

Baseline Survey of Socio-Economic and
Physical Situation of the Project Area
Ama Jungle Yojana (AJY)

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Ama Jungle Yojana (AJY)**

Submitted to

The Project Director

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Abbreviations

AJY	Ama Jangala Yojana
ANR	Assisted Natural Regeneration
CAMPA	Compensatory Afforestation Fund Management & Planning Authority
CSR	Corporate Social Responsibility
DPF	Demarcated Protected Forest
DTP	Desk Top Publishing
EC	Executive Body
EDC	Eco-Development Committee
FA	Forest Area
GA	Geographic Area
GB	General Body
GBH	Grith at Breast Height
GCH	Grith at Collar Height
GIM	Green India Mission
GIS	Geographic Information System
GKS	Gaon Kalyan Samiti
GP	Gram Panchayat
HH	Household
IGA	Income Generation Activity
INR	Indian Rupee
IRS	Indian Remote Sensing
ISFR	Indian State of Forest Report
ITDA	Integrated Tribal Development Agency
JFM	Joint Forest Management
JICA	Japan International Cooperation Agency
KBK	Kalahandi, Balangir and Koraput Region
LBDC	Loose Boulder Check Dams
MDF	Moderately Dense Forest
MGNREGS	Mahatma Gandhi National Rural Employment Generation Scheme
MSME	Micro Small and Medium Enterprise
MT	Metric Ton
NPV	Net Present Value
NRLM	National Rural Livelihood Mission
NTFP	Non-Timber Forest Produce / Product
OC	Other Caste
OEMF	Odisha Environment Management Fund
OF	Open Forest
OFSDP	Odisha Forestry Sector Development Project
OFSDS	Odisha Forestry Sector Development Society
OLM	Odisha Livelihood Mission
OMBADC	Odisha Mineral Bearing Area Development Corporation
OMC	Odisha Mining Corporation
PF	Protected Forest
PIA	Project Implementing Agency
RF	Reserve Forest
RFA	Recorded Forest Area
SC	Scheduled Caste
SEPLS	Socio-Ecological Production Landscapes and Seascapes
SHG	Self Help Group
SMC	Soil Moisture Conservation
SPSS	Statistical Package for Social Science
ST	Scheduled Tribe
UF	Unclassed Forest
VDF	Very Dense Forest
VLFP	Village Level Forest Protection Committee
VSS	Vana Surakshya Samiti
WS	Watershed
W&S	Water and Sanitation



Executive Summary

Executive Summary:

Introduction: Ama Jangala Yojana (AJY) is being implemented through Odisha Forestry Sector Development Society to promote sustainable forest management in the state with emphasis on livelihood support for the communities living in the forest fringe villages with the support of VSS. AJY is being implemented in the areas which have not been covered under OFSDP Phase-I or are not proposed to be included in OFSDP Phase-II. The baseline study followed “observational” and quasi experimental design, with reference to intervention and comparable group study. Following Stratified Random Sampling, the study covered 16 Ranges, 150 VSS, 148 SHGs and 751 households. Both structured and semi-structured tools were administered to capture information from different stakeholders.

Vana Surakshya Samiti (VSS): In the study area, VSS are constituted mostly taking members from one village, irrespective of intervention and control area. Average number of households per VSS has been 97 in case of control and 99 in intervention. Average number of male members per VSS is marginally higher than female members. The average number of members in the EC have been 14 in control with 62.27 percent male and 43.54 percent female. In intervention, average EC member per VSS has been 16 with 56.31 percent male and 44.06 percent female.

Meeting and Documentation: The VSSs have been organizing their GB meetings annually. However, during the year 2019-20, some VSS organized one GB meeting (control: 10.00 percent; intervention: 10.83 percent) while two GB meetings were organized by 90.0 percent VSS in control and 52.50 percent VSS in intervention. In 36.67 percent VSS, in intervention (no VSS in control) more than 2 GB meetings were also organized during the year. In around 20.00 percent VSS in control and 46.67 percent VSS in intervention, special GB meetings were also organized. Organization of Executive Committee meeting observed to be less than or equal to 6 times (≤ 6) in 63.64 percent VSS in control and 48.33 percent VSS in intervention. Around 36.36 percent VSS in control and 28.33 percent in intervention organized their EC meetings between 6 to 12 (>6 & <12) times during the same period, i.e., 2019-20. So, organization of executive committee meeting observed to be less than 12 times per year (once per month on an average) in 100.00 percent VSS in control and 76.67 percent VSS in intervention. On the other hand, 23.33 percent VSS in intervention (No VSS in control) organized ≥ 12 EC meetings during the year 2019-20. The VSSs have been maintaining different documents to record their functioning. Number of records maintained at VSS level observed to be better in intervention pockets in comparison to control.

Capacity Building of VSS Members: Capacity building measures have been taken to improve the skill base and understanding of the VSS members. On an average 16.67 percent EC members in control and 16.44 percent EC members in intervention have received training on different themes. Apart from EC members, other members of the GB have also been trained. Themes of trainings have been survey and demarcation of assigned area, book-keeping, nursery raising, plantation (Block / ANR with gap plantation), SMC measures, vermicomposting, preparation of micro plan, forest protection and management, VSS management, mushroom farming, fishery, wildlife protection etc. Apart from this, VSS members / villagers in common have also received different trainings under various schemes / programs.

Key Activities by VSS: The VSSs have been involved in a number of activities like (a) forest protection (100.0 percent in control and intervention), (b) wildlife protection (control: 36.67

percent; intervention: 69.17 percent), (c) bio-diversity conservation / protection (control: 6.67 percent; intervention: 37.50 percent), (d) protection of catchment area (control: 10.00 percent; intervention: 30.83 percent), (e) conservation / management of water resources (control: 10.00 percent; intervention: 19.17 percent), (f) micro plan preparation (intervention: 100.0 percent; no VSS in control), (g) prevention of encroachment (intervention: 1.67 percent; no VSS in control), (h) coordination with other dept. schemes / program (intervention: 19.17 percent; no VSS in control) etc. Association of VSS in product market linkage (including NTFP) or protecting eco sensitive zone is not observed.

Forest Protection and Management: As VSS has been a local institution, members from 68.97 percent households in control and 93.89 percent households in intervention have been involved in different activities of VSS. However, in case of meetings of VSS, 22.8 percent households in control and 46.5 percent households in intervention have higher degree of participation; followed by moderate participation by 51.7 percent households in control and 47.9 percent households in intervention. Forest conservation and management trainings have been conducted by the Forest Department from time to time for VSS members in general and 11.7 percent households in control and 23.1 percent in intervention have received such trainings. Topics covered in the training are like (a) community mobilization, (b) fire protection mechanisms, (c) micro plan preparation, (d) wildlife protection, (e) documentation / record keeping, (f) survey and demarcation, (g) nursery raising, (h) SMC works, (i) works related to Assisted Natural Regeneration etc. Apart from forest protection and management, livelihood related trainings have also been imparted like (a) mushroom cultivation, (b) agricultural trainings, (c) farming technologies, (d) goat farming etc.

Benefit from Forest Resources: People residing in the forest fringe villages have different degree of dependency on forest resources, like fuelwood, fodder, bamboo, and small timber. The villagers / VSS members have been deriving different economic benefits from the forest in different seasons. Average of about 52.77 percent households from 60.00 percent VSS in control and 53.20 percent households from 67.50 percent VSS in intervention collect dry leaf and green fodder (grass) from the forest for domestic purposes with an average of 3.72 MT (1.45 quintal per year per HH) and 5.0 MT (3.57 quintal per year per HH) respectively. Intermediate forest yields like small timber and firewood are collected by 78.77 percent households from 96.67 percent VSS in control and 63.22 percent households from 85.00 percent VSS in intervention with an average collection of 3.81 MT (4.64 quintal per year per HH) and 5.66 MT (7.09 quintals per year per HH) respectively. Different types of non-timber forest produce (NTFP) are collected (seasonal basis) by 48.94 percent households from 83.33 percent VSS in control and 48.23 percent households from 80.0 percent VSS in intervention with an average collection of 0.87 MT per year (1.47 quintal per year per HH) and 2.58 MT per year (3.93 quintal per year per HH) respectively. Collection of NTFPs by families in the forest fringe villages are more in comparison to households living in distant places from the forest. Dependency on major harvests (timber / wood) is limited to 13.53 percent households in 30.00 percent VSS in control and 17.81 percent households in 35.00 percent VSS in intervention, depending upon the clearance from the VSS.

Forest Fire Protection and Management: Incident of forest fire is reported to happen occasionally in control and intervention areas in last two years which is managed by VSS with the support of forest officials.

Human-Animal Conflict: Wild animal impacting agricultural field is reported in the forest fringe villages. Villagers normally manage the situation and try to keep the wild animals out of their fields. But Human animal conflict is also reported in some of the studied villages which are not of serious nature and managed by VSS. It has been one of the causes for poor cropping intensity and thereby poor agricultural income of the farmers. Due to wild animals, crop damage is reported to be common in these villages and gross farm output has been low.

Self-Help Group (SHG): All the studied villages observed having women SHG/s, on an average around 6-7 women SHGs per village, and they have been involved in different socio-economic activities. In most of the villages (control: 51.7 percent, intervention: 49.6 percent), there are more than 5 SHGs existing on an average; and in 3.4 percent control and 7.6 percent intervention villages, at least one women SHG is existing. So, in 96.6 percent control and 92.4 percent intervention villages, there are more than one WSHG.

Inclusion of Poor: On an average, 69.0 percent members of the SHGs in control and 68.9 percent in intervention belong to poor economic category

SHG Governance and Management: All the SHGs, both in control and intervention, have their bank account (100.0 percent) in the nearest bank branches. The SHGs have been maintaining different documents / registers like (a) meeting register (100.0 percent SHGs in control and intervention), (b) cash book (100.0 percent SHGs in control and intervention), (c) loan register (control: 69.0 percent; intervention: 55.5 percent), (d) loan repayment register (control: 65.5 percent; intervention: 52.1 percent) etc. Meetings of the SHGs are mostly organized on monthly basis but in certain cases, it is also organized weekly. Majority of the SHGs (control: 62.1 percent; intervention: 77.3 percent) conduct meeting on regular basis in >90 percent cases whereas regularity of meeting has been less in 6.9 percent SHGs in control and 1.7 percent in intervention (<=50.0 percent).

