bilateral Matching Institutions (BMI) as the essential pre requisite. This also led towards convergence of information and resources.

- Awareness, identification of pro active social change agents from among the community, institution building to bring new social order

Identified proactive community volunteers (SICO – Self Initiated Community Organisers) from among the Birhors and Kamars respectively by applying the PANCHATATWA method at six villages, formed the group of like minded SICO members, created awareness programs and developed the capacity of the SICO members as Social Change Agents.

The capacity of the SICO groups are developed for institution building, organizing meeting and taking resolutions for consensus based decision, developing control mechanism and new rituals.

Emergence of proactive members from among the community, particularly women and youth are helping in implementation of the activities.

Assumption 2: The Inbuilt mechanism for continuous learning will build competency for skill development and to develop sustainable livelihood options

PrashikshanShibirs as outreach centre for in situ training and capacity building are established at the village level. In situ trainings are conducted for establishing nutrition kitchen garden, seed treatment by applying bio fertilisers and bio pesticides, application of Beejamruth, preparation of organic ball for seed sowing, mulching, preparation of Neemastra, nursery raising, vermi compost preparation. Residential training for the Community Resource Persons are conducted at Kolkata.

Assumption 3: Sustainable livelihood opportunities can be developed using the locally available resources that are unused and by engaging the women and youth

In order to explore opportunities for sustainable livelihood options the fallow lands available in the homestead and adjoining areas are identified to establish organic nutrition kitchen garden, dry plant parts and green grasses are used to prepare organic composts, bamboos are used for developing nursery structures, locally available seeds are used for raising saplings etc. The women and youth in the village who do not want to pursue their traditional livelihood are engaged to initiate the new livelihood generation activities through capacity building, trainings and hand holding support.

- Establishment of organic nutrition kitchen gardens

Total 56 organic nutrition kitchen gardens are established covering six villages after training of the community members for the first time in a systematic manner. The fallow land areas are put under production. People are harvesting vegetables from the gardens and using for their own consumptions. Interestingly some have started selling the surplus in the market.

The benefits of these nutrition gardens will have impact on reducing mal nutrition in the long run through changing the dietary practices. It is also influencing the process of empowering women by creating opportunities for livelihood for them. The lands received under FRA patta are used effectively. It is also increasing the aspirations of the community to scale up cultivation of vegetables and other crops.

- Development of Vermi Compost Units

Vermi composts are produced for use in the field of the farmers and also to develop an alternate livelihood for them through sale. Total 25pits are constructed and is under the process for preparation of the vermi compost. Due to lock down and restrictions on physical contact the process has to slow down.

- Community Nursery Development

Community Nurseries are developed by the communities organized in groups to produce in situ quality planting materials for plantation in the village as well as sell the produces to earn income. Six community nurseries are established where both tree plants and vegetables saplings are raised. Out of six, two nurseries are in good shape. It is interesting to note that in the community nursery of Demotand village around 500 chili saplings and 50 french bean saplings are raised which are planted in the nutrition Kitchen garden of the villagers only.

Assumption 4: The competent and empowered community will be able to measure the “Trade Offs” and make judicious and sustainable use of resources and

The project focused upon empowering the community, women in particular through training and capacity, creating an enabling environment to instill confidence to utilize their inert potentials, providing hand holding support for transfer of appropriate technology to diversify and strengthen their livelihood options, develop a network among the communities, providing exposure and increasing mobility.

PRA exercises, SWOT analysis, participatory baseline studies are conducted for situation analysis and preparation of village level landscape conservation plan by involving the community in line of microplan for implementation of the activities. During the process of preparation of the microplan the community was involved through the process of sensitization for analyzing the Trade offs between short term gains by degrading the natural resource base vis a vis a long term benefits of conservation. Accordingly, community get involved in identification of the medicinal plants in their forest areas that are getting rare and endangered and taking primary initiatives for their conservation by establishing herbal gardens. Capacity building of the community members has also helped in setting common goals for livelihood development by measuring the consequences of indiscriminate use of chemical fertilizers and pesticides and judicious use of locally available resources and opportunities and engaging different stakeholders

Assumption 5: Development of the targeted communities cannot be achieved in isolation ignoring other communities living in the same villages

Efforts are being made to integrate the Kamar and Birhor PVTGs with other communities living within the villages such as Gond and Patel in Chhattisgarh and in Demotand. There were some kitchen gardens initiated by the community in their homestead land too. These communities are appreciating the facts that because of these PVTGs they are getting the opportunities to learn new skills. The Kamar and Birhors have also got opportunities to share their views with other communities from 10 states through participation in three National Conventions.

Way Forward

The project activities were completed and most of the objectives are met even though there has been interruption and slow working due to COVID 19 pandemic. Since the project has just completed, at this stage we only can share that for any village level plan of livelihood support the concept of Integrated Landscape Management will prove to be effective. Since PVTGs are known to belong to pre agrarian society, they will not accept any kind of livelihood support which is provided to any other community who are already practicing agriculture. Though there have been some trend showing changes among the community but it would require some more time for establishing the process of social transformation. It has always been a challenging job and time taking process to instill new cultural practices to adopt land based livelihood by those who are not used to with the system. It requires social transformation and change in the belief system. Hence, they are to be nurtured for some more time as Mentee under incubation program.

Chapter- I

INTRODUCTION

1.1 Background

There are over 705 Scheduled Tribe (ST) groups notified under article 342 of the Constitution of India constituting 8.6% of total population of the country (Census 2011) who are an integral part of the cultural mosaic of our population. Some special protection to these ST populations is provided by the Constitution of India under Schedules V and VI. Even with the dedicated institutions and earmarked budget provisions, the ST population lags behind all the human development parameters compared to their counterpart population of the general categories. It is also highlighted by several reports, published papers, documents that the Particularly Vulnerable Tribal Groups (PVTGs) suffer far more in terms of malnutrition, poor health, lack of education, subsistence based economy and remain far beyond the periphery of mainstream development process (Mani raju and Thakur 2018). Among the ST population in general and PVTG in particular women suffers the most in terms of health, education, livelihood opportunities as is evident through the reports and studies (<https://tribal.nic.in/ST/StatisticalProfileofSTs2013.pdf>).

Realizing the need for capacity building and women empowerment to address the issues of Tribal Development, PVTGs in particular, which are many and deep, in the context of degradation of the natural resource base of the tribal habitat, loss of traditional livelihood base and poverty, IBRAD (Indian Institute of Bio Social Research and Development) Centre of Excellence has designed and field tested unique methods of **Action Research** by unifying different theories on the social, biological and economic concepts for building appropriate social institutions and social order to facilitate transfer of appropriate technology for sustainable livelihood development of the tribal communities, PVTGs in particular. Such approaches for introducing new social order and transfer of appropriate technology to address the issue of food security at one hand and climate change on the other by involving the community themselves as the partner with the government functionaries have been appreciated and accepted by the ICAR, Government of India and the state governments of West Bengal, Jharkhand, and Chhattisgarh and have been field tested in different locations.

Based on such prior learnings IBRAD CoE developed approaches for building capacity for 'Integrated Agro-Forest Mosaic Landscape Management' and implemented it by involving the Kamar and Birhor communities in Chhattisgarh and Jharkhand. The approaches applied has resulted in showing a trend of diversifying the livelihood opportunities of the small holder or land less PVTG community, introduction of land based livelihood options by utilizing even the small parcel of homestead areas of the small holder PVTGs by involving both the men and women members of the family. Interestingly, such approaches developed by IBRAD are in the line of Forest and Farm Facility, FAO which is for optimizing mitigation, adaptation and resilience services to climate change and facilitate an inclusive livelihood and food security for the smallholders.

1.2 The project and Objectives

The project "Capacity Building of Kamar and Birhor on Women Empowerment for Sustainable Livelihood based on Integrated Landscape Management: Developing Models & Strategy For

Sustainable Livelihood For Tribals” was assigned to IBRAD CoE with the following objectives:

- i. Situation analysis of the causal-effect of degradation of natural resources and mapping of the landscapes through PRA.
- ii. Create awareness to improve conservation and sustainable development by creating a new social order through proactive social change agents SICO (Self Initiated Community organizers).
- iii. Identify the options and conditionality of the sustainable livelihood of a common interest group (CIG).
- iv. Enhance women's empowerment to facilitate social change.
- v. Conduct training, skill development of the women and youth.
- vi. Develop tribal community resource persons (CRP) as proactive social change agents.
- vii. Document the process and demonstrate the outcome of the capacity building in terms of conservation and livelihood options.
- viii. Suggest ways, based on the experience, to improve community engagement in effective integrated landscape management for sustainable livelihood.

The project focuses upon capacity building of the tribal community through skill development for conservation based sustainable livelihood development, women’s empowerment and developing tribal Community Resource Persons (CRP) as Social Change Agents.

1.3 Timeframe

The project was of the duration of 18 months started on 15th July 2019. The activities were completed within December 2020 and the UC was submitted on 31st December 2020.

1.4 Study Area and the Communities

The project is being implemented on a pilot basis among

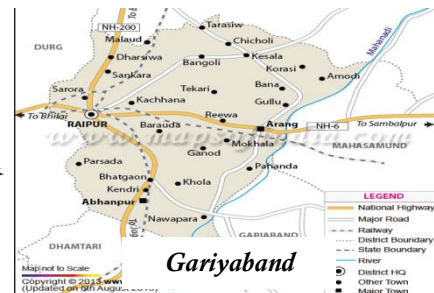
- i. Birhor tribes of Hazaribagh District in Jharkhand which is further replicated in West Singhbhum district in Jharkhand and
- ii. Kamar tribes of Dhamtari, Gariyabandh and Baloda Bazar districts of Chhattisgarh

Based on the situation analysis and the initiatives of the Self Initiated Community Organisers (SICO), Demotand and Dhengura villages in Hazaribagh district and Tatiba village in West Singhbhum district in Jharkhand and Kesodar and Kowabahara villages in Dhamtari district, Chhattisgarh were selected for in depth interventions

Location Maps



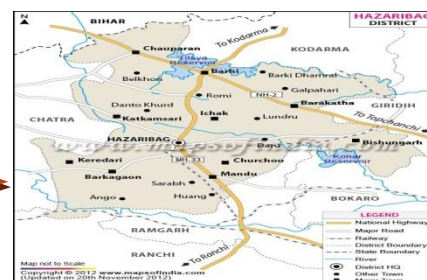
Baloda Bazar



Gariyaband



Dhamtari



Hazaribagh

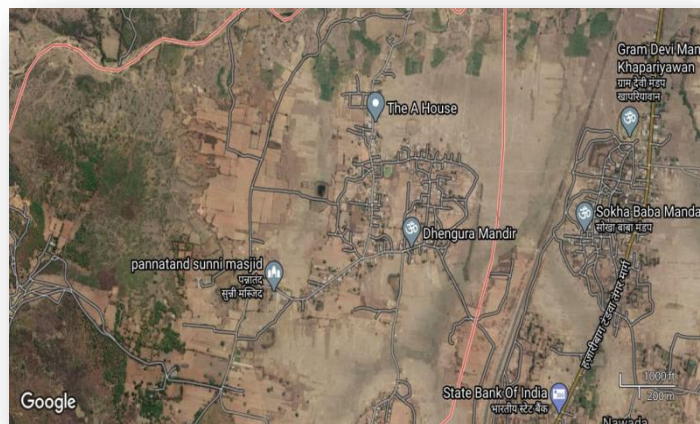


West Singhbhum

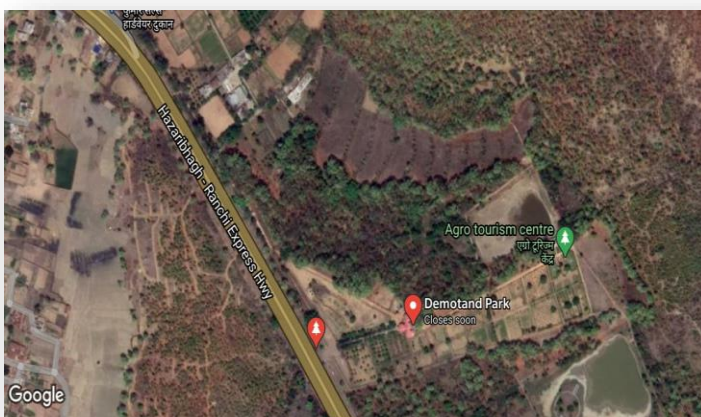
Degrees of Degradation of forest lands in and around the project villages as depicted through satellite images



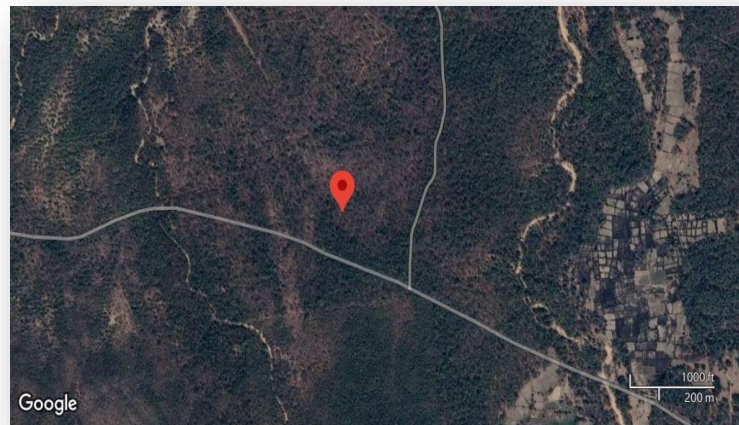
Satellite image of Tatiba



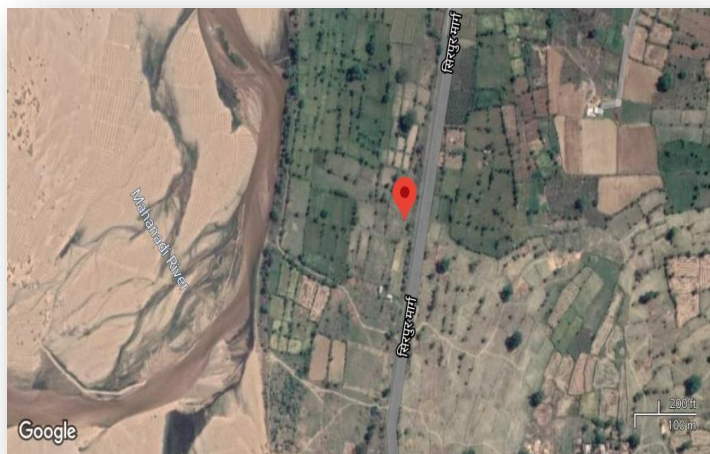
Satellite image of Dhengura



Satellite image of Demotand



Satellite image of Kesodar



Satellite image of Kauwa Bahara

Chapter -II

METHODOLOGY

2.1 The Rationale for the action Research

While the natural habitat as the landscape ecosystem is the foundation for sustainable human development of the tribal community, there is strong evidence that many of these resources are facing degradation and the tribes have been suffering from malnutrition, particularly where tribes like Kamar (Mitashree et al 2006) in Chhattisgarh and Birhor (Pandey et. al. 2000) in Jharkhand mark their habitat. Most of these tribes are landless and they do not have a source of sustainable subsistence, except NTFP (Non Timber Forest Produces) collection and working as wage labour nearby.

The action research conducted by IBRAD COE involves situation analysis, understanding of the existing social institutions and social practices as well as the indigenous traditional knowledge of the tribal community blended with scientific principle, transfer of appropriate technology that can help the tribes in developing sustainable land based activities, adopting organic farming on the forest fringe villages to ensure sustainable livelihood. The study by the members of IBRAD has revealed that traditional knowledge is relevant in anyfields of natural resource management (Mukhopadhyay et al 2015).

The action research with intervention has been designed with a multifaceted, multi-dimensional and multi-layered concept where the process of womenempowerment has the visible role of women in managing resources, the share of control over the material, control over decision-making in the home, community and society with government functionaries. It is also important to involve the government functionaries in the project at the field level and organize a periodical meeting with the district level/state level functionaries to provide feedback about the challenges and accomplishments of the projects. The challenges of biodiversity conservation can be addressed by designing effective community based social institutions and integrate them with the government institution through BMI (Bilateral Matching Institution) that can lead to biodiversity conservation and contribute towards human well – being(Roy 1992, Roy and Mukhopadhyay 2015).

The concept of Women Empowerment in General: Broadly, empowerment means individual acquiring the power to think and act, freely exercise choice, and to fulfill their potential as a full and equal member of society. The United Nations Development Fund for Women (UNDFW) includes two factors in its definition: Acquiring Knowledge and understanding of gender relationships and the way in which these relations may be changed; Developing a sense of self-worth a belief in one's ability to secure desired changes and the right to control one's life.

Women Empowerment in The Context of Natural Resource Management (NRM)

The main objective of women empowerment through NRM based livelihood support is to create more and more awareness in a field like conservation of biodiversity from the forest,

agriculture and livestock. These would benefit tribal women to diversify and strengthen their sustainable livelihood opportunities.

The action research is designed to facilitate creating **an enabling environment for tribal women** that promotes equal opportunities, eliminates discrimination and ensures empowerment through changes in societal attitude.

Skill Development for mobilizing and imparting skills pertaining to livelihood opportunities to adolescent girls, housewives, and rural youth has been tried through training.

Women Empowerment:

Capacity building/education is an essential foundation for all social, economic and cultural development (Sen, 1994) that enhances the human capital and economic prospects of a country (UNFPA, 2005). Investment in women's education results in an improved status through improved economic prospects, greater decision-making authority, control over resources, exposure to the modern world, husband-wife communication, and self-reliance in old age, and reduced restrictions on physical mobility (Moser, 1998). A mother's education is linked to better reproductive health and a reduction in young children's mortality rates (Jejeebhoy, 1996; UNFPA, 2005). Education is also likely to enhance women's economic independence by equipping them with the skills necessary to take advantage of paid employment opportunities. Labor force participation not only gives women an opportunity to earn income but also exposes them to the outside world.

Most of the women of the target villages lack formal education and do not even know the official language of the state which creates a big hindrance to express their views in the meeting. Under such context and considering the limited timeframe of the project the capacity and skill building of the PVTG women through training is tried as a means for developing their autonomy and self reliance.

2.2. Methodology

Keeping the above rationale in mind the methodology of the action research is designed that relies primarily upon securing participation of the community in understanding the problems/issues, prepare participatory planning for solving the problems and its implementation.

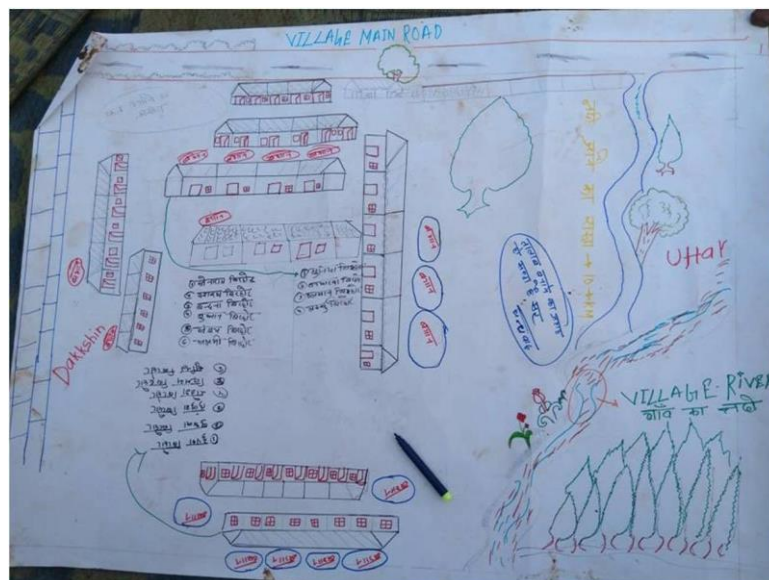
A. Participatory Methods

As the community with whom the action research is conducted lacks formal education and exposure, are shy and do not open up freely with the outsiders, are engaged mostly in daily wage based activities and are constrained to spare time, it is utmost important to develop a trustworthy relationship with them first. The intricate and sensitive issues and challenges that they face can be overlooked through the structured questionnaire survey. It requires an exploratory method to understand the lifescapes of the Kamar and Birhors and participatory approaches are best suited for it.

Participatory methods are such where the subjects of the research get involved as partners in the process of the enquiry and a trustworthy relationship is developed between the researcher and the researched. More importantly, participatory researchers act as facilitators to enable the local people not only to analyse their own situation and problems but also come out with the solutions to the problems and its implementation.



PRA exercise at Demotand village



PRA map prepared by the Birhor community at Tatiba village

Participatory Rural Appraisal methods are used to understand the drivers of degradation and the causal relations between the degradation of the natural resources and the livelihood and food security issues and mapping the landscape to identify the issues and the potentials for interventions as well.

B. Qualitative methods

Qualitative methods are the characteristics of a scientific research that in general terms consists of an investigation to seek answers to a question, systematically uses a predefined set of procedures to answer the question, collects evidence, produces findings that were not determined in advance and produces findings that are applicable beyond the immediate boundaries of the study. But more importantly it focuses upon understanding the given research problem from the perspectives of the local community and so is especially effective in obtaining insights of a particular problem by putting it into the socio cultural context of the particular population. It helps in capturing the “intangible” problems and issues that are often overlooked in the process of quantitative studies.

Three important tools of qualitative research are used in the study as follows:

- **Participatory observation method** is used for collecting data on naturally occurring behaviors of the communities in their usual village contexts. No questionnaire or interview method is used. Rather the observation by the field workers help in both understanding the real life situation of the community and validating the data collected through structured survey methods or participatory assessment methods



Participatory Observation Method while Bamboo is being processed by the Kamar Tribal community



- **In-depth interviews** are optimal for collecting data on individuals' personal histories, perspectives, and experiences, particularly when sensitive topics are being explored. Such method is used to understand the changes in the thought process, belief systems and aspirations of the people.