Thrift and Internal Credit: Per member saving per period (weekly / monthly) varies between Rs.10.00 to Rs. 100.00 as per group norm. All the SHGs (100.0 percent in control and intervention) have been involved in thrift and credit activities to meet their financial requirements. The norm of group level saving is mostly on monthly basis (control: 100.0 percent; intervention: 99.2 percent). Average per group savings in intervention areas (Rs.47,268.39) is comparatively higher than control areas (Rs. 35,317.28). Average per member savings has been Rs. 3,375.38 in control and Rs. 4,276.32 in intervention. About 17.24 percent SHGs in control and 24.58 percent SHGs in intervention areas are having group savings of > Rs. 50,000. On the other hand, 3.45 percent SHGs in control and 7.63 percent SHGs in intervention are having average group savings amounting to <=Rs.10,000.00.

External Credit Linkage: Of the total studied SHGs, 62.1 percent SHGs in control and 48.7 percent SHGs in intervention accessed credit (from different sources) in last 3 years. Many SHGs (control: 37.9 percent, intervention: 52.1 percent) have not taken any credit from the bank due to various reasons like no plan for credit utilization, absence of specific credit needs, own fund or funds accessed from different sources is adequate to meet their internal demand, no such business development plan that demands credit linkage, poor performance of the SHG for which banks would have found them unsuitable for providing credit, earlier credit outstanding etc. Average bank credit per group linked with the banks in last 3 years has been Rs. 1,15,555.56 in control, and Rs. 1,73,250.0 in intervention, irrespective of times of linkage with the banks. Bank credit found outstanding with 41.4 percent SHGs in control (average of Rs. 70,948.83) and 34.5 percent SHGs in intervention (average of Rs. 80,292.83).

Involvement in IGA: Involvement of SHGs in IGA (both individual and group) found in 27.59 percent groups in control and 35.29 percent groups in intervention. Further, of the total groups involved in IGA, 62.50 percent in control and 69.05 percent in intervention are involved in group IGA, individual IGA observed in 37.5 percent SHGs in control and 30.95 percent SHGs in intervention. Different IGAs have been taken up by the SHGs / members of the SHGs but in majority cases, it has been agricultural activities. Prevalence of IGA activities in aggregation, processing, value addition, supply chain management and over and above in off-farm and non-farm sector is rare. Selected members of the SHGs are only involved in the IGAs. Of the total

SHGs involved in IGA, in 37.5 percent SHGs, ≤ 25.0 percent members are involved in control, whereas in intervention ≤ 25.0 percent members are involved in 31.0 percent SHGs.

Farm Forestry Promotion: Adoption of farm forestry models is observed in 20.69 percent households in the control and 20.30 percent households in the intervention areas. Households belonging to other social categories (OC) are having better adoption (control: 36.67 percent; intervention: 25.0 percent) in comparison to SC (control: 17.39 percent; intervention: 17.86 percent) and ST households (control: 16.30 percent; intervention: 18.45 percent). Economically better off households have higher adoption rate in control areas (50.00 percent) whereas poor households have better adoption in intervention (20.38 percent). Farm forestry is better adopted by semi-medium and medium farmers in comparison to marginal and small farmers in control. However, marginal and small farmers in intervention areas are more involved in farm forestry in comparison to control. Average area devoted for farm forestry is about 0.28 ha. in case of control and 0.23 ha. in case of intervention.

Biodiversity: Two activities were observed in the studied sites, i.e., (a) ANR without gap plantation, and (b) Block Plantation. Of the total assigned forest area, the average degraded area taken up for operation under ANR without gap is around 49.69 ha. and implemented by 96.43 percent VSS. About 3.57 percent VSS have taken up Block Plantation in average area of 10.0 ha. The plantation assessment was conducted in 29 sample plots, and it is observed that a number of natural species existing in the assessed plots covered under ANR without gap planation. Apart from tree species, several herb and shrub species were also observed in the sites.

To understand plant diversity, two indices are computed, i.e., Shannon Index (Shannon-Wiener Index) (H) and Simpson Index (D). As per Shannon-Wiener Index, 7.1 percent sites fall in to “Rank 1” (low diversity), 42.9 percent to “Rank 2”, 50.0 percent to “Rank 3” and no site found in “Rank 4” (high diversity) category. Simpson’s Diversity Index (Reciprocal Index) shows that about 21.4 percent sites fall in to “Rank 1” (low diversity), 28.6 percent in to “Rank 2”, 28.6 percent in to “Rank 3” and remaining 21.4 percent in to “Rank 4” (high diversity).

Livelihood Scenario: In all the social categories, majority of the households are having ration card in both control and intervention areas. Around 93.3 percent villages in control and 92.4 percent villages in intervention have more than 75.0 percent houses that have ration card (poor category). At the studied household level, 93.10 percent households in control and 94.72 percent in intervention areas are having ration card. The ST households are having higher enrolment in comparison to other social categories, followed by households belonging to OC categories among the total card holders. Further, looking by card holding in each social category, it is observed that percentage of SC (95.65 percent) households of the total SC household and percentage of ST households (95.65 percent) of the total ST households have higher enrolment in comparison to OC households in Control areas. But in intervention areas, ST households have better holding in comparison to SC and OC households and number of OC households having ration card is marginally higher than SC households.

Occupation and Income: Agriculture has been the primary occupation of most of the able-bodied members, followed by wage. About 40.1 percent persons in control and 34.4 percent in intervention are primarily engaged in agriculture. Wage (agriculture / daily wage) has been the primary occupation of 25.1 percent people in control and 30.8 percent in intervention. For a segment of population, 8.0 percent in control and 9.6 percent in intervention, NTFP collection and its selling is the primary occupation. People engaged in salaried job, both temporary and permanent, amounts to 10.3 percent in control and 9.3 percent in intervention. Wage related engagement and NTFP collection has been major secondary sources of income for people, irrespective of intervention and control.

About 71.7 percent members in control and 70.9 percent in intervention are having average annual income in the range of $< 60,000$. Looking by sex, it is pertinent that 57.6 percent male and 91.8 percent female fall into the lowest range in control and 54.2 percent male, and 93.1

percent female fall into the lowest income range in intervention. So, a greater number of females, engaged in different occupations, have lower income in comparison to their male counterpart. More percentage of male members observed in second ($>60,000 \leq 1,20,000$) and third ($>1,20,000$) income category in both control and intervention areas. Average annual income of male engaged in different occupations has been comparatively higher than that of female. The income difference between male and female is significant, irrespective of the sector of employment ($p < 0.05$, sig.: .000). In control area, observation remains same where significant difference is observed between male and female headed households, households headed by male members ($p < 0.05$, sig.: .000) have higher income in comparison to female headed households.

Land Holding: Majority are marginal farmers in control (51.72 percent) as well as in intervention (54.95 percent) areas, having land holding below one ha. It is followed by small farmer (Control: 24.83 percent; Intervention: 21.62 percent) with holding size between one to two ha. So, together, marginal, and small farmer accounts to 76.55 percent of the total households holding land (own land) in control and 84.32 percent in intervention. Average land holding (own) of marginal farmers has been 0.60 ha. in control and 0.52 ha. in intervention. Small farmers, on an average hold 1.49 ha. in control and 1.55 ha. in intervention. Further land holding by social categories reflect that, 94.57 percent ST households having own land, while 96.67 percent OC households and 65.22 percent SC households have own land in case of control areas. In case of intervention, 82.62 percent ST households, 80.36 percent SC households and 85.23 percent OC households have own land. The average land holding is lowest among the SCs (0.8 ha.) whereas families belonging to ST and OC categories have average holding of 1.0 ha. Average land holding by social categories reflect that households of OC categories have better average own land holding (1.64 Ha.) in comparison to other social groups in control areas. Whereas, in intervention, ST households have marginally higher average own land holding (1.10 Ha.). Similar trend is observed in case of operational holding.

Crop Production: Paddy has been the prime crop during Kharif (Control: 93.79 percent farmers; Intervention: 91.91 percent farmers). Some farmers also cultivate Paddy during Rabi season, where irrigation facility is available. Average area devoted for paddy cultivation has been 0.97 ha. in control and 0.86 ha. in intervention. Average crop productivity in certain crops found below the state average whereas certain crops are in the same productivity range to that of the State.

Cluster Development: Pigeon pea (Arhar) has been the major production in 18.3 percent VSS and production growth potential to the tune of 37.2 percent can be achieved in 15.8 percent VSS. Black gram is commonly grown by farmers in 35.0 percent VSS and production growth potential is about 57.7 percent in case of 33.3 percent VSS. Green gram production considered to be higher in 23.3 percent VSS and 23.3 percent VSS having the production growth potential of more than 100.0 percent. Groundnut is one of the major commodities produced by farmers in 6.67 percent VSS which is having production growth potential of 46.7 percent covering all these 6.67 percent producing VSS.

Employable Skill Base and Skill Training: Employable skill base of the members in different skill categories observed in 6.10 percent people of sample households in control and 9.72 percent in intervention. Poor skill base is observed in both intervention and control areas. Comparing persons having different skill base by sex, it is evident that around 9.22 percent male and 2.87 percent female in control; and 14.27 percent male and 4.94 percent female in intervention area are having different skills. Members of about 7.59 percent households in control and 12.54 percent households in intervention have received skill-based training on different skills / trades. Of the total, who got skill-based training, 45.45 percent in control and 31.58 percent in intervention got employment in different places with average monthly remuneration of about Rs. 6,000.00 in control and Rs.10,500.00 in intervention.

Household Expenditure: Food expenditure of 29.66 percent households in control and 25.21 percent households in intervention observed ≥ 57.0 percent of the total household expenditure, whereas remaining households have food expenditure < 57.0 percent of their total expenditure. Taking monthly per capita expenditure benchmark of Rs. 695.00 (Rs. 37,530 per family per year with average family size of 4.5) for Odisha (Tendulkar committee estimation), it is observed that 92.41 percent households in control and 87.46 percent households in intervention are having annual expenditure more than Rs. 37,530.00, which means 7.59 percent households in control and 12.54 percent households in intervention do less expenditure than the benchmark and continue to be below the poverty line. Considering national benchmark of Rs. 816.00 per capita expenditure (Rs. 44,064 per family per year with average family size of 4.5), it is observed that around 88.28 percent households in control and 82.34 percent in intervention expend more than the benchmark. Alternatively, 11.72 percent households in control and 17.66 percent households in intervention having annual expenditure less than the stipulated poverty benchmark price.