In depth interview reveals the insights about the community and the area

- **Focus group discussions(FGDs)** are effective in generating broad overviews of issues of concern to a representative group within the community like women groups, NTFP collectors, wage laborers etc. Such FGDs are conducted to assess the perspective of different representative sections of the community.



Focus Group Discussion to understand the issues and challenges faced by the Kamar community at Chhatisgarh was facilitated by Prof. S. B. Roy, Chairman, IBRAD

C. Quantitative Methods

Structured questionnaire survey is conducted for baseline study. Quantitative data is thus collected and analysed.



Participatory household survey by involving the community in data collection process

D. Application of Digital Technology and Digital platform

During the project life we have faced the unprecedented challenge of COVID 19 Pandemic restricting the movement of the team members to reach directly to the community. It has opened up a new opportunity to apply Digital Technology for reaching the community. Capacity building of the community members and meetings with the community and the government functionaries has been conducted through webinars, whatsapp group video calls for the first time with the PVTGs.

Video and photos from the field are shared by the field staff for monitoring and tracking the progress of activities.



Training on Organic seedbed preparation for nutrition kitchen garden through Whatsapp

Chapter -III

THE STUDY ASSUMPTIONS

3.1 Issues and Challenges identified through situation analysis

One of the initial activities of the project was understanding the existing conditions, issues and challenges faced by the community through situation analysis. Based on the study following issues and challenges are identified:

- Degradation of natural resource base, resettlement and impact on livelihood

The situation conducted in the villages revealed the issues and challenges of the livelihood and nutrition security of the tribal communities, impact of the natural resource degradation and access issues to the natural resources like bamboo for the Kamars and natural fibres for the Birhors that are used for their traditional livelihood including bamboo crafts for Kamars and rope making due to resettlement of the communities in case of Birhors. The time distance for both the collection and marketing of the produces has increased manifold.



Replacement of natural fibres with plastic fibres for rope making by the Birhor community



All the three generations are involved in basket making in Kauabahal village, Chhattisgarh



Basket making is a family activity of the Kamar community

- *Degradation of natural resources and vulnerability*

The Birhors especially have now shifted from using the natural fibre for rope making to the



Rope making mostly by the elderly people using nylon fibre by the Birhor community

nylon fibres that are collected from the used cement sacks that they purchase from the market. Thus the free raw materials from the forests are substituted by the materials that they have to purchase. Moreover, due to increase in cultivation of tomatoes and other vegetables in the area the demand for sacks has increased among the farmers and thus the Birhors are facing competition to get the sacks from the markets.

Such stressed conditions are forcing them more to depend on unskilled wage based activities resulting into increased vulnerability.

- Dependence of wage based earning, livelihood security issues

The male community members now depend mostly on wage based earnings by working as unskilled and few semi skilled labors (tractor driver). Their livelihood is neither secured nor do they get proper payments from their employer on time.

The women also work mostly as agriculture laborer in the field of the farmers from time to time and are engaged in basket making (Kamars) and rope making (Birhors).

- Changing aspirations

There have been overt changes in the aspirations among the younger generations and their parents as well who do not want to pursue their traditional livelihood. The young girls are

mostly sitting idle in the home especially among the Birhor communities and they can be tapped for introduction of new activities



Tractor driving is becoming the role model for the Birhor children



It is encouraging to note the enrolment of Kamar children in school and the aspiration of their parents for their study

- Land use pattern

The land provided in the resettled colonies of Birhors in Jharkhand are not being used for agriculture or horticulture activities and are remaining as fallow even if the land is adjoining to their habitation and there is sources of water nearby. Similarly, among the Kamars too large parcels of lands remain as fallow without any productive uses.



Unused lands in the homestead areas for nutrition that can be converted into productive use by establishing nutrition kitchen garden



Such fallow lands in Kesodar village is converted for raising nutrition kitchen garden



Fallow land in Dhengura village infested by weeds

- Breakdown of social institutions and social order

The resettlement also has had negative impact on the social system and the social institutions. There is break down of the social order. Consequently, the society lacks harmony, collective goals and actions as well as control mechanism. Outsiders take the advantage by grabbing their land and using them as labor in their agriculture field or for other activities by paying a much lesser rate compared to the market rate.



Agriculture field of non Birhor community just adjacent to Birhor Tanda, Dhengura

3.2 Assumptions

Based on the study the following Assumptions are made for testing in the field through action research inputs for bringing changes:

1. The problem of natural resource degradation can be reversed by developing social cohesion, collective action and regulatory mechanism of the social institutions
2. The Inbuilt mechanism for continuous learning will build competency for skill development and to develop sustainable livelihood options
3. Sustainable livelihood opportunities can be developed using the locally available resources that are unused and by engaging the women and youth
4. The competent and empowered community will be able to measure the “Trade Offs” and make judicious and sustainable use of resources
5. Development of the targeted communities cannot be achieved in isolation ignoring other communities living in the same villages

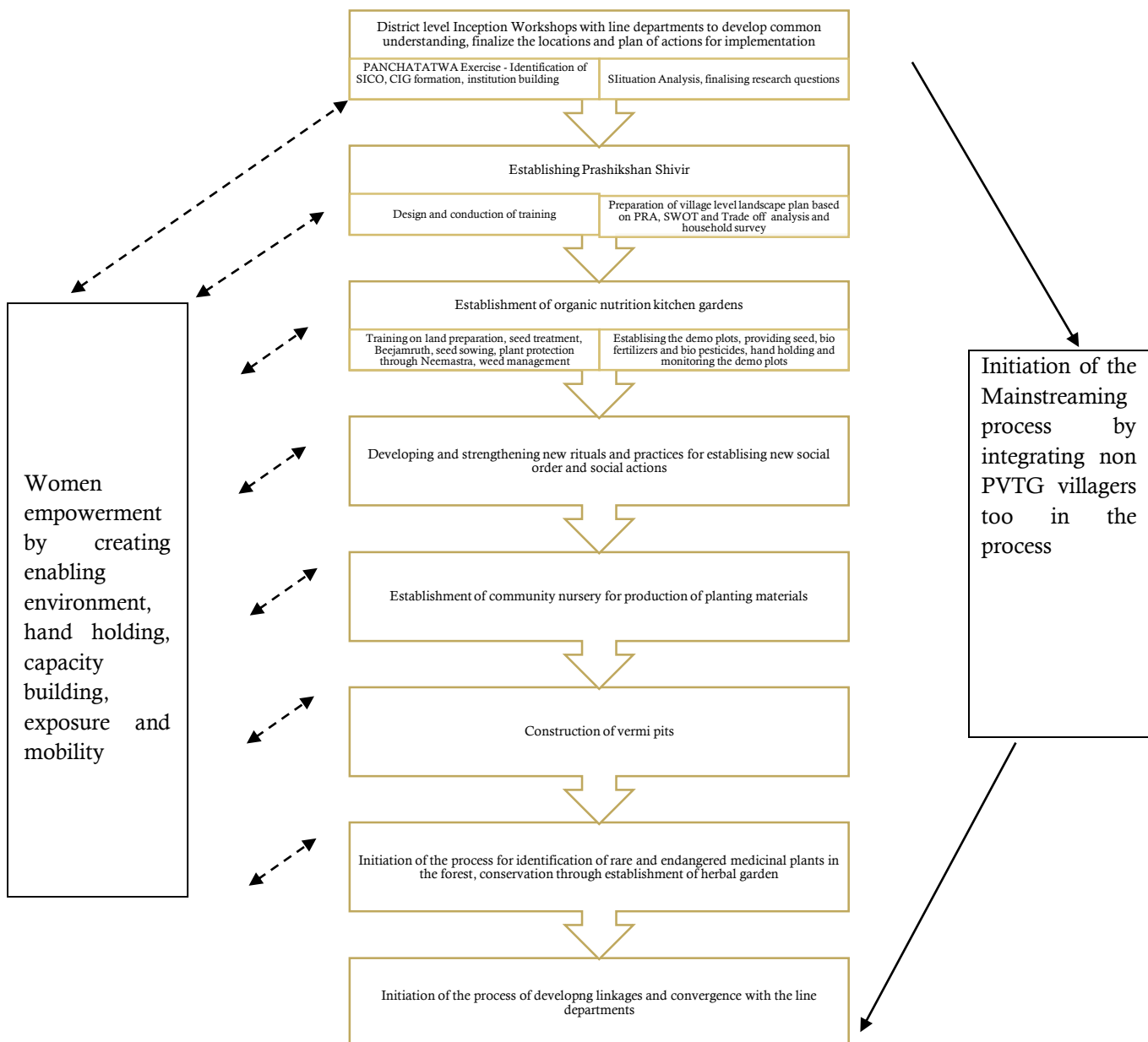
Chapter IV

INTERVENTIONS AND OUTCOMES

To test the assumptions a series of sequential activities are implemented in the field in the form of interventions.

The interventions are designed incorporating multiple social and ecological concepts. These are aimed at developing socio ecological processes for conservation based sustainable livelihood development of the PVTGs.

The process Flow Chart of the interventions are depicted below.