Indebtedness: The households have been taking credit from different formal and semi-formal / informal sources to meet their financial requirements. A maximum of about 21.38 percent families in control and 22.77 percent families in intervention found having credit from single or multiple sources. Among different sources, credit taken by families from money lender/s observed comparatively less (control: 4.83 percent, intervention: 6.11 percent) than emerging / established credit sources. Credit from banks / formal financial institutions is accessed by 11.72 percent families in control and 7.76 percent in intervention, whereas credit from cooperatives (agricultural cooperatives) is accessed by 21.38 percent households in control and 13.86 percent in intervention. Local SHGs have been the primary lender to majority of the households. Around 18.62 percent households have taken credit from SHGs in control and 22.77 percent in intervention.

Average credit amount outstanding per household observed to be highest among all the sources in case of agricultural cooperatives (control: Rs. 47,458.06, intervention: Rs. 36,952.38) and banks (control: Rs. 34,483.12; intervention: Rs. 50,273.40). The families belonging to OC have better accessibility to banking system (23.33 percent) and cooperatives (36.67 percent) in comparison to SC (banking: 8.70 percent; cooperative: 17.39 percent) and ST (banking: 8.70 percent; cooperative: 17.39 percent) families in control. Similar situation is also observed in case of intervention areas. Further, in case of poor and non-poor households, bank credit outstanding is higher in case of non-poor in both control and intervention along with credit outstanding with cooperatives. But percentage of poor households having credit outstanding with SHG is more than non-poor in intervention and marginally less in case of control.

Migration: It is observed in the study that members from 11.72 percent households in control and 7.59 percent households in intervention migrate to different places in search of employment. Place of migration has been to States like Andhra Pradesh, Karnataka, Kerala, Gujarat, Tamil Nadu, Maharashtra etc. People also found migrating to different Districts within the State of Odisha. Average annual income of migrating people (last year) was around Rs. 1,52,090.91 in control and Rs. 1,11,844.44 in the intervention. People, who migrate within the State for casual labour, receive advance for migrating to the destined place. The average amount of advance is about Rs. 3,000.00 per person.

Potentials for Livelihood Enhancement and Key Challenges: People / households have different livelihood related requirements, like availability of institutional credit facility is a priority of 16.81 percent households, flexible repayment of institutional credit (second ranked by 58.12 percent), on time credit availability as per the need (ranked second by 53.98 percent) etc.



Section I Introduction and Background

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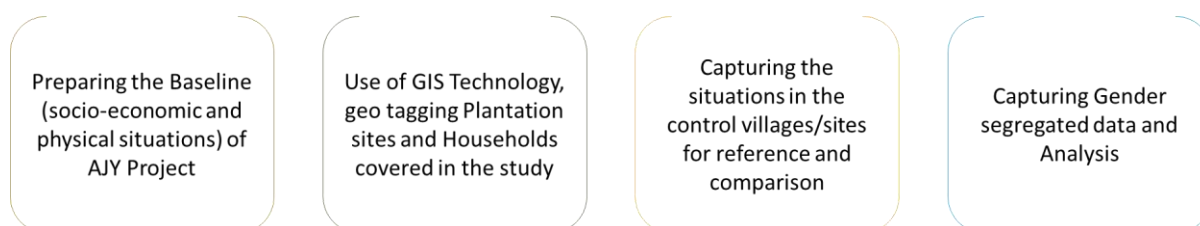
1.0 Introduction:

Ama Jangala Yojana (AJY) is an endeavor of the Government of Odisha, Forest & Environment Department, being implemented through Odisha Forestry Sector Development Society to promote sustainable forest management in the state with emphasis on livelihood support for the communities living in the forest fringe villages in VSS mode. AJY is proposed to be implemented in 30 Territorial & Wildlife Divisions covering 7,000 VSSs, which have not been covered under OFSDP Phase-I or are not proposed to be included in OFSDP Phase-II. The scheme envisages further strengthening of the participatory forest management, in the state by way of bringing the informal village level institutions/bodies involved in the protection and management of forest resources under the fold of AJY in addition to creation of new VSSs.

The project is having four broad components, i.e., (1) preparatory works like JFM area selection, community mobilization and institution building, survey and demarcation of assigned area and treatment area and micro-planning; (2) support activities like collaboration with partner NGOs for the implementation of the scheme, construction of VSS building for meeting, product aggregation etc.; (3) forest restoration, i.e., ANR without gap and ANR with gap plantation of 200 plants over 2.5 lakh ha., Block Plantation over 1000 Ha. where area for ANR is not available; and (4) support managerial activities.

1.1 Objective and Scope of the Study:

Specific objectives of conducting baseline study and physical situation analysis were¹; (a) to prepare the baseline (socio-economic and physical situations) of AJY Project; (b) use of GIS technologies during the study, i.e., geotagging of the houses covered under the study; (c) recording of all the sample sites through GPS coordinates; (d) conducting the study in collaboration with the project units (DMU and FMUs); (e) to capture the situations in the control villages/sites for reference and comparison; and (f) to capture the gender segregated data and its analysis.



The overall scope of work looks at developing baseline socio economic condition of the project and control households and baseline physical situation of the project area. Considering the overall scope of the study, and further looking at the components of intervention, the baseline socio economic study and baseline physical situation was assessed. With respect to physical situation assessment, the coverage of degraded forest area and type of tree species, average height of the tree's and average GBH of the existing trees etc. were assessed. Similarly, with respect to socio economic baseline, in addition to the

¹With reference to the Terms of Reference (TOR)

profile of the forest fringe households, the current livelihood, income, employment and consumption pattern etc. were also assessed.

1.2 Approach and Methodology

The baseline study followed “observational design” linking the project perspective to the expected study outputs. The study was exploratory and empirical evidence based, adopting mixed method approach. The baseline study design adheres to quasi experimental design, with reference to intervention and comparable group study.

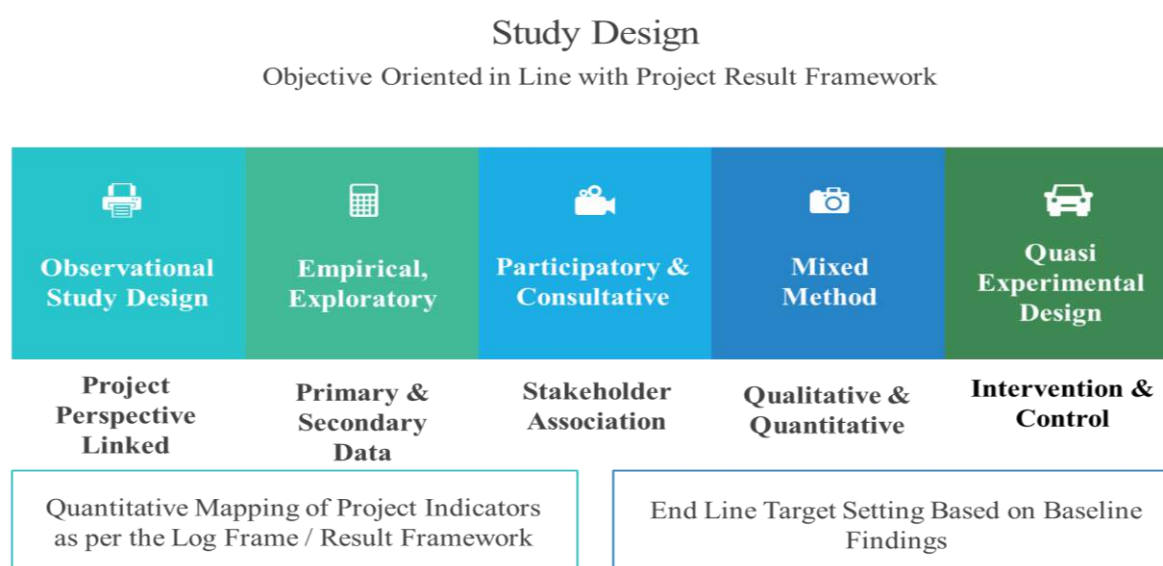


Figure1: Study Design

As a part of study methodology, available literature related to the project were reviewed with analysis of existing database / information of the project. The desk review was followed by consultation meeting/s with the project officials and finalization of study strategy. Primary information was collected from different stakeholders at the sample project (intervention) and non-project sites (comparable area), through interview, focus group discussion and physical measurement of plantation sites. It was also encompassed consultations with forest officials at the sample project sites.

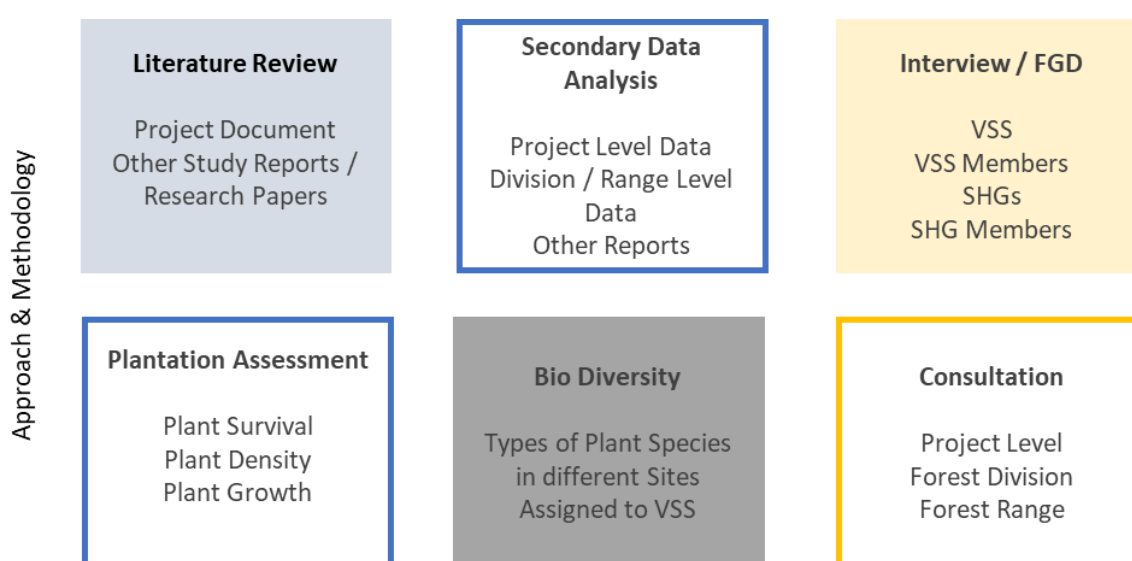


Figure 2: Methodological Approach

1. Participatory and consultative mode of execution, involving stakeholders in the study process;
2. Secondary data collection and its analysis, apart from primary data;
3. Statistically significant sample frame that is representative to the project universe;
4. Mapping indicator specific baseline values for future evaluation of the project;
5. Covering project components and activities that are linked to project intervention;
6. Designing tools (mixed method of data collection) that are responsive to the project aspects;
7. Use of technology for capturing data (GIS application);
8. Use of statistical software for data analysis (SPSS / R);
9. Peer review and client feedback mechanism for quality improvement.

Qualitative	Quantitative
FGD (Convenient Sampling of Target Mass)	Random Sampling of Beneficiaries / Target mass
Community Interaction (Convenient Sampling of Target Mass)	Quantitative Measurement of Indicators & Rating (Likert Scale: 5 points)
Case Analysis (Study of information rich cases)	Mapping Access, Benefit and Success Pattern (Quantitative data)
Semi-structured qualitative questions for exploration (Project Aspects)	Testing Hypothesis (H0 / H1)
	Rate of Success (in Percent / proportion)
	Correlation of attributes for Baseline Conclusion

Figure 3: Mixed Method Overview

The study design and the adopted approach and methodology suitably incorporates the suggestions of the officials of the Forest and Environment Department, Government of Odisha. The methodology was discussed with the officials of the OFSDS (F&E Dept., Govt. of Odisha) from time to time and finalized incorporating their valuable suggestions. Further, for elaborate discussion on the study approach and methodology, an exclusive meeting was organized on 13th of January 2020 under the chairpersonship of Additional Chief Secretary to Government, F&E Dept., Govt. of Odisha. The suggestions made by the house were made a part of the study design suitably.

1.2.1 Sample Frame:

The baseline study covered selected Divisions and Ranges that are under AJY implementation. Along with intervention area, control area was also covered for comparative analysis of baseline situation. The overall sample frame for the study is presented in the matrix below. Details of sampling strategy are discussed in subsequent sub-sections. As the study aims at baseline socio economic survey of households in the project area and mapping of physical situation of the degraded forest areas taken up for plantation under the project, both the activities were taken up simultaneously in selected Forest Division and Ranges. In this process, VSSs protecting concerned plantation on degraded forests and the members of VSS were covered for the baseline of physical situation as well as the household socio-economic parameters.

1.2.2 Sampling of Forest Ranges:

The available GIS maps of OFSDS (F&E Dept., Govt. of Odisha) were used to demarcate geographical areas under AJY and deriving the sample Ranges for coverage under the baseline. The existence of VSS and forest area (Ha.) assigned to them were also analyzed using the GIS maps. For the baseline study, 12 intervention Divisions were selected, representing different Forest Circles of the State. From each Forest Division, Range/s was selected randomly for the study. A total of 17 Ranges (including intervention and control Ranges) were selected from 12 AJY Forest Divisions. List of Districts and Ranges are presented in the table.

Table 1: Sample AJY Forest Divisions and Ranges

SN	Forest Divisions (AJY)	Study Ranges	SN	Forest Divisions (AJY)	Study Range
1	Anugul	Jarapada	7	Kalahandi (N)	M.Rampur
2	Balliguda	Balliguda; Tumudibandh	8	Keonjhar	Keonjhar
3	Bargarh	Bhatli	9	Rayagada	Rayagada
4	Bolangir	Bolangir	10	Nabarangpur	Jharigaon
5	Bonai	Bonai Kuliposh	11	Rairakhol	Girishchandrapur Naktideula Rairakhol
6	Deogarh	Deogarh	12	Rourkela	Rajgangpur Biramitrapur

Note: Some of the Forest Ranges, decided earlier for coverage changed due to exogenous factor (COVID 19 pandemic situation).

Coverage of Sample Forest Division & Ranges under AJY, Odisha

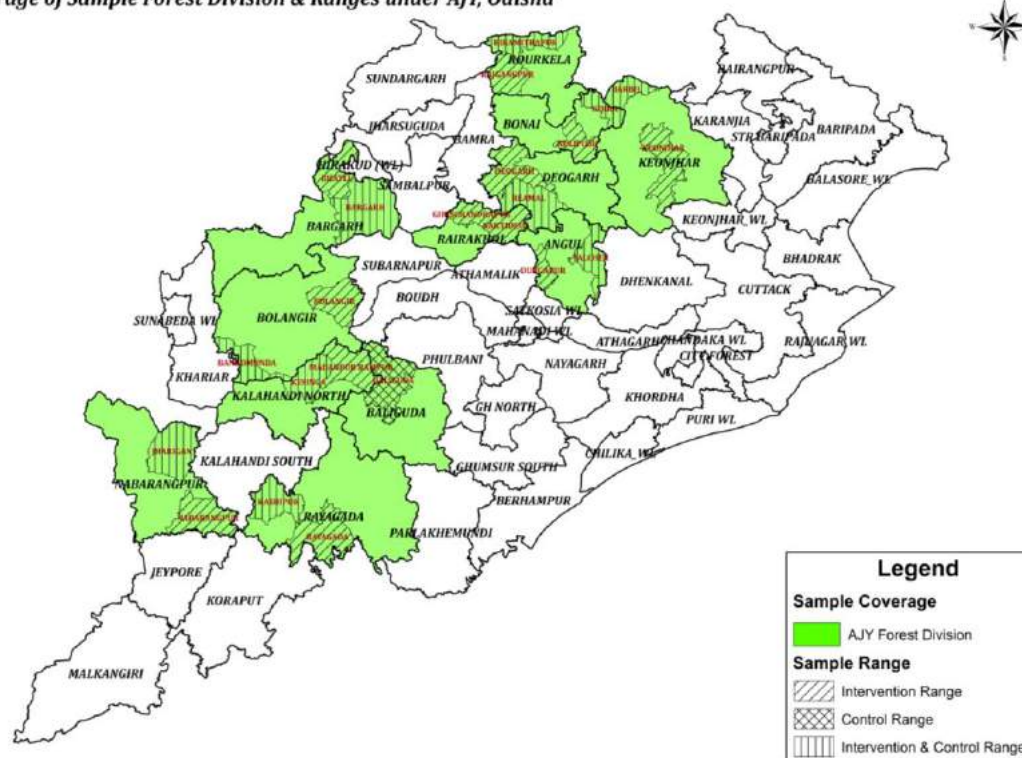


Figure 4: Coverage of Sample Forest Division and Ranges

1.2.3 Selection of Control / Comparable Sample:

For developing a baseline, only those control villages were covered which were more or less of same type, consisting of non-contiguous forest fringe villages where AJY is not planned for implementation.

In the selection process, care was taken to ensure that the control villages were within the same Forest Division / Forest Range, assuming the socio-economic characteristics in a given Division are homogenous, and non-contiguous characteristics were deliberately chosen so as to negate project externalities among the control groups. List of selected control areas is presented in the matrix.

Table 2: Control Ranges; AJY

SN	Control Ranges of AJY	
	Division	Control Range
1	Bargarh	Bhatli
2	Bolangir	Bolangir
3	Bonai	Bonai, Kuliposh
4	Kalahandi (N)	M. Rampur
5	Rourkela	Biramitrapur
6	Rayagada	Rayagada

NB: A total of 7 AJY Ranges were covered as Control Ranges. A list of selected Ranges is presented here for information. Seven control AJY Ranges were selected in consultation with officials at the Division level.

1.2.4 Sampling of VSS:

In case of AJY, average number of VSS per Range is about 26 numbers. To select the VSS sample, proportionate distribution of VSS in sample Range under each Forest Division is calculated. Based on proportionate distribution of VSS, numbers of sample VSS was estimated across each Range and Division. Details of proportionate distribution of VSS across Forest Ranges and number of samples VSS covered is presented in the matrix.

Table 3: Distribution of VSS Sample; AJY

Division	Intervention Range	Intervention VSS	Proportion	Sample Covered
Anugul	Jharpada	21	6.60	8
Balliguda	Balliguda, Tumudibandha	27	8.49	10
Bargarh	Bhatli	29	9.12	11
Bolangir	Bolangir	19	5.97	7
Bonai	Bonai, Kuliposh	28	8.81	11
Deogarh	Deogarh	32	10.06	12
Kalahandi (N)	M. Rampur	39	12.26	16
Keonjhar	Keonjhar	13	4.09	5
Nabarangpur	Nabarangpur	27	8.49	10
Rayagada	Rayagada	30	9.43	10
Rairakhol	Girishchandrapur, Naktideula, Rairakhol	26	8.18	10
Rourkela	Rajgangpur	27	8.49	10
Total	16 Ranges	318	100.00	120

Note: In Balliguda FD, two intervention Ranges were covered, i.e., Balliguda and Tumudibandha. From Balliguda, 6 VSS were covered and 4 VSS were covered from Tumudibandha. Two Ranges were covered in Bonai, i.e., Bonai (1 VSS) and Kuliposh (10 VSS); In Rairakhol Division, three Ranges were covered, i.e., Girishchandrapur (8 VSS), Naktideula (1 VSS) and Rairakhol (1 VSS).

After the finalization of number of VSS per Forest Range, VSS were selected through stratification. The VSS in different Ranges and Forest Divisions are having assigned forest area of different size (in ha.). For the selection of VSS for baseline, assigned area of VSS was considered as the criteria for stratification and selection. The objectives of considering assigned area for VSS stratification are (1) to understand the management principles in case of higher forest area Vs lower forest area (VSS is objectively designed and formed for forest protection / management), (2) forest based livelihood security and alternate means of livelihood in different forest area coverage, (3) volume of collection and selling of produces and emergence of any specific forest based production clusters around forest area of different size, (4) mapping the opportunity and viability of promoting NTFP / other production specific clusters in different forest bases, and (5) infrastructural facilities and services that are prevailing at the village level with different forest area coverage.

For the stratification and selection of VSS, the difference of operational forest area of VSS under each Forest Range from the mean area (in ha.) was estimated. VSS were selected from three different Ranges, based on their deviation from the mean, i.e., higher positive deviation (higher forest area than the mean forest area), negative deviation (lower forest area from the mean value) and VSS having forest area around the mean value (marginally higher or lower than the average value). Graphical presentation of stratification and selection of sample is presented below as an example.