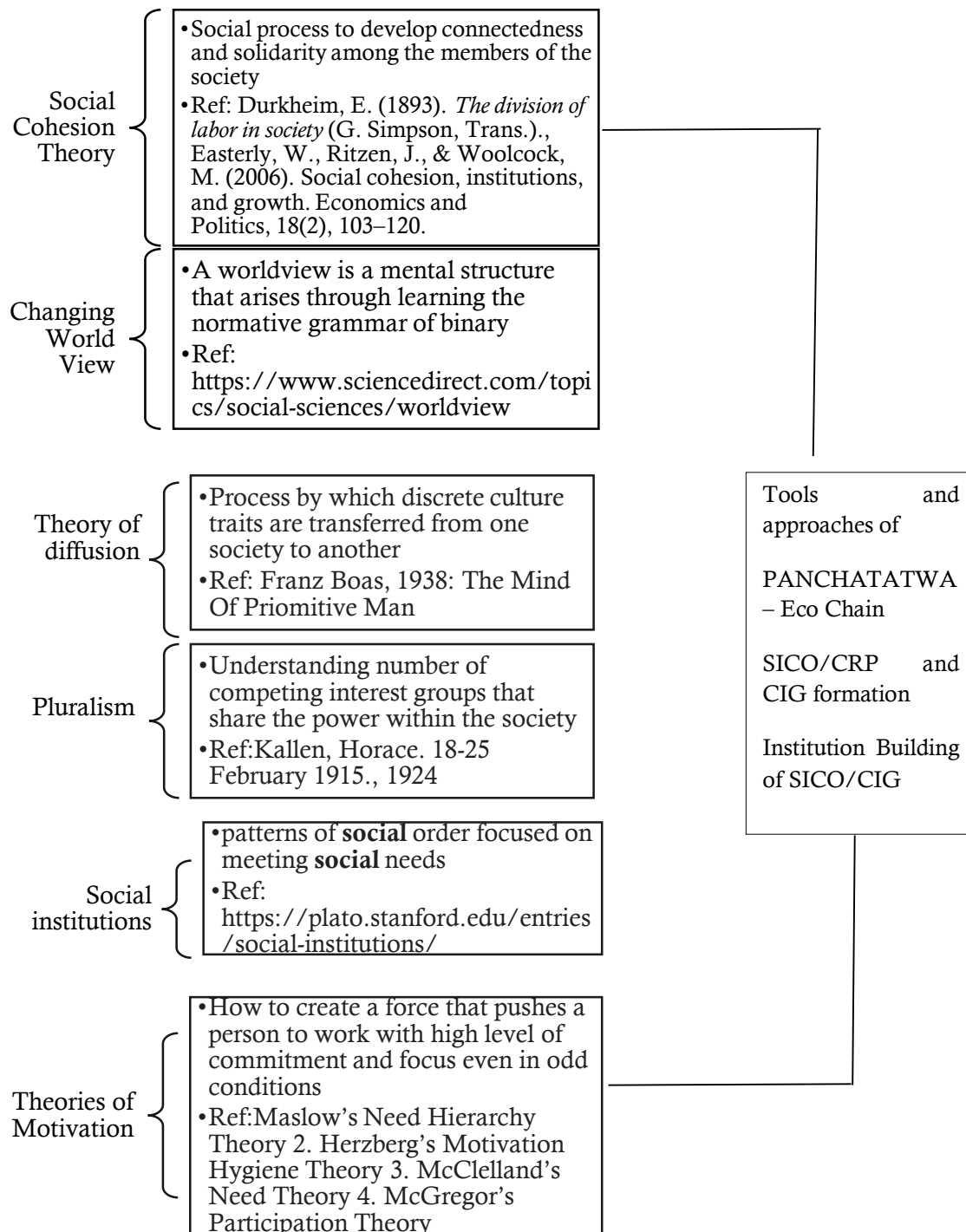


4.1 The Interventions

For testing each assumption interventions are designed by synthesising different theories.

Assumption 1: “The problem of natural resource degradation can be reversed by developing social cohesion, collective action and regulatory mechanism of the social institutions”

Theories synthesized and used to design steps of interventions



The above theories are synthesized to design the intervention steps in order to develop social cohesion, collective action, develop social institutions and implement social regulatory processes

The pre requisite – Bilateral Matching Institutions (BMI)

For developing social cohesion and social institutions and social regulatory processes it is an important prerequisite to set a common goal, understanding and agreed path of action with the government functionaries as Bilateral Matching Institutions (Roy 1992). The tribal social institutions cannot work in isolation ignoring the government policies, Acts and regulatory processes like their access to the forest is regulated by Wild Life Protection Act, Forest Conservation Act. Therefore, the social institutions need to be developed in coherence with the macro level policy and regulatory framework.

Accordingly, district level workshops with the government functionaries along with the communities are organized both at

- i. Hazaribagh in Jharkhand on 24th September 2019 with 40 participants including the officials and field staff of Forest Department, official from Animal Resource Department, Panchayat functionaries and tribal community members including the Birhores.



The members from the Birhor community are sharing their views in the district level workshop at Hazaribagh while The Regional CCF, Official from ARD and the Chairman IBRAD are listening



Sharing of project objectives and finalizing the plan of actions during the Workshop at Hazaribagh



Meeting with Sri Ranendra Kumar, IAS, Director TRI Ranchi was held on 23rd September 2019

An inception meeting was held with Sri Ranendra Kumar IAS, Director, TRI, Ranchi on the 23rd Sept 2019 for sharing the approaches of sustainable tribal development. Sri Kumar shared how challenging it is to develop involve the Birhor community for sustainable livelihood development. The past experiences showed that whatever material inputs are given in terms of seeds, agriculture implements or Ox for plough are either consumed or sold by the community. It requires in depth work by any professional institute who will invest time with community as part of their community to change the culture and practices of the community.

- ii. Gariyaband in Chhattisgarh on 3rd October 2019 with 30 participants present in the meeting including the officials and field staff of Forest Department, Panchayat functionaries and the tribal community members including the Kamar.



Sharing about the project, steps and approaches with the stakeholders of line departments, panchayat functionaries and the community members

- iii. Meeting with the DFO, ADFO and field level functionaries of Saranda Forest Division on 15th July, 20th July and 31st July through webinars.



Meetings are conducted with the district level functionaries and field staff of Saranda Forest Division through webinars during the COVID 19 pandemic

Interventions at the village level

- Awareness, identification of pro active social change agents from among the community, institution building to bring new social order

The Kamar and Birhor PVTGs are living in somewhat isolated condition either in a corner of a village or are rehabilitated by the government (as in Jharkhand) in a new settlement exclusively meant for them. The community institutions, in both the cases, but more so in case of Birhors, are broken and they are living in a precarious state. They do not have strong social regulations neither are integrated fully in the panchayat system.

The strategy is developed to first identify some proactive community volunteers (SICO – Self Initiated Community Organisers) from among the Birhors and Kamars respectively and develop their capacity as Social Change Agents to instill new behaviours and social actions for adopting appropriate technologies for conservation based sustainable livelihood development. Accordingly awareness programs following the steps of PANCHATATWA were organized in four villages in Chhattisgarh and two villages in Jharkhand for identification of the SICO.

IBRAD's method of Eco Chain (Panchaatwa) is field-tested and has been recognized internationally (<https://oppla.eu/sites/default/files/uploads/methodfactsheetecochain.pdf>).



Presentation by a Kamar women during the PANCHATATWA exercise

Eco Chain is an approach to raise the awareness of local people with respect to the interdependence and relationships between different components of ecosystems in a given landscape which is interconnected like a chain, i.e. it is necessary to maintain biodiversity to preserve its associated ES (Ecosystem Services). The approach aims to motivate people, as has been demonstrated in Demotand and Dhengura villages inhabited by Birhor Tribes in Jharkhand and Kesodar, Kauabahara, Balda Kacchar and Aurrai villages in Chhattisgarh, to conserve habitats and biodiversity. This blends scientific principles with indigenous knowledge and includes the participation of the stakeholders in:

- (1) Identifying the problems,
- (2) Assessing the available resources and trade-offs
- (3) Setting the goals, and
- (4) Developing action plans to reach their goals.



SICO members of Demotand village in Jharkhand showing their eagerness to implement the activities in the village

The method effectively involves local communities in finding solutions to arrest ecosystem degradation such as deforestation, soil degradation, which has its primary immediate negative impact on the indigenous local communities themselves. It encourages local communities to spontaneously take responsibility to act and to monitor progress. Furthermore, including indigenous knowledge

helps to build synergies between different approaches for conservation, organic agriculture and sustainable livelihood.

The process creates an enabling environment within the village for conservation of the natural resources and makes people responsive to take charge of their own area.

Panchayat exercises were held at

1. Demotand and Dhengura villages in Hazaribagh and Tatiba in West Singhbhum district, Jharkhand
2. Kesodar, Kauabahara, Balda Kacchar and Aurrai villages in Chhattisgarh



SICO members of Kowabahara village, Chhattisgarh have formed Jai Maa Seetala group for implementation of project activities

The SICO members having leadership ability volunteer to convey information from field staff of the Project to the individual farmers and they in turn are trained as Community Resource Persons (CRP).

These SICO/CRPs in the long run would become the main change agents in the area.

The Birhor and Kamar PVTGs in the villages did not follow any structured social actions for taking collective actions for developing their livelihood. After formation of the SICO/CRP they have started conducting meetings, taking collective resolutions and even writing it down. As these are entirely new actions for them so far it required facilitation from the project staff. But this shows a beginning for developing new social actions.



Professor S. B. Roy, Chairman IBRAD facilitating the process of common goal setting and development of plan of actions with the forest officers and the Kamar Tribal Community

आज दिनांक 24.7.19 को 7/11 डेमेंटिंग
विश्वोक्त कर्मों में ~~IBRAD~~ के सदस्य
IBRAD के सदस्यों से केन्द्रों
247 एवं 248 के सदस्यों के
लिए सर्वे साधन से निर्माण किया
गया। IBRAD द्वारा साभागी एवं प्रशिक्षण
247 एवं 248 के सदस्यों को दिया गया।
आज दिनांक 24.7.19 को 7/11 डेमेंटिंग
में ~~IBRAD~~ के सदस्यों से
Raktina Mukhopadhyay
247 एवं 248 के सदस्यों से
सर्वे साधन से निर्माण किया
गया। IBRAD द्वारा साभागी एवं प्रशिक्षण
247 एवं 248 के सदस्यों को दिया गया।

आज दिनांक 24.7.19 को 7/11 डेमेंटिंग
विश्वोक्त कर्मों में ~~IBRAD~~ के सदस्यों
से केन्द्रों के सदस्यों से केन्द्रों
के लिए सर्वे साधन से निर्माण किया
गया। IBRAD द्वारा साभागी एवं प्रशिक्षण
247 एवं 248 के सदस्यों को दिया गया।

Sudipta Das
Project Officer
IBRAD, Kolkata

पार्वती मुखर्जी
Mamta Kumar
247 एवं 248 के सदस्यों से
सर्वे साधन से निर्माण किया
गया। IBRAD द्वारा साभागी एवं प्रशिक्षण
247 एवं 248 के सदस्यों को दिया गया।

Mo. 9934318610
Kirmadasi

3. विद्यालक्ष्मी
4. सविता देवी
5. सविता देवी
6. सविता देवी
7. सविता देवी
8. सविता देवी
9. सविता देवी
10. सविता देवी

Developing new rituals to instill a sense of unity, dignity and social order

Rituals are cultural phenomena. They regulate human actions in a variety of context including the way human society uses and conserve their natural resource base. The rituals instill sense of connections amongst the members of the society and develop a collective consciousness as mentioned by Emile Durkheim.



Bride performing the ritual by putting water at Dhengura village

Marriage is one such ritual. During the field work we witnessed a marriage ceremony where the bride is from Dhengura village, the sister in law of one of the SICO member Sunita Birhorni and the groom is from Demotand village. The people from the groom side first cleaned the floor with cow dung and sat in front of the bride's house in a circular form

where the traps that are used for catching animals from the forest are used. Then the bride accompanied by other ladies came and started taking rounds around the menfolk sitting on the ground and putting water in a vessel. Then she bowed down before each of the members and was blessed with some money. Then after having lunch the bride decorated with new cloths gifted from the groom's family were taken to groom's village.



Sarhul puja is performed by the Birhor community as a ritual by involving all the members

We have learnt through the rituals followed by the Birhors that new rituals can be developed and new behaviours can be instilled amongst the Birhors to instill a sense of unity, promote collective actions and social regulatory processes.



Accordingly,
programs are

Celebration of world indigenous people day at Tatiba, Jharkhand in presence of the Forest Officials

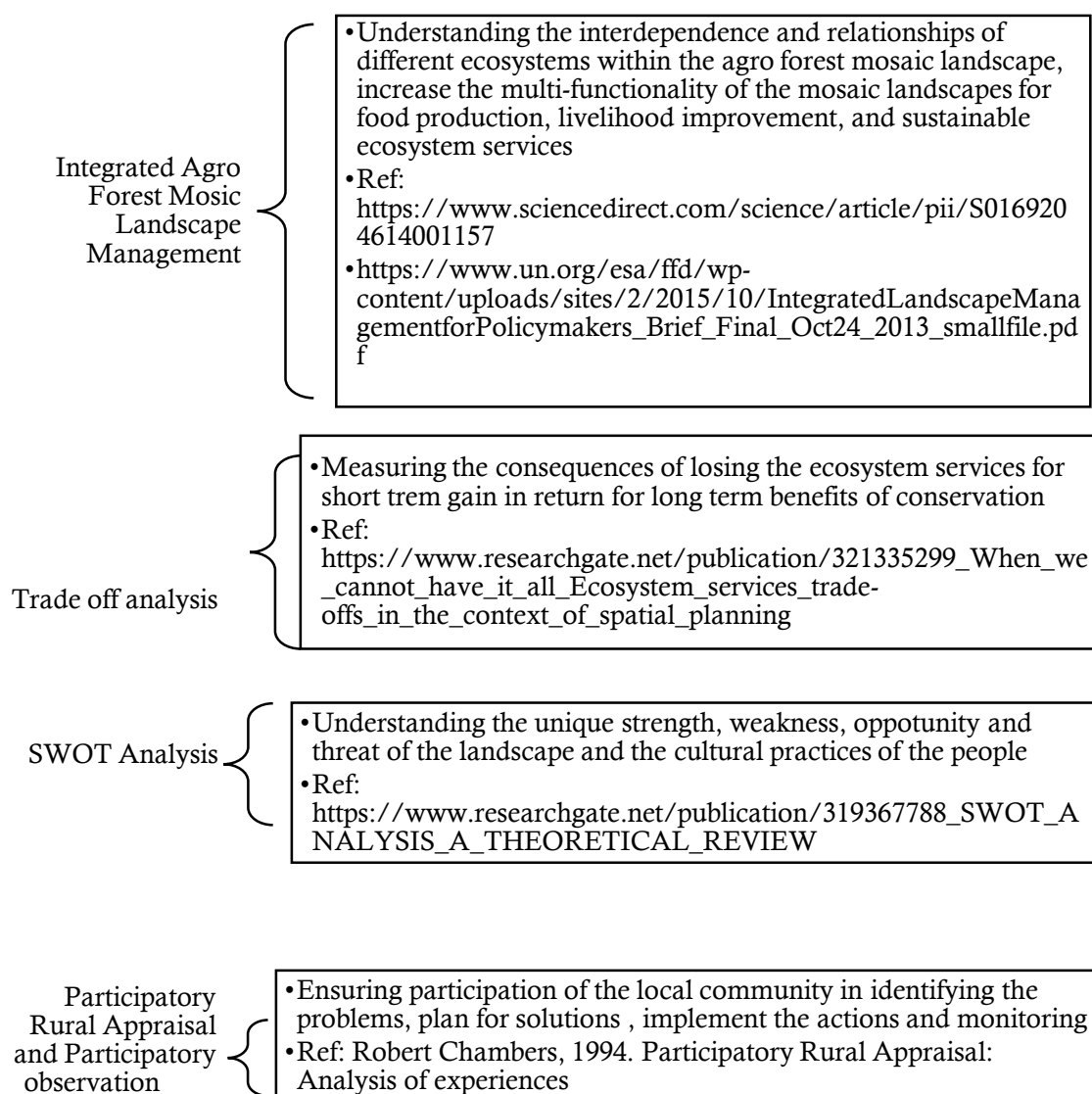
designed such as the one to celebrate The World Day of Indigenous/Tribes by involving the PVTGs



Celebration of the Year International Year of Fruits and Vegetables 2021 for promoting nutrition kitchen gardens to overcome mal nutrition and earning income

- **Situation Analysis by using the participatory exercises such as PRA**

Theories and tools synthesized and used



- **PRA exercises at the village level**

PRA exercises were done in the villages to involve the villagers in identifying their own resources and also to start developing a consensus on how to better utilize the resources.

It develops a common understanding among the villagers and a sense of working together in a collective manner for a common purpose.



PRA exercises at Demotand

It was found that during the PRA exercises both men and women and even children took active part and became involved in the process.

Based on the PRA exercise and household level baseline survey the landscape conservation plan following the Integrated Landscape Management for the village is prepared with active participation from the community.



Involvement of young girls and children too during the PRA exercise at Dhengura village

Sustainable Tribal Development & Sustainable Agro Forest Mosaic Landscape Development is interdependent. Tribal social system, social order, and cultural practices are related to Natural Forest Ecosystem.

The forests, agriculture farm, livestock, water bodies together form an interdependent mosaic ecosystem and these cannot be managed in isolation. It requires an integrated landscape management approach. Sustainability of the natural production system on the forest fringe mosaic landscape is important for sustainable livelihood and human well being of the Tribes and we cannot imagine to work for Sustainable Tribal Development ignoring the degradation of natural habitat of the Tribes.

Integrated mosaic landscapes are the places where forests and non-forest land-use coexist as a functioning ecosystem in a mosaic pattern. The boundary between forest and agriculture is fuzzy in space and time.

- ***Preparation of village level landscape conservation plan***

Accordingly, the Landscape Level Conservation Plan is prepared taking the village as the unit. For optimization of conservation impact, productive potentials of the natural resource base and the livelihood options for the community, all the essential components of the landscape need to be developed in a systematic manner.

These steps for implementation of Landscape Conservation Plan includes

- (i) habitat, biodiversity conservation (in particular) and development – The promotion of organic kitchen gardens, Agro forestry and Community Nursery raising is planned accordingly
- (ii) On-farm facilities for input production to make the community self reliant for the agri inputs and also explore options for alternate livelihood through sale of the inputs – The production of vermi composts, Neemastra, Panchaagabya, Amrit Jal etc are planned accordingly
- (iii) Cropping sequence and combination planning – As the Birhors and Kamars are yet to practice agriculture in their field, they have to learn the techniques of crop planning and combination/mix cropping to have sustained flow of food.
- (iv) Annual crop rotation plan for the kitchen garden
- (v) Growing of crops suiting to the specific region, soil, and climate.

The landscape conservation plans are developed based on PRA exercise and SWOT analysis of the area.

As the PVTGs so far lack much of formal education the PRA exercise that uses visual and graphical tools for involving the community to identify the issues and potentials are found tool to involve the community for preparing the village level microplan.

It is encouraging to note that such participatory plans prepared by the Birhor community at Tatiba has been considered by the Forest Department for converging resources for implementation of some the activities related to water conservation and plantation. In Hazaribagh too, the local forest staff got involved in the process and started interacting more with the villagers.

The community members have started forming Common Interest Groups (CIG) for raising nutrition kitchen gardens, nursery raising, vermi compost preparation etc. This is for the first time such collective actions for livelihood is initiated in the village.

Assumption 2: The Inbuilt mechanism for continuous learning will build competency for skill development and to develop sustainable livelihood options

Concepts synthesized and used

Tribal dormitories

- Youths learn as Mentee from the senior the socio cultural practices and conformity to social norms, collective living, skills for livelihood, peer learning and instilling sense of belongingness
- Ref: Roy SC, 1915. The Oraon of Chhota Nagpur; Their History, Economic Life and Social Organisation
- https://www.iitp.ac.in/images/faculty_profile/human/Aditya/Aditya%20Vibhuti.pdf

Farmer Field School

- The farmer field school (FFS) approach was developed by FAO as an alternative to the prevailing top-down extension method. Trainings are conducted in situ by a trained facilitator following the seasonal crop calendar
- Ref: <http://www.fao.org/agriculture/ippm/programme/ffs-approach/en/>

- *Establishment of Parshikshan Shivir following the principles of tribal dormitories and farmer field school*

In order to achieve the goal of creating an enabling environment for continuous learning to build capacity and competency of the community **Prashikshan Shivirs**, a semi structured hub is established keeping in mind both the Tribal Youth Dormitory and as Outreach Centre in the line of Farmers' Field school to act as a hub for continuous learning. It is the place for conducting in situ trainings at the village. These centres act as 'Open Class Rooms'.

Three Prashikshan Shibirs are constructed, one each in Kesodar village in Chhattisgarh, Dhengura and Tatiba in Jharkhand respectively.



Making of Prashikshan Shivir at Dhengura, Hazaribag



Prashikshan Shivir at Kesodar village

But it is to note that the Prashikshan Shibirs of both Dhengura and Tatiba are dismantled by the community after few months during the COVID lock down period as the community institutions had not yet taken a stronghold to manage and sustain common property resource like the Parshikshan Shibir. It is also impractical to think that the community will build the strong regulatory process within a short span of few months only. We need to have patience to foster new social behavior.

Such action by the community also affirms the views shared by the Director, TRI Ranchi during the inception meeting held with him.

We have initiated some temporary arrangement to continue the training and the community members have also realized the importance of the Prashikshan Shivir. Gradually efforts are being made to rebuild the Prashikshan Shibir again.

- ***In situ Training and Capacity Building for skill development following the approach of Mentee Centred Training, Hand holding and Monitoring***

The in situ trainings are designed and implemented following the approach of Mentoring and Mentee centred training with hand holding support provided by the project field officials and staff. The trainings are conducted in situ at the village level to develop organic nutrition kitchen gardens, preparation of vermi compost pits, preparation of organic inputs like neemastra, organic compost, skill development for nursery raising etc. The target groups are mostly

women in the villages and these capacity building modules are designed to empower them to diversify the livelihood options and expand their choices.



Hands on Training for preparation of organic ball for seed sowing

The trainings are not conducted in piecemeal manner or are one time. The training modules are integrated with each step of implementation of the project activities following a sequence. For example, just after being trained on land preparation for organic nutrition kitchen garden the trainers have demonstrated through holding of the trainees on field preparation of land for the nutrition kitchen garden.

The training on seed bed preparation for nutrition kitchen garden and seed has resulted in establishment of 56 nutrition

gardens and raising of organic vegetables in the gardens.



Hands on training on preparation of Organic Ball for Sabji Bagan at Demotand

The PVTGs are also trained to prepare Neemastra, a neem based solution for controlling pests for plant protection. They are now applying Neemastra to their crops and the yields are more. It is produced using locally available neem leaves and they do not have to incur any expenses related to application of pesticides to their crops. It helps in saving money and getting fresh and non toxic vegetables.



Training of women for preparing kitchen garden and seed bed preparation in Kesodar, Chhattisgarh



Training on Neemastra preparation at Kesodar village, Chhattisgarh



Training on mulching by using the locally available resources



Hands on training for seed treatment at Kowabahara village



Hands on training for seed bed preparation at Dhengura



Hands on training on Seed bed preparation at Dhengura village on the plot of Gita and Soniya Birhor to prepare nutrition garden



Training by maintaining the face cover protocol post COVID 19 pandemic at Tatiba village



Training on organic seed bed preparation at Tatiba village

- Residential training for the Community Resource Persons (CRP)

Residential trainings for the Community Resource Persons are held at IBRAD Campus at Kolkata.