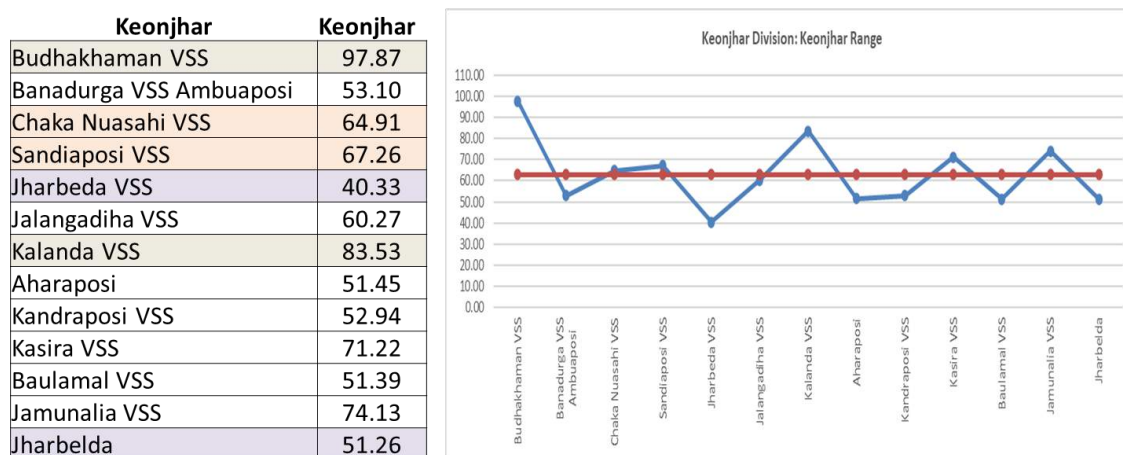


Figure 5: Distribution of VSS based on Area Coverage and Mean Area (in Ha.)

Based on the distribution of VSS, taking the mean value as the cut-off, total sample VSS in different Forest Ranges and Forest Divisions were selected. Detail distribution of VSS is presented in the table.

COVERAGE OF INTERVENTION & CONTROL VSS UNDER AJY

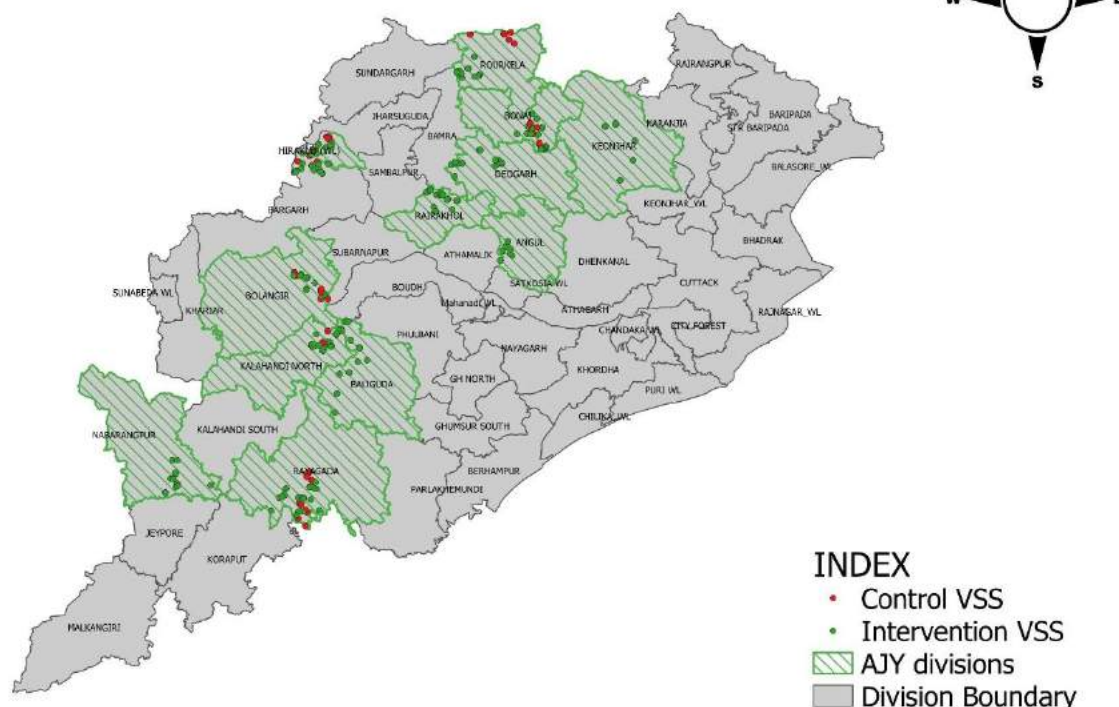


Figure 6: Intervention & Control VSS & Villages Covered in the Baseline

Table 4: Distribution of Sample VSS and Households; AJY (Intervention Area)

Division	Intervention Range	> Mean		Around Mean		< Mean		Total	
		VSS	HH	VSS	HH	VSS	HH	VSS	HH
Anugul	Jharpada	3	15	3	15	2	10	8	40
Balliguda	Balliguda & Tumudibandh	3	15	4	20	3	15	10	50
Bargarh	Bhatli	3	15	4	20	4	20	11	55
Bolangir	Bolangir	3	15	2	10	2	10	7	35
Bonai	Bonai & Kuliposh	4	20	4	20	3	15	11	55
Deogarh	Deogarh	4	20	4	20	4	20	12	60
Kalahandi (N)	M.Rampur	5	25	5	25	6	30	16	86
Keonjhar	Keonjhar	2	10	1	5	2	10	5	25
Nabarangpur	Nabarangpur	4	20	3	15	3	15	10	50
Rayagada	Rayagada	3	15	3	15	4	20	10	50
Rairakhol	Girishchandrapur	2	10	4	20	4	20	10	50
Rourkela	Rajgangpur	4	20	3	15	3	15	10	50
Total		40	200	40	200	40	200	120	606

Note: VSS: Vana Surakshya Samiti; HH: Household

1.2.5 Sampling of Households:

In order to undertake socio-economic baseline, sampling of households constitutes to be the foremost step. The study covered 5 households (about 10.0 percent covering SHG households) were sampled out from each of the project village / selected VSS based on “Stratified Random Sampling” by considering social category and economic category as stratum. Further the Stratified Random Sampling was followed as per the rule of proportionality. So that according to the percentage share of each stratum in the total population, households correspondingly equal in proportion were considered in the overall sampling. By considering 5 households per project village, the study covered a total sample of 606 households in project area and 145 households in control area. The Range / Division wise number of sample households covered under the study is presented in the matrix (Table 5).

1.2.6 Sampling of SHG:

The study covered one SHG from each VSS village, i.e., a total of 148 SHGs, i.e., 29 SHGs from control and 119 SHGs from intervention areas (Table 5). The SHGs covered under the sample falls broadly in to two categories, i.e., SHGs being nurtured by the VSS (functionally low in performance) and SHGs that are already part of the local federation (cluster / GP level federation) (functionally better off).

1.2.7 Overall Sample Coverage:

The study covered a total of 16 intervention Forest Ranges (FMU) and 7 control / comparable Ranges from the same Forest Divisions for the comparison of findings. Detail sample frame of AJY is presented in the matrix.

Table 5: Sample Coverage; AJY

SN	Forest Divisions	Forest Ranges			VSS			SHG			Household		
		I	C	T	I	C	T	I	C	T	I	C	T
1	Anugul	1	0	1	8	0	8	8	0	8	40	0	40
2	Balliguda	2	0	2	10	0	10	10	0	10	50	0	50
3	Bargarh	1	1	1	11	5	16	11	5	16	55	25	80
4	Bolangir	1	1	1	7	5	12	7	5	12	35	25	60
5	Bonei	2	2	2	11	5	16	11	5	16	55	25	80
6	Debagarh	1	0	1	12	0	12	12	0	12	60	0	60
7	Kalahandi (N)	1	1	1	15	5	20	16	5	21	86	20	106
8	Keonjhar	1	0	1	5	0	5	4	0	4	25	0	25
9	Nabarangpur	1	0	1	10	0	10	10	0	10	50	0	50
10	Rayagada	1	1	1	10	5	15	9	4	13	50	25	75

SN	Forest Divisions	Forest Ranges			VSS			SHG			Household		
		I	C	T	I	C	T	I	C	T	I	C	T
11	Rairakhol	3	0	3	10	0	10	10	0	10	50	0	50
12	Rourkela	1	1	2	10	5	15	10	5	15	50	25	75
	Total	16	7	17	120	30	150	119	29	148	606	145	751

Note: The control Range (FRU) is selected from AJY intervention Division as AJY intervention in other Forest Divisions are in a saturated mode and no Range (FRU) without intervention is there. I: Intervention; C: Control; T: Total. Total Forest Ranges covered under the baseline is 17 as some Ranges are common in Intervention and Control.

Apart from community institutions (VSS and SHG) and household coverage from intervention and control area, the study also covered infrastructural facilities and services that are supportive for the promotion of income generation activities.

1.2.8 Sampling of Forest Sites:

From each studied intervention Range (Ranges as per the intervention sample frame), one site (ANR without Gap / Block Plantation) was taken up for assessing the physical situation. Overall, 28 sample sites were assessed under the baseline to understand the physical situation of the sites, such as height, girth etc, of the plants grown in different forest sites. Representative number of plots were taken from different grids of the forest sites for assessment. Forest sites covered under the baseline assessment is presented below.

Table 6: Sample Coverage; Forest Sites

Forest Division	No. of Sample	Forest Division	No. of Sample
Angul	1	Keonjhar	1
Baliguda	2	Nawarangapur	3
Bargarh	3	Rayagada	4
Bolangir	3	Redhakhhol	2
Bonai	3	Rourkela	2
Deogarh	2	Total	28
Kalahandi (N)	2		

1.2.9 Study Tools:

Both structured and semi-structured tools were developed to capture primary and secondary information from different stakeholders, i.e., VSS households, VSS, SHG members, SHGs etc. The tools developed by stakeholder category are presented below.