After being trained the CRPs took lead to engage their neighbors for adopting new technologies like application bio fertilizers and bio pesticides in the nutrition kitchen garden, nursery technique, vermi compost preparation etc.



Residential Training of the CRPs of Chhatisgarh at IBRAD campus Kolkata



Residential training of the CRPs of Jharkhand at IBRAD Campus Kolkata



Birhor Trainees from Jharkhand at IBRAD Campus Kolkata

Name of the village	Number of nutrition kitchen gardens
Tatiba	20
Dhengura	7
Demotand	9
Kauwa Bahara	12
Kesodar	8

Assumption 3: Sustainable livelihood opportunities can be developed using the locally available resources that are unused and by engaging the women and youth

Concepts and theories synthesized and used

	<p>Principles of Organic Farming</p> <ul style="list-style-type: none"> •The basic principles of organic farming is used for establishing the nutrition gardens, production of vermi compost, neemastra, beejamurth etc •Recycle and reuse of the locally available materials
	<p>Agronomic practices and crop rotation</p> <ul style="list-style-type: none"> •Agronomic practices are designed to establish organic nutrition kitchen gardens in the small plots •Seasonal crop rotation for year round production of vegetables
	<p>Women empowerment</p> <ul style="list-style-type: none"> •Creating an enabling environment •Developing capacity and skills to enalrge the choices •Providing opportuinity to apply the skills •Creating opportunities to enlarge their choices and autonomy

- Identification of the locally available options and opportunities

In order to explore opportunities for sustainable livelihood options the fallow lands available in the homestead and adjoining areas are identified to establish organic nutrition kitchen garden, dry plant parts and green grasses are used to prepare organic composts, bamboos are used for developing nursery structures, locally available seeds are used for raising saplings etc.

- Providing opportunities to women and youth to try new livelihood options by creating an enabling environment through training, hand holding and monitoring

The women and youth in the village who do not want to pursue their traditional livelihood are engaged to initiate the new livelihood generation activities through capacity building, trainings and hand holding support.

a. Establishment of organic nutrition kitchen gardens

Total 56 organic nutrition kitchen gardens are established after training of the community members.

After being trained both the Kamar and Birhor tribal members have initiated organic nutrition kitchen garden in their homestead and adjoining lands. After getting trained on seed bed preparation, seed treatment, production of neemastra, the villagers were actively involved in preparation of all the three components and established the kitchen gardens. They were provided with the certified seed, Trichoderma Viridie for seed treatment and Azophous as bio

fertilizer. Hand holding support was provided by IBRAD staff not only to prepare seed bed, seed treatment, mulching etc but also during the process of weeding, watering etc.



Sanichar Birhore is making lines in the nutrition kitchen garden by using rope to make it straight at Demotar village, Jharkhand



Manu Ram Kamar and family are mulching the Kitchen Garden in Kesodar village, Chhattisgarh



Beans plants of Fulu Ram's kitchen garden in Kesodar village in Chhattisgarh



Kitchen garden of Sunita at Demotand village. This is the second cycle of her kitchen garden



Establishment of the kitchen gardens at Tatiba facilitated by the local CRP Guman and Mansukh Birhor



Production of crops in the nutrition kitchen gardens at Tatiba



Bajrang Birhor of Demotand is preaparing his nutrition kitchen garden for the third cycle of production



Sarita, Manju and Rukmani have harvested their rainy season vegetbales and cleaning their garden for cultivation of Rabi crops



Third cycle of cultivation of crops in the organic nutrition kitchen garden of Muniya and Sunita Birhor at Dhengura



Beans fruits in the nutrition kitchen garden at Kowabahara

We have purposely involved few members from the Gond community and Patels who were very proactive and have very good relations with the Kamar community in the village. Involvement of both the communities has created an enabling environment in the village of mutual reciprocity, trust and respect.

Outcomes of the initiatives through establishment of organic nutrition kitchen gardens

- *Changing land use, supply of fresh vegetables for dietary support*

What is more encouraging is the fact that the initiatives to start the organic kitchen gardens are mostly women led and women managed. The lands adjoining their homes used to lie vacant throughout the year. These are now put into productive use and people are getting fresh vegetables for their families as nutrition support.



Freshly harvested vegetables have become part of the daily meal

- *Changing gender roles and gender relations, expansion of choices, increase in autonomy*

Women led nutrition gardens in the patta land received under FRA

The nutrition kitchen garden is raised by Sarita, Manju and Rukmani Birhor at Dhengura village in approximately covering 250 sq.mt area. They are living in the adjoining houses and the land is received under FRA which used to lie vacant earlier. After receiving training from IBRAD, they have initiated the nutrition kitchen garden and are cultivating vegetables and even agriculture crops. They have so far raised Corn, Okra, Goud, Bitter Goud, leafy vegetables like Dhania, Methi, Lal Sag which have already been harvested and consumed by the families. The land is now put under cultivation of potato with intercrop of Baklori, a kind of pea. The collective effort of these ladies is changing the land use pattern of the FRA patta land. They are



Inspiring to see the confidence level of a young girl like Sunita to bring changes at the village at Dhengura

developing new livelihood opportunities. They could sell about 10 – 12 kg of Okra as a surplus product at the rate of Rs 40 per kg. Even though it is a meager amount but for the community who has never been raised vegetables earlier this is a welcome trend.

Mamta and Sunita are two young women in the same Dhengura village who are also raising the nutrition kitchen garden in the FRA patta land. They have already harvested French Bean, Goud, Dhania and Methi and are now cultivating Potato and Baklari. None of them have ever raised nutrition gardens before.

The husbands of all these women were engaged either as wage labor or tractor driver. Few also make ropes. But none is involved in land based activities. This is initiated and managed by the women only who are taking lead in diversifying the livelihood options for the family by putting the land received under FRA in effective use.

The new roles assumed by these women in Dhengura village represents the change in the gender role within the family and at the social level at broader scale. These women after being trained are feeling confident to put the lands of their family under productive use, supplying nutrition to their family, changing the dietary habits and are slowly getting confidence to scale up the production to earn disposable income.

Benefits beyond increase in income, enhancing dignity, increasing negotiation capacity

The Birhors of Demotand village have not yet received patta under FRA. There are 28 members in Demotand village who have initiated nutrition kitchen garden for the first time in their homestead land. They are now feeling confident and aspire to cultivate vegetables and agriculture crops at large scale. They are requesting the forest department for initiating the process for allotment of patta which itself is an indication of autonomy and empowerment.



The project has increased the scope of interactions with the local forest staff who are coming in the village for different programs and celebrations

b. Botanical extract production units

The community have learned, producing and applying Neemastra in their nutrition kitchen garden.



Production and application of Neemastra in the nutrition kitchen garden by the kamar tribes

c. Liquid Biofertilizer consortia (Nitrogen fixing / Phosphate Solubilizing/ potassium mobilizing biofertilizer)

Azophous is used for preparation of seed bed as bio fertilizers in all the villages during preparation of seed bed. This has resulted in improving the yield of crops.



Application of Azophous for preparation of organic soil ball

d. Liquid Biopesticides (Trichoderma viridae, Pseudomonas fluorescens, Metarhizium, Beauveria bassiana, Pseudomonas, verticillium)

Trichoderma viridae is used for seed treatment and the treated seeds are used in the kitchen gardens. This has resulted in improved survival rate of the crops.



Application of Trichoderma viridae for seed treatment

e. Use of Beejamruth for seed treatment

Seeds are also treated by using the organic method of Beejamruth and are planted in the nursery.



Demonstration of Beejamruth steps for seed treatment at Demotand village

f. Biological nitrogen harvesting plantation

Plantation of fruit bearing trees like mango, cashew nut, guava etc are done in Dhengura village in Jharkhand.



Fruit tree Plantation at Dhengura village



Fruit tree Plantation at Tatiba village by Forest department

Plantation is also done in Tatiba village in convergence with the Forest Division.

However, the plantation could not be done in all the cases as the season was over due to the COVID related lockdown.

g. Development of Vermi Compost Units

Vermi composts are produced for use in the field of the farmers and also to develop an alternate livelihood for them through sale. The progress of preparation of vermi compost got delayed due to the COVID 19 pandemic related restrictions.

Here too like in case of Prashikshan Shibir, the vermi pits got damaged by the children. We have to repair the pits again.



Vermi compost pit of Mamta Birhor at Dhengura that was repaired second time



Vermi compost pit of Munia Birhor at Dhengura that was repaired second time



Prakash Birhor of Demotand is putting shed on his vermi pit



Cutting and mixing of green and dry leaves for filling up the vermi pit at Dhengura



Preparation of vermi compost pit at Tatiba



Preparation of vermi compost pit at Kesodar

h. Community Nursery Development

Community Nurseries are developed by the communities organized in groups to produce in situ quality planting materials for plantation in the village as well as sell the produces to earn income. It also helps in ex situ conservation of REET species and promotes biodiversity conservation.



Training for preparation of poly pots in the nurseries by involving the Birhor community at Demotand



Babulal of Demotand village is taking care of the nursery and watering the saplings

Six community nurseries are established where both tree plants and vegetables saplings are raised. Out of six, two nurseries are in good shape.

It is interesting to note that in the community nursery of Demotand village around 500 chili saplings and 50 french bean saplings are raised which are planted in the nutrition Kitchen garden of the villagers only.

Assumption 4: The competent and empowered community will be able to measure the “Trade Offs” and make judicious and sustainable use of resources

The project focused upon empowering the community, women in particular through training and capacity, creating an enabling environment to instill confidence to utilize their inert potentials, providing hand holding support for transfer of appropriate technology to diversify and strengthen their livelihood options, develop a network among the communities, providing exposure and increasing mobility.

Results of capacity building for improving economic prospects, greater decision making authority, control over resources

As mentioned in the earlier sections the skills are applied to establish kitchen gardens that are opening new opportunities for earning income for the community.

Women are gaining greater decision making authority to utilize the lands for vegetable cultivation.

Competent and empowered women taking the lead

They are located in the remote villages, belonged to the most marginalized PVTGs, and have little choices to lead a life with dignity and self respect. They have to work very hard till dawn to dusk, whether for making baskets from bamboo or making ropes. These women are the most mal nourished. They lack formal education and can not even speak in the Hindi, the official

language of the state which creates a big hindrance to express their views in the meeting of local affairs.

The action research project of IBRAD was designed to facilitate creating an enabling environment for Birhor and Kamar tribal women that promotes equal opportunities, eliminates discrimination and ensures empowerment through changes in societal attitude.

Developing competency and skills to empower the women to access equal opportunities

It was purposely focused under the project to target the women and train them to start kitchen gardens, produce organic inputs, establish community nurseries. It is very encouraging to see how the women of the villages of Kowabahara, Dhengura and Demotand got involved in establishing their kitchen gardens.