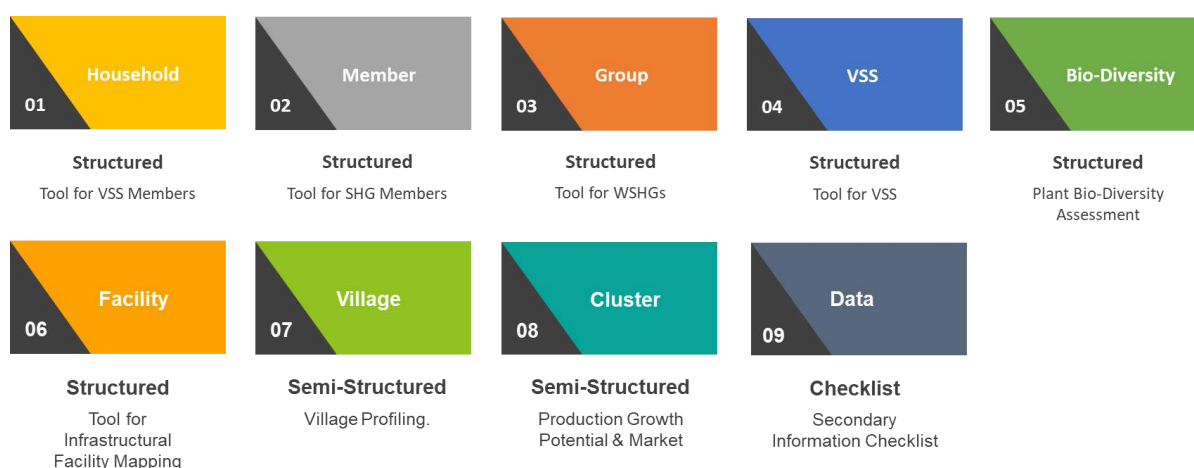


Figure 7: Administered Study Tools

Table 7: Study Tools by Stakeholder Category

Particular	Tools	Tool Type
Stakeholders		
VSS	VSS Operation Tool	Structured
	FGD Tool	Semi-Structured
SHG	Rating Tool	Structured
Household (HH)	HH Schedule	Structured
	SHG Member Schedule	Structured
Forest, Livelihood & Other		
Infrastructure	Village Infrastructure Profiling	Structured
Forest Degradation	Measurement Matrix	Semi-Structured
Range / Division	Secondary Information Checklist	Structured

1.3 Study Limitations:

The study was conducted when COVID-19 pandemic situation was prevailing and there was restriction on movement and social interactions. Because of government regulations and fear of contamination, focus group discussions and community interaction processes were impacted upon. The scheduled field study was delayed by several months due to government regulatory measures like restrictions on movement, shut down, lock down, declaration of containment zones at the local level and non-availability of transport facility. Village level restrictions for entry of people coming from outside further impacted the study. People were also hesitant to be a part of the assessment process due to the fear of COVID-19 contamination. The adverse situation during the pandemic period delayed the overall assessment process and impacted upon area coverage. The initial plan to cover different control Ranges under the study for assessment was impacted severely due to prevailing rate of contamination, locally (District / Block / GP level) declared containment zone and overall unpleasant environment. Due to such conditions, in many cases, the study team members were not able to enter the control study area for conducting the study as per earlier design. Hence, to meet the objective of the study, without compromising with the overall design frame, sample areas were selected from same Ranges that are not under project intervention. Further, certain required information, which was expected to be available with different stakeholders, could not be accessed, either due to non-availability of information or it was not up to date. However, abiding the guidelines of the Government and maintaining required precautionary measures (wearing mask, maintaining physical distance, repeated hand sanitization etc.), the team completed the study covering required sample.



Section II Community Organisations

Section II: Community Organizations

2.1 Community Organizations:

Different community organizations are existing in the villages of both intervention and control areas, but women SHG (WSHG) and VSS are in prominence among all the community organizations. Some of the community organizations like farmers group / producer group are in an emerging stage and their functioning is not that prominent like SHG and VSS. However, membership of the households in more than one community organization is common. Government has formed GKS at the village level for community health care and health management. While the villages are having one WS committee or VSS, average number of WSHG found to be 7-8 at village level as universal coverage approach is being adopted for involvement of women in SHGs.

Table 8: Community Organizations; AJY

AJY		Community Groups							
		Farmer Group	WSHG	W&S Committee	GKS	WS Committee	Cultural Gr.	Producer Group	VSS / JFMC
Control	V (%)	6.7	96.7	-	46.7	20.0	26.7	-	100.0
	Av.	2.00	7.10	-	1.00	1.00	1.13	-	1.00
Intervention	V (%)	5.9	94.1	2.5	51.3	7.6	27.7	3.4	97.5
	Av.	2.14	7.27	1.00	1.00	1.00	2.18	1.25	1.00
Total	V (%)	6.0	94.6	2.0	50.3	10.1	27.5	2.7	98.0
	Av.	2.11	7.23	1.00	1.00	1.00	1.98	1.25	1.00

Note: V (%): Percentage of Villages / VSS, Av.: Average No. of Community Organizations, WSHG: Women Self-Help Group, W&S: Water and Sanitation, GKS: Gaon Kalyan Samiti, WS Committee: Watershed Committee, VSS: Vana Surakshya Samiti, JFMC: Joint Forest Management Committee

The community organizations are involved in different activities, based on the objective of their existence. While women SHGs are more into thrift and credit, IGA and awareness building; VSS are involved in forest protection and its sustainable management. The farmer's groups are informal associations of village farmers who have been engaged in activities like leaf plate making and vegetable cultivation, apart from their other agricultural activities. This section discusses about assessment observations for VSS and SHG in detail as they are the key community institutions who would be involved in the project processes. However, different activities performed by other community organizations and their aspirations / requirements are presented in a matrix in this section.

2.2 Vana Surakshya Samiti (VSS):

2.2.1 Overview of VSS:

The Government of Odisha, in agreement with the National Forest Policy, 1988, adopted Joint Forest Management (JFM) approach and sought community participation for protection, regeneration and management of the forest wealth. The Odisha Village Forest Rules, 1985 were formulated which envisage preparation of a Management Plan for every village forest and sought co-operation of the community in protection of the forest. In 1988, a resolution was formally passed by the State Government to introduce a scheme of protection of peripheral reserve forest areas with participation of the adjoining villagers by forming a Village Level Forest Protection Committee (VLFPC). The scope of this resolution was enhanced further in 1990 to include the Protected Forests. To make the forest-people interface more effective, the Forest & Environment Department issued a resolution in 1993, highlighting involvement of local communities in protection of adjoining forests and formation of Van

Samrakshyana Samiti (VSS) (now called Van Surakhsha Samiti). The 2008 and 2011 resolutions of the Forest and Environment Department, Government of Odisha (read with 2015 amendment) extended the participatory approach to all types of forests. Eco-development was adopted as a strategy to improve the livelihood of local people and thereby securing their support for conservation.

The Van Surakhsha Samiti or VSS were formed to promote community participation based sustainable forest management in the state of Odisha. Promotion and strengthening of VSS has been a part of government flagship scheme “Ama Jangala Yojana” of Odisha. The scheme plans to promote sustainable use of forest and income generation at the same time for forest dwellers and others dependent on it. The scheme is to be implemented in 30 Territorial and Wildlife Divisions of Odisha from 2016-17 to 2021-22. It also aims to involve as many as 7000 VSS. The target of VSS was later reduced to 500 VSS per year since 2017-18 due to reduced fund flow.

The VSS is defined as an independent, formal, democratic village-based community institution comprising resident adult inhabitants of a village constituted for the development/management of assigned forests as per section 3 of the Odisha JFM Resolution, 2011 and resolution of 2015². The objectives behind promoting VSS are;

1. To protect, manage and develop forest areas under its management;
2. To receive the benefits/concessions/incentives and distribute the same among members;
3. To plan interventions for management of the assigned forest area based on scientific principles;
4. To serve as interface between villagers and forest department, villagers and other line departments, villagers and other community-based institutions;
5. To represent the villagers in VSS related matters in any public forum;
6. To facilitate and promote activities, which are integral part of the program including micro planning, restoration of degraded forests, income generating activities or any other activity in furtherance of the program;
7. To form and manage producer groups under the ambit of National Rural Livelihood Mission;
8. To form and manage other institutions (such as SHGs) within the VSS/EDC for the benefit of the program;
9. Revolving fund with soft loans to SHG; and
10. Corpus fund generation and management.

2.2.2 Constitution of VSS/EDC:

In general, there is one VSS/EDC for a single village. One VSS may also cover more than one village or there may be more than one committee in a village of larger size. Other forest protection groups, if any, are also covered as per the resolution. Each VSS has a General Body (GB) and Executive Committee (EC) for smooth and democratic functioning of VSS for the realization of the objectives. As per the resolution, all adult members of the village can be the members of the VSS/EDC. They may pay an enrolment fee determined by the General Body (GB) of VSS/EDC. The local Palli Sabha is having a role in constitution of the VSS / EDC and minuting the resolution and onward submission for registration at the Forest Division level. VSSs/ EDCs have been formed throughout the State, covering all the Forest Circles / Forest Divisions, as per the assessed potential, as a part of participatory forest management system.

² Annual Report-Ama Jangal Yojana (AJY). Odisha Forestry Sector Development Project (Phase-II). 2018

Table 9: Status of JFM in Odisha

Total No. of VSS	Total No. of EDC	Total assigned Area (Sq. km.)				Total Families involved (in lakh)		
		RF	PRF/DPF	Other	Total	SC	ST	General
13,218	542	6,738.40	3,264.69	2,188.96	12,192.05	2.68	7.18	6.36

Source: Govt. Document

Note: RF: Reserve Forest; PRF: Protected Reserve Forest; DPF: Demarcated Protected Forest

Every VSS has an Executive Committee (EC), constituted by election of the Chairperson, Vice-Chairperson, Secretary, Treasurer, and a minimum of 11 members. To promote participation of women it is mandated that 10 percent of the EC members must be women. In addition to this, individuals from SC/ST category are encouraged to join the EC. The number of such individuals should be in proportion to their membership in VSS/EDC³. The EC has a tenure of 3 years and the Range Officer is responsible for conducting elections as Returning Officer. The numbers of VSS promoted at the end of March 2017 are 2,346 in 24 Forest and Wildlife Divisions⁴.

The composition of EC as mandated by the Government of Odisha under Joint Forest Management Resolution, 2015 are;

1. Chairperson
2. Vice-Chairperson
3. Secretary (Local Forest Guard/ Local Forester)
4. Treasurer
5. Ward Members(s) concerned
6. Members

In the study area, VSS are constituted mostly taking members from one village (control: 100.0 percent, intervention: 99.17 percent), irrespective of intervention and control area. Average number of households per VSS has been 97 in case of control and 99 in case of intervention. Average number of members in the VSS is 301, with an average of 303 members in control and 300 members in intervention. Looking at sex composition, the average number of female members in the VSS is 148 in control and 146 in intervention. Average number of male members per VSS is marginally higher than female members, i.e., 155 males in control and 154 in intervention.

Table 10: Membership in VSS: AJY

Particulars	Average Member: AJY		
	Control	Intervention	Total
VSS Member: Male	155	154	155
VSS Member: Female	148	146	146
VSS Member	303	300	301
EC Member: Male	9	9	9
EC Member: Female	6	7	7
EC Member	14	16	16

The average number of members in the EC have been 14 in control with 62.27 percent male and 43.54 percent female. In intervention, average EC member per VSS has been 16 with 56.31 percent male and 44.06 percent female. While the executive body comprises of both male and female members, chairperson has been male in most of the VSS (control: in 91.67 percent; intervention: 95.80 percent) whereas vice chairperson position is mostly occupied by females (control: 61.54 percent; intervention: 85.84 percent). Secretary and Treasures are mostly male members (control: 86.96 percent; intervention: 83.90 percent). Distribution of office bearers by their sex is presented in the matrix.

³ Course Material- Capacity building programme on implementation of AJY, Volume-1. OFSDS.

⁴ Annual Report-Ama Jangal Yojana (AJY). Odisha Forestry Sector Development Project (Phase-II). 2018

Table 11: Percentage Distribution of Key Office Bearers (EC) by Sex; AJY

Positions	Male & Female (VSS %) by Control and Intervention (AJY)			
	Control		Intervention	
	Male	Female	Male	Female
Chairperson	91.67	8.33	95.80	4.20
VC	38.46	61.54	14.16	85.84
Secretary	86.96	13.04	83.90	16.10
Treasurer	88.24	11.76	88.39	11.61

Note: VC: Vice Chairperson

Average forest area assigned to VSS for management is about 59.20 ha., in control and 63.34 ha. in intervention. In 81.82 percent cases, forest area was assigned to VSS for management before 2014-15 in control whereas no VSS in intervention found having assigned with forest area during that period in the studied VSS. Around 9.09 percent VSS in control and 100.0 percent VSS in intervention was assigned with forest area for management during 2014-15 and afterwards. Further, in case of 15.00 percent VSS in intervention (no VSS in control), forest area was assigned to VSS in 2018-19 and subsequently. Hence, it can be said that about 15.00 percent VSS are at a learning and emerging stage, especially who have been assigned with forest area in recent years. Forest type assigned to VSS generally fall in to “moderately dense” category in both intervention and control areas.

Table 12: Assignment Forest Area (Ha.) and Year of Assignment; AJY

Control / Intervention	VSS Covered (No.)	Total Assigned Area (Ha.)	Assigned Average Forest Area per VSS (Ha.)	Year of Assignment of Forest Area (VSS %)		
				Before 2014-15	2014-15 & After	2018-19 & After
Control	30	1,302.45	59.20	81.82	9.09	0.00
Intervention	120	7,159.07	63.34	0.00	100.00	15.00
Total	150	8,461.52	62.70	12.68	85.92	12.68

Note: In case of control, information about year of assignment of forest area to VSS for few VSS is not available.

2.2.3 VSS Governance and Management:

The VSS/EDC has been entrusted with the responsibility of conserving and protecting the forests, wildlife, and biodiversity. It also manages water resources and catchment areas for protecting resources in the assigned area. The EC, however, is responsible for carrying out the day-to-day business for VSS/EDC. Also, there are three types of membership of the VSS/EDC, i.e., General, Nominated and Ex-officio⁵.

1. Adult resident members of village/hamlet are member of the General Body of the VSS/EDC;
2. People like local school-teachers, NGO representatives, local health workers, *anganwadi* workers, panchayat representatives, government department representatives from Gram Panchayat/block. These members are nominated by VSS/EDC or program authorities with the consent of concerned GB as members of the Executive Committee (EC);
3. The Ex-Officio Secretary of the EC can be either the concerned Forester or the Forest Guard.

There are two dedicated committees of a VSS / EDC, namely General Body and Executive Committee.

2.2.3.1 General Body (GB) Meeting:

The General Body meetings of the VSS are held once in 6 months. These meetings can take place more frequently if needed. The Chairperson convenes the meeting with one-week advance notice. The

⁵ Course Material- Capacity building programme on implementation of AJY, Volume-1. OFSDS.

meetings take place in VSS Office-cum-Meeting Place. For effective functioning of VSS, a low-cost meeting place is constructed by VSS under built up area of 400 sq. ft⁶.

During the year 2019-20, some VSS organized one GB meeting (control: 10.00 percent; intervention: 10.83 percent) while 2 numbers of GB meetings were organized by 90.00 percent VSS in control and 52.50 percent VSS in intervention. In 36.67 percent VSS, in intervention (no VSS in control) more than 2 GB meetings were also organized during the year.

Table 13: GB Meetings per Year (Last Year); AJY

Control / Intervention	No. of GB Meetings in Last Year (% of VSS); AJY				Total
	1 (Once)	2 (Twice)	3 (Thrice)	> 3 (> Thrice)	
Control	10.00	90.00	0.00	0.00	100.0
Intervention	10.83	52.50	21.67	15.00	100.0
Total	10.67	60.00	17.33	12.00	100.0

2.2.3.2 Special GB Meeting:

In around 20.00 percent VSS in control and 46.67 percent VSS in intervention, special GB meetings were also organized to discuss various aspects of forest management. Of the total VSS, who organized special GB meetings, 55.36 percent VSS in intervention (no VSS in control) organized it once, 66.67 percent VSS in control and 28.57 percent in intervention organized twice. More than two special meetings were also found organized by 33.33 percent VSS in control and 16.07 percent VSS in intervention. Special GB meetings by intervention and control VSS is presented in the matrix.

Table 14: Special GB Meetings per Year (Last Year); AJY

Control / Intervention	VSS (%) with Special GB Meetings	Special No. of GB Meetings in Last Year (% of VSS); AJY				Total
		1	2	3	>3	
Control	20.00	0.00	66.67	33.33	0.00	100.00
Intervention	46.67	55.36	28.57	10.71	5.36	100.00
Total	41.33	50.00	32.26	12.90	4.84	100.00

2.2.3.3 Women Participation in GB:

Average participation of women in the VSS GB meeting is termed moderate (average) in 66.67 percent VSS in control and 55.00 percent VSS in intervention. Poor participation of women in VSS GB meetings reported in 33.33 percent VSS in control and 45.00 percent VSS in intervention. Key areas of discussion in the GB have been (a) protection of forest from fire, (b) plantation, (c) VSS financials (income and expenditure) etc. Discussion on livelihood related aspects in the GB meetings of VSS was found limited to few cases.

Table 15: Participation of Women in GB Meetings; AJY

Control / Intervention	Av. Participation of Women in GB (% VSS); AJY		Total
	Moderate	Poor	
Control	66.67	33.33	100.00
Intervention	55.00	45.00	100.00
Total	57.33	42.67	100.00

Note: Moderate participation refers to at least 25 percent of women members participate in GB meeting. Less than 25. Percent considered to be poor participation. It is mapped based on the responses of the VSS members.

2.2.3.4 Meeting of Executive Committee:

Organization of Executive Committee meeting (the Executive Committee meeting is to be held once in two months) was observed to be less than or equal to 6 times (≤ 6) in 63.64 percent VSS in control and 48.33 percent VSS in intervention. Around 36.36 percent VSS in control and 28.33 percent in

⁶ Guidelines for constitution of VSS Office-cum-Meeting Place under AJY Scheme, AJY CFPMP Cell OFSDS, 2016.

intervention organized their EC meetings between 6 to 12 (>6 & <12) times during the same period, i.e., 2019-20. So, organization of Executive Committee meeting was observed to be less than 12 times per year (once per month on an average) in 100.00 percent VSS in control and 76.67 percent VSS in intervention. On the other hand, 23.33 percent VSS in intervention (No VSS in control) organized ≥ 12 EC meetings during the year 2019-20.

Table 16: No. of EC Meetings Organized by VSS; AJY

Control / Intervention	No. of Annual EC Meetings (Last Year) (% VSS); AJY			Total
	≤ 6	$>6 \text{ \& } <12$	≥ 12	
Control	63.64	36.36	0.00	100.00
Intervention	48.33	28.33	23.33	100.00
Total	49.62	29.01	21.37	100.00

2.2.4 Maintenance of Records:

The VSSs have been maintaining different documents to record their functioning. Number of records maintained at VSS level observed to be better in intervention pockets in comparison to control. For example, “resolution register” is maintained in all the intervention VSS whereas in control VSS, maintenance of this record is comparatively less. Different records maintained by VSS in intervention and control areas is presented in the matrix.

Table 17: Different Records Maintained / Available at VSS Level; AJY

Maintenance / Availability of Records (% of VSS); AJY							
VSS Records	Particulars	Control	Intervention	VSS Records	Particulars	Control	Intervention
Resolution Registers (EC/GB)	Not Available/Maintained	33.33	0.0	Stock Register	Not Available/Maintained	100.0	100.0
	Available/Maintained	66.67	100.0		Available/Maintained	0.0	0.0
	Total	100.0	100.0		Total	100.0	100.0
Asset Register	Not Available/Maintained	100.0	100.0	Grant Receipt	Not Available/Maintained	100.0	100.0
	Available/Maintained	0.0	0.0		Available/Maintained	0.0	0.0
	Total	100.0	100.0		Total	100.0	100.0
Cash Book	Not Available/Maintained	100.0	100.0	Cheque Book	Not Available/Maintained	100.0	0.0
	Available/Maintained	0.0	0.0		Available/Maintained	0.0	100.0
	Total	100.0	100.0		Total	100.0	100.0
Ledger Book	Not Available/Maintained	100.0	100.0	Plantation Journal	Not Available/Maintained	100.0	99.17
	Available/Maintained	0.0	0.0		Available/Maintained	0.0	0.83
	Total	100.0	100.0		Total	100.0	100.0
Visitor Register	Not Available/Maintained	100.0	99.17	Purchase Register	Not Available/Maintained	100.0	100.0
	Available/Maintained	0.0	0.83		Available/Maintained	0.0	0.0
	Total	100.0	100.0		Total	100.0	100.0
Bank Passbook	Not Available/Maintained	100.0	0.0	Check Book Register	Not Available/Maintained	100.0	100.0
	Available/Maintained	0.0	100.0		Available/Maintained	0.0	0.0
	Total	100.0	100.0		Total	100.0	100.0
Notice Register	Not Available/Maintained	100.0	100.0	Membership Register	Not Available/Maintained	100.0	95.83
	Available/Maintained	0.0	0.0		Available/Maintained	0.0	4.17
	Total	100.0	100.0		Total	100.0	100.0
Micro Plan	Not Available/Maintained	100.0	0.0				
	Available/Maintained	0.00	100.00				
	Total	100.0	100.0				

2.2.5 Financial Resource Accessibility and Management:

The Vana Suraksha Samitis are formal institutions at community level composed of resident adult members from villages. These community-based organizations function with the support of OFSDS, Dept. of Forest and Environment, Government of Odisha. The constituted community organizations (VSS) for forest protection and management have been given important in the interventions of AJY. In AJY, forest development and management related expenditure is directly incurred by the officials of forest dept. involving the VSS. The VSSs have their bank account in the nearby bank branch to manage financial transactions. All the VSS covered under AJY are having single bank account. Bank transaction is done by the Member Secretary (person from forest dept.; concerned forester or local forest guard) and the treasurer. However, project related funds transaction is yet to happen through bank account in VSS covered under AJY. Required expenditure is incurred by the local Range Office with the

involvement of Member Secretary of the concerned VSS. Disbursement of funds to the beneficiaries, persons engaged in different forest related works (plantation, pit digging etc.), service providers, vendors etc. is made through direct bank transfer.