Preparation of soil and filling of polybags by the women of Dhengura

What is more encouraging is the fact that these women not only started new livelihood for their families but few of them like SaritaBirhorni and Sunita of Demotand village has come forward to orient others and ensure that the kitchen gardens are maintained properly. They are slowly emerging as the change agents in their villages.



The women, like Kamla Kamar of Kowabahara village has started writing resolution of the meetings



Sarita of Dhengura village is taking a lead in organizing women for the kitchen garden and maintaining them. Sarita is explaining their activities to the Mukhiya of Dhengura Gram Panchayat. Her level of confidence has increased manifold with the training she received.

Developing ownership and sense of belonging for sustainability



Developing a sense of belonging and ownership is important for sustaining the project initiatives. Straying of livestock such as poultry and pigs are threat for raising kitchen gardens. Women, like Manju in Dhengura village Jharkhand are putting fence with dry twigs, saree to guard their kitchen gardens. They are poor but still are using their sarees to gaurds their kitchen garden . It shows both their ownership and the importance that they put on the gardens.



Mamta Birhor of Dhengura is emerging as a change maker in her village.

She has established her nuttition garden on FRA patta land along with Sunita. They are now raising year round vegetables. In the Rabi season of 2020-2021 they are cultivating potatoe on their land.

Mamta is repairing the shed of her vermi compost pit while holding her child in lap.

The homestead lands remained unutilized by both the Bihors and Kamars. After getting the training on kitchen garden preparation they have started producing vegetables in a scientific and systematic manner.

The seeds are treated organically before sowing. The seed beds are prepared with Azophous and cow dung. Such scientific practices have resulted into higher yields and production.

The smiling face of Suman bai kamar of Kowabahara village in Chhattisgarh after harvesting raddish from her kitchen garden, reflects the story of an empowered woman.





Charkhi of Dhengura is feeling confident now to share her views in front of the video camera

Mobility is another indicator that helps in empowering women. There were women and even the adolescent girls who have volunteered to come to Kolkata to attend the National Convention on Integrated Tribal Development for Sustainable Livelihood in the context of Climate Change from 14 – 16 February 2020. It was the first time that they were out from their village. Their exposure with the outer world has made them enthusiastic and confident.



Birhor women of Tatiba are learning how to hold mobile phone and interact through Whatsapp



The empowered women not only are involved in the livelihood related activities but are coming forward to ensure the overall well being of their family.

They have become more conscious about the preventive health care issues of the children and women.

It certainly shows a way forward on how these women can take a lead role for changing the village condition and the quality of life of these PVTG community.

Suman Bai Kamar of Kowabahara village interacting with the Mitnin about the immunization in Kowabahara village

It is encouraging to see the confidence of the young woman like Sunita Birhor of Dhengura who has come all the way from Hazaribagh to Kolkata to attend the National Convention and Training in February 2020 with her young child on lap. This is the first time she stepped out from her residence to come to any other state. After returning back Sunita is taking lead both for cultivating vegetables in her nutrition kitchen garden and also introducing crops like potato for cultivation.



Identification of the rare and endangered plants in the forest areas, particularly the medicinal plants, its documentation and conservation

The Birhor communities of Tatiba and Demotand were involved to identify the medicinal plants available in their forest areas that are becoming rare and endangered. The traditional healers are involved to identify them and note the use of its parts for different ailments.

Discussion with the community is initiated to establish herbal gardens for conservation of these plants and conserve the traditional knowledge and practices related to health traditions.



Munia Birhor of Dhengura is explaining the use of medicinal plants



Identification of medicinal plants by the Birhor community in the forest

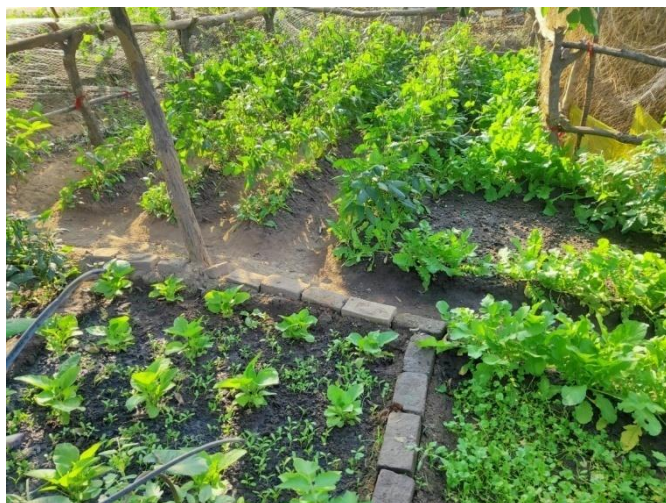


Birhor community members are explaining the usages and threat status of the medicinal plants like Satvar and Chiraita available in their forest area

Assumption 5: Development of the targeted communities cannot be achieved in isolation ignoring other communities living in the same villages

Efforts towards mainstreaming the PVTGs with other communities through exposures and inclusion

Efforts are being made to integrate the Kamar and Birhor PVTGs with other communities living within the villages such as Gond and Patel in Chhattisgarh and in Demotand. There were some kitchen gardens initiated by the community in their homestead land too. These communities are appreciating the facts that because of these PVTGs they are getting the opportunities to learn new skills. The social interaction between the communities has increased through the common learning platform.



Kitchen Garden of Hemlal Dhruw, member of non Kamar Community in Kesodar



Tameswar Dhruw of Kesodar also started kitchen garden in his homestead land



Kamar, Birhor Gonds and Patels working as a team



Sharing the joy together

The Birhor and Kamars were provided with the opportunity to mix with different tribal communities during the three National Conventions where there were about 100 participants in each from different states of India as follows:

- i. “Integrated Landscape Management and Sustainable Tribal Development” from 9 – 11th August 2019 as part of celebration of International Day of Tribals on the 9th August 2019 with 140 participants with 95 tribal community members representing 13 tribal communities from seven states of India and



Santosh Birhor and his team from Demotand village, Jharkhand sharing their experiences during the National Convention

- ii. “Anthropological Concept and Approaches to Sustainable Tribal Development: Challenges and Opportunities” on 19th and 20th October 2019 with 105 participants.

Focus Group

Discussion was held with the tribal community members including the Birhor and Kamar PVTGs of Jharkhand and Chhattisgarh, Santhals of Odisha and West Bengal, Gonda and Bethudi of Odisha. The different tribal groups shared



Lighting of lamps by Santosh Birhor, Fuluram Kamar with the dignitaries

their perspectives on development, the constraints they face for development, their vision for future and how do they want to take part in the development process.

- iii. SANCALP National Convention with the theme Integrated Tribal Development for Sustainable Livelihood in the context of Climate Change from 14 – 16 February 2020. About 100 participants from eight states of India have participated in the program.



Members of different states during the inauguration of SANCALP National Convention



Members from different states attending the inaugural function of SANCALP National Convention

Chapter V

LEARNINGS AND WAY FORWARD

The project activities were completed and most of the objectives are met even though there has been interruption and slow working due to COVID 19 pandemic. Situation analysis through PRA and participatory household survey has been done to understand the existing social structure, natural resources and livelihood and drivers for changing traditional livelihood. Awareness and sensitisation programs, training and capacity building has resulted in formation of CIG as new social institution and adoption of organic vegetable cultivation by the community. Women empowerment is a process that requires time for radical and structural changes in the society. But the initiatives of the women to adopt new livelihood and train others reflects a positive trend. Training and hand holding support provided have resulted into adoption of new practices and technologies in the form of organic nutrition kitchen garden, community nursery, organic inputs production, more particularly by the women.

PVTG is not a homogenous entity

During the process of implementation of the project we have got the opportunity to understand the stages and process of transformation of the Kamar and Birhor PVTGs from their pre agrarian hunting gathering state to mostly wage based livelihood. It is replacing their traditional social institutions for social regulations of the natural resources and its use pattern. Moreover, their exposure with the outer world and other communities are changing their world view and aspirations. Therefore, though we consider the PVTG community as a homogenous unit but there have been significant differences within the same community who are residing in the same village only in terms of their aspirations, thought process, learning aptitudes and ability. Hence, we have to develop a strategy to identify the proactive members from among the community and to develop them as change makers.

Identifying the social change makers by deconstructing the stereotypes and myths to facilitate developing ‘self organizing’ community

Here, the method of PANCHATATWA is found effective for identifying proactive villagers eventually whose capacity are developed to be the social change makers. Interestingly, breaking the stereotypes, young girls and women particularly among the Birhor community have emerged as more effective for adopting new technologies for organic vegetable cultivation and engaging others for transfer of technology.

Integrating training modules with the supply value chain for implementation of the activities builds confidence of the people while they get to see the results of the skills learnt

The skill development training with immediate hand-holding by providing seeds and organic inputs are found to be effective and resulted in the establishment of women-led and women managed organic nutrition kitchen gardens in the homestead areas. The lands adjoining their homes are now put into productive use and people are getting fresh vegetables for their families as nutrition support. Even though such cultivation has started for the first time but some of them have managed to sell the surplus in the market. These women are emerging as the change agents in their villages.

Increasing resilience of the project implementers to adopt with the unforeseen eventualities, risks and shocks

While implementing the project we have come across with two major unforeseen eventualities that had impacted in redesigning the methodology and approaches substantially and radically.

One such being the COVID 19 pandemic and the restriction of movements due to COVID related protocols.

To meet up the challenges we have developed the methodology of reaching to the communities through digital platform. Application of digital platform for remote training of the PVTGs has been tested and found effective. Adoption of digital platform of training and capacity building as a viable option is accepted by the forest department of Jharkhand. The Divisional Forest Officer of Saranda Forest Division has accepted the method developed by IBRAD and implemented the method for initiating the project by involving the Birhor community of Tatiba village.

Implementation of FRA and its impact on the project

दुगली वन संसाधन के सीमांकन के दौरान बलवा

नगरी (प्रखर)। बुधवार को ग्राम पंचायत दुगली की वनाधिकार समिति के सदस्य वनाधिकार क्षेत्र वन विभाग के अमले के साथ जीपीएस टैक के लिए ग्रामीणों के साथ निकले थे। इसी दरम्यान कोहाबाहा सीमा क्षेत्र नगरी के पास कोहाबाहा के संकड़ी ग्रामीणों ने दुगली वनाधिकार समिति को अपनी क्षेत्र का अधिकार जताने हुए लकड़ी ढंडे से लैस होकर रोक्ने के साथ गाली गलौज की। ग्रामीणों के साथ वन विभाग के कर्मचारियों को भी मानसिक प्रताड़ना दी गई। शासकीय कार्य में बाधा पहुंचाई। दुगली थाना से कुछ दूरी पर घटना घटने की खबर से घटना स्थल पर लकाल दुगली थाना प्रभारी ने मौके पर पहुंचकर ग्रामीणों को समझाई दी। इस दरम्यान दुगली वन अधिकार समिति के सदस्य धमती मार्ग से होते हुए दुगली क्षेत्र पहुंचे। कोहाबाहा के ग्रामीण उनका पीछे करते हुए बस स्टैंड तक पहुंच गए। मातला शाही होने के बाद दुगली विद्वेषा के मुखे की गली में दोनों पक्षों के बीच बहस छिड़ गई। दोनों पक्षों में पथराव हुआ। दुगली वन प्रबंधन समिति अध्यक्ष ने बताया जिस सीमा का दुगली वाले सीमांकन कर रहे थे, वह प्रबंधन समिति दुगली की आरक्षित वन भूमि है। जहां कोहाबाहा वाले निस्सार करते हैं। वनक्षेत्र में कोहाबाहा के ग्रामीण कुछ सालों से वन भूमि को अतिक्रमण किए हुए हैं। इसी वजह से कोहाबाहा के ग्रामीण दुगली वालों के प्रशासनिक कार्य में व्यवधान पहुंचाते रहे हैं। सीमांकन मौके पर दुगली वनाधिकार के कर्मचारी ईश्वरी सरकार और मोन्द नेताम जीपीएस करवा रहे थे। उनकी जीपीएस को कोहाबाहा के ग्रामीणों ने छीन लिया। उन्होंने बताया जिस क्षेत्र का सीमांकन किया जा रहा था, वह दुगली वनक्षेत्र की आरक्षित वनभूमि है। मामले को लेकर दुगली थाने में प्राची चंदभान नेताम पिता भिखारी राम को रिपोर्ट दर्ज कराई। राजेश कुमार नेताम के घर में कोहाबाहा के ग्रामीणों द्वारा धावा बोलने व बीच बचाव करने के दौरान कोहाबाहा के 70-80 ग्रामीणों ने दुगली वनक्षेत्र के सदस्यों को अलौल गली गलीज जाप से भारने और ईट पत्थर लकड़ी से पिटाई की। जिससे रतीव कुमार नेताम, रामदेव सरकार, प्रमेश कुमार यादव, शक्तिरत्ना मंडवी, भुनेश्वर ओटी, मंगली नेताम, प्रिती कोडोपी, दयाबती, प्रविण नेताम, विकास कुमार को गंभीर चोट आई है। दुगली थाने में प्राची को नामजद रिपोर्ट पर कोहाबाहा सरपंच शिवप्रसाद नेताम, विनोद सरकार, विशाल टेकाम, बोरसु टेकाम, चिन्ताम टेकाम एवं अन्य 70-80 लोगों के खिलाफ दुगली थाना में प्रथम सूचना रिपोर्ट तहत धारा 147, 148, 149, 294, 506, 523, भाद वि के तहत अपराध पंजीबद्ध किया गया है। कोहाबाहा के ग्रामीणों ने भी मारपीट का आरोप लगाते हुए दुगली वनाधिकार समिति पर आरोप लगाया है। दुगली थाने से मिली जानकारी अनुसार मामला बलवा का है। दोनों तरफ से कार्टर रिपोर्ट दर्ज है। दुगली पुलिस अपराध दर्ज कर कार्यवाही कर रही है।

Another externality that have had an impact on the project to slow down the activities among the Kamar tribes in Chhattisgarh was due to the conflict between the Kamar and the non Kamar counterparts under Dhamtari Division over the boundary demarcation of the

forest areas for settling rights over FRA land tenure. The conflict has led to registering police cases and complete closure of the villages. It has been covered in both the local and state level. Consequently, we also have to stall our activities for the time being.

Scope for future uptakes

Support for effective implementation of FRA and sustainable management of the land under FRA patta

"Tribal have symbiotic relationships with forests both in terms of livelihood- health and traditional culture'. While we all wish that the FRA has to be implemented in letter and spirit, it is taking more time and facing challenges.

Considering the authorities and responsibilities assigned to the Gram Sabha under FRA it requires experts at the Gram Sabha level who will engage professionals with the knowledge of Working Plan and Watershed Management techniques for preparation of Sustainable Forest Management Plan at the Gram Sabha.

We propose the following rationale for having a Policy supported Operational Manual:

1. Fragmentation of landscape has to be avoided during determining the nature and extent of individual or community forest rights by the GRAM SABHA which may cause the emergence of invasive species and disruption of the path of pollinators, break down of biodiversity corridor, breaks the flow of energy and water and thus have varied effects on ecosystem services, and negative effects on human well-being and biodiversity.

2. The habitat of the Biological Diversity is a coherent part of the landscape of the water catchment area. Therefore, the local forest management plan and the micro plan of the GRAM SABHA has to follow the principle of Watershed Management. This requires experts for the preparation of Management plans keeping in mind the catchment of water and water table. *Section 3 and Section 5 of the act has clearly mentioned the 'Duties of holders of forest rights..., (a) protect the wildlife, forest and biodiversity; (b) ensure that adjoining catchments area, water sources and other ecological sensitive areas are adequately protected;'*

The forest Working Plan is one of the important documents with the prescription of management of the forest ecosystem. The Gram Sabha has to consult the working plan unless such working plans are discarded. The local Forest Range Officers may be included at the committee of the GRAM SABHA to act as Forest expert for monitoring of the Sustainability of the forest and guide for forest-related technical support. The Gram Sabha may engage Foresters, any other expert for preparation of management plan, business development for livelihood, marketing linkage for better income generation related activities.

3. GRAM SABHA has many more activities other than FRA. Therefore, we have to discuss the process of strengthening the Governance System of the Gram Sabha for FRA. GRAM SABHA as an authority and the officials will be treated as 'Public Servant'. Please refer to Chapter VI..." *Every member of the authorities referred to in Chapter IV and every other officer exercising any of the powers conferred by or under this Act shall be deemed to be a public servant within the meaning of section 21 of the Indian Penal Code".*

4. There are many JFMCs with excellent performance in terms of both livelihoods support as well as protection of the forests. Such JFMCs with a good number, stand as a BRAND of collaborative management. There are a number of states who have externally funded projects for years together for JFMCs. They form the part of the GRAM SABHA. We have to find out the mechanism to sustain such JFMCs, following the FRA Act 2006, maybe with another name or appropriate governance system to avoid demoralising the JFMC who have illustrated 'ways and means' of collaborative management system of forests.

Integrated Agro Forest Mosaic Landscape Management can only lead to sustainable tribal development

Since the project has just completed, at this stage we only can share that for any village level plan of livelihood support the concept of Integrated Landscape Management will prove to be effective. Since PVTGs are known to belong to pre agrarian society, they will not accept any kind of livelihood support which is provided to any other community who are already practicing agriculture.

Handholding in the form of incubation for sustaining the initiatives

Though there have been some trend showing changes among the community but it would require some more time for establishing the process of social transformation. It has always been a challenging job and time taking process to instill new cultural practices to adopt land based livelihood by those who are not used to with the system. It requires social transformation and change in the belief system. Hence, they are to be nurtured for some more time as Mentee under incubation program.

Strategies for convergence with the line departments

Since the challenges faced by the PVTGs are many and deep, it requires a convergence of resources and information from all the line departments to ensure improvement of the human development indicators of the community. Strategies need to be develop convergence with the line departments for diversifying the livelihood options of the community and also to sustain the initiatives introduced under the project.

Study the issues related to use of lands received under FRA and developing capacity of the land title holders for effective and sustainable management of the lands

After confronting with the issue of FRA land settlement in Dhamtari the need for study on use of FRA patta lands and developing capacity of the land title holders for it's effective use is further realized. While a nationwide drive has been taken to ensure land tenure rights of the tribal population through effective enactment of FRA it would not yield desired results if the capacity of the community is built properly. Rather it would lead to fragmentation, loss of ecosystem services and further degradation of the natural endowments upon which the livelihood of the tribal communities depend.

Scope for replication

The methods of community involvement to create new social institutions, cultural practices and competencies through systematic and rigorous training can be replicated for other areas. The new body of knowledge developed is documented in the form of reports and scientific papers for publication in the peer reviewed journals.

Creating a network of professionals as a critical mass for updating and fine tuning the strategy and approaches and promotion of best practices

The National Level Webinars, three with the New Indian Express and two International Webinars with academics from UK, Finland, Germany, Belgium, Kenya, Italy, Bangladesh to share the project experiences with the wider audience has resulted in generating interests among the professionals and developing a network. Such initiatives would lead into developing a knowledge platform and development of new body of knowledge and should be promoted in future.

Ensuring transparency and accountability by using digital application

A designated website on tribal development, tribaldevelopmentibrad.org is hosted for dissemination of information. A project performance dashboard is being added for reporting and tracking the project.

The learnings are captured through video documents that are being edited in the form short films.

References

Boas Franz, 1938: The Mind Of Primitive Man

Census of India, 2011

Durkheim, E. (1893). *The division of labor in society* (G. Simpson, Trans.),

Easterly, W., Ritzen, J., & Woolcock, M. (2006). Social cohesion, institutions, and growth. *Economics and Politics*, 18(2), 103–120.

<https://plato.stanford.edu/entries/social-institutions/>

<https://oppla.eu/sites/default/files/uploads/methodfactsheetecochain.pdf>

<https://www.sciencedirect.com/topics/social-sciences/worldview>

<https://tribal.nic.in/ST/StatisticalProfileofSTs2013.pdf>

Jejeebhoy S., 1996. Women's education fertility and proximate determinants of fertility, *Population, and women*, UN.

Kallen, Horace. 18-25 February 1915., 1924

Maslow's Need Hierarchy Theory 2. Herzberg's Motivation Hygiene Theory 3. McClelland's Need Theory 4. McGregor's Participation Theory

Mitra Mitashree et al 2006. Nutritional Status of Kamar tribe children in Chhattisgarh, *Indian Journal of Pediatrics* 74 (4) 381-384

Mukhopadhyay Raktima., Roy S.B., 2015. Traditional Knowledge for Biodiversity Conservation, Maintain Ecosystem Services and Livelihood Security in the Context of Climate Change: Case Studies from West Bengal, India. *Kamla Raj. J Biodiversity*, 6(1,2): 22-29

Pandey GD., Tirkey VR., Tiwari RS., 2000. Some Aspects of health-seeking behavior in Birhors A Primitive tribe Man In India 79 (3&4), 291-299

Roy, S. B., 1992. Bilateral Matching Institutions: An illustration in forest conservation, *Journal of the Indian Anthropological Society* 27: 253-262.

Roy, S.B., Mukhopadhyay Raktima., 2016. Method Fact Sheet, Eco Chain Participatory Biodiversity Management.

<https://oppla.eu/sites/default/files/uploads/methodfactsheetecochain.pdf>

Roy S. B., Mukhopadhyay Raktima., 2015. Bilateral Matching Institution: Issues In Participatory Biodiversity Conservation And Well - Being Of The Community; Man in India, 95(3)

Roy S. B., Mukhopadhyay Raktima., 2015. Participatory Biodiversity Management: Approaches To Improve Ecosystem Services And Well Being. Serial Publication. International Journal of Economic Research, Vol 12 Issue 3, Pages 851 - 860

Sen A., 1994. Population policy: authoritarianism versus cooperation. Social change 24(3-4): 20-35.