2.2.6 Capacity Building:

The capacity development is “the process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives over time”⁷. Capacity building measures have been taken to improve the skill and knowledge base of the VSS members. To improve VSS governance and functioning, emphasis has been given for capacity building of EC members. On an average 16.67 percent EC members in control and 16.44 percent EC members in intervention have received training on different themes. Apart from EC members, other members of the GB have also been trained, i.e., 0.21 percent in control and 0.44 percent in intervention. Theme of trainings have been financial management, book-keeping, nursery raising, SMC measures, vermicomposting, preparation of micro plan, forest protection and management, VSS management, mushroom farming, fishery, wildlife protection etc. Apart from this, VSS members / villagers in common have also received different trainings under various schemes / programs.

Table 18: VSS Members (%) Trained; AJY

Control / Intervention (AJY)	EC Members (%)	Other GB Members (%)
Control	16.67	0.21
Intervention	16.44	0.44
Total	16.48	0.39

Table 19: Household Actions for Forest Protection and Management; AJY

SN	Specifications	Household Actions
1	Forest Fire	1. Generating awareness among the VSS Members; 2. Information to forest department on fire incidents; 3. Cleaning of forest area and creating fire lines; 4. Extinguishing forest fire / attempt to control forest fire.
2	Wild Animal Attack	1. Animal tracking; 2. Generating awareness among the VSS members to restrict movement of people and domestic animals in assigned forest area; 3. Inform villages / other VSS members; 4. Inform forest department; 5. Keep distance from wild animal; 6. Make sound, noise, show fire, use light to keep wild animals away; 7. Remain in the safe place; 8. Making barricade / trenches.
3	Theft / Illegal Cutting of Woods	1. Apprehend the thief, inform & handover to forest officials; 2. Inform to villagers / other VSS members; 3. Levy fine on forest offenders; 4. Create awareness among the villagers / locals; 5. Seize illegally cut woods and instruments used; 6. Watch and ward of assigned area.
4	Plantation	1. Participate in plantation works through VSS; 2. Periodic monitoring and social auditing; 3. Watch and ward of plantations undertaken.
5	Forest Area Encroachment	1. Generating awareness on encroachment related issues; 2. Inform to VSS and discuss the matter in the VSS; 3. Report / information to local forest officials; 4. Taking up plantation in the encroached area after eviction.

⁷ Andie Davis and Tsegaye lemma. Capacity Development: A UNDP Primer. UNDP CDG Primer Report.2009

2.2.7 Key Activities by VSS:

The VSSs have been involved in a number of activities like (a) forest protection (100.0 percent in control and intervention), (b) wildlife protection (control: 36.67 percent; intervention: 69.17 percent), (c) bio-diversity conservation / protection (control: 6.67 percent; intervention: 37.50 percent), (d) management of catchment area (control: 10.00 percent; intervention: 30.83 percent), (e) conservation / management of water resources (control: 10.00 percent; intervention: 19.17 percent), (f) micro plan preparation (intervention: 100.0 percent; no VSS in control), (g) prevention of encroachment (intervention: 1.67 percent; no VSS in control), (h) coordination with other dept. schemes / program (intervention: 19.17 percent; no VSS in control) etc. Association of VSS in product market linkage (including NTFP) is not observed.

Table 20: Participation of VSS in Different Activities; AJY

SN	Key Activities	Activities Taken up by VSS (% VSS); AJY	
		Control	Intervention
1	Forest Protection	100.0	100.0
2	Wildlife Protection	36.67	69.17
3	Biodiversity Protection	6.67	37.50
4	Management of Catchment Area	10.00	30.83
5	Management of Water Resources	10.00	19.17
6	Protecting Other Eco-Sensitive Area	0.00	0.00
7	Micro Plan Preparation	0.00	100.0
8	Plantation of Indigenous NTFP Species	20.00	30.00
9	Plantation of Medicinal Plants	13.33	22.50
10	Prevention of Encroachment	0.00	1.67
11	Product Market Linkage	0.00	0.00
12	Coordination with Other Dept.	0.00	19.17

2.2.8 Forest Protection and Management:

As VSS has been a local institution, members from 68.97 percent households in control and 93.89 percent households in intervention have been involved in different activities of VSS. However, in case of meetings of VSS, 22.8 percent households in control and 46.5 percent households in intervention have higher degree of participation; followed by moderate participation by 51.7 percent households in control and 47.9 percent households in intervention. Different activities where households participated in the year 2019-20 is presented in the matrix.

Table 21: Participation of Households in Different Activities; AJY

Key Activities	HH (%) Participated; AJY	
	Control	Intervention
Forest Protection	61.38	93.56
Wildlife Protection	46.90	68.48
Biodiversity Protection	10.34	24.92
Management of Catchment Area	11.03	40.10
Management of Water Resources	2.07	18.98
Protecting other Eco-Sensitive Area	0.69	13.70
Micro Plan Preparation	17.93	58.09
Mitigating / Preventing Forest Fire	18.62	56.93
Plantation of Indigenous NTFP Species	17.93	40.59
Plantation of Medicinal Plants	15.86	24.42
Prevention of Encroachment	3.45	17.00
Product Market Linkage (Individual Level)	0.00	5.28
Coordination with Other Dept.	0.00	8.91
Dealing with Human-Animal Conflict	6.90	13.86

Forest conservation and management trainings have been conducted by the Forest Department from time to time for VSS members in general and 11.7 percent households in control and 23.1 percent in intervention have received such trainings. Topics covered in the training are like (a) community

mobilization, (b) fire protection mechanisms, (c) micro plan preparation, (d) wildlife protection, (e) documentation / record keeping, (f) survey and demarcation, (g) nursery raising, (h) SMC works, (i) plantation etc. Apart from forest protection and management, livelihood related trainings have also been imparted like (a) mushroom cultivation, (b) agricultural trainings, (c) farming technologies, (d) goat farming etc.

2.2.9 Linkage with Other Institutions:

Functional linkage of SHG and VSS as community level institutions is limited to attending meeting of VSS by SHG members (as they are also the members of the VSS). In case of trainings and awareness activities, SHG members also participate along with other VSS members. The SHGs have been involved in different IGA supported by other department/s where VSS is not having any role in enterprise promotion or management of IGA. During COVID 19 pandemic situation both VSS and SHGs facilitated awareness activities at the village / local area to sensitize people on health care and sanitation. When activities like forest cleaning, fire line maintenance, plantation etc. are taken up, female members participate but not as an SHG rather as villagers and members of VSS. Similarly, the proposal for the formation of Executive Committee of the VSS is approved by the Palli Sabha, empowering EC to function as a sub-committee of the local GP for forest protection and management as prescribed in the provisions of FRA. Further, the micro plan is also approved in the Palli Sabha, according to the provisions of FRA.

However, support from forest department has been immense to VSS to strengthen them and involve them in the forest protection and management. VSS has been involved in different activities taken up by the dept. like demarcation of forest area, pillar posting, fire line creation and treatment, preparation of micro plan, plantation, forest protection etc. VSS have also been involved in SMC works taken up inside the forest area. Other department have also been supporting the VSS members in providing their support provisioned under different schemes / programs like input support by agriculture and horticulture dept., horticultural support for plantation of horticultural crops, promotion of mushroom cultivation, LPG gas connection, credit / financial support by Mission SHAKTI / OLM, vaccination camp by F&ARD dept. etc.

2.2.10 Access to and Benefit from Forest Resources:

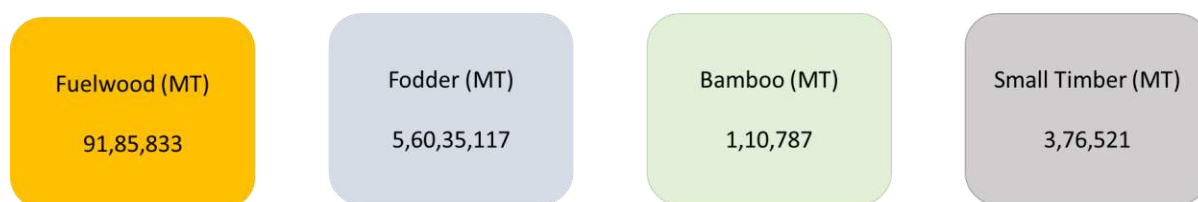
A large proportion of population depends on forest and its resources. As per the ISFR 2019 report, the total fuelwood collected annually from forest is as much as 85,290 MT. Other than this the collection of fodder, small timber and bamboo is high as well. The major species of tree in the forest of Odisha (the top five species) are *Shorea robusta*, *Lannea grandis*, *Buchnanian Lanza*, *Terminalia tomentosa* and *Cleistanthus collinus*. Other than this the major NTFP species that support the income of forest dwellers are as mentioned in the table:

Table 22 Relatively Abundant Species in Odisha

Species	Relative Abundance (in percentage)
<i>Shorea robusta</i>	57.91
<i>Madhuca indica</i>	17.11
<i>Buchnanian lanzan</i>	12.48
<i>Schleichera oleosa</i>	3.02
<i>Semecarpus anacardium</i>	2.98

Source: ISFR 2019

People residing in the forest fringe villages have different degree of dependency on forest resources, like fuelwood, fodder, bamboo, and small timber. Among these, the consumption of fuelwood and fodder is normally high followed by small timber.



(Consumption of Forest Resources in Odisha; Source: ISFR 2019)

The villagers / VSS members have been deriving different economic benefits from the forest in different seasons. Attempt is made to understand economic dependency of the households on the available forest resources (excluding environmental benefits). Average of about 52.77 percent households from 60.00 percent VSS in control and 53.20 percent households from 67.50 percent VSS in intervention collect dry leaf and green fodder (grass) from the forest for domestic purposes with an average of 3.72 MT (1.45 quintal per year per HH) and 5.0 MT (3.57 quintal per year per HH) respectively. Sometimes, it is also shared with the neighbours at the time of their need. Intermediate forest yields like small timber and firewood are collected by 78.77 percent households from 96.67 percent VSS in control and 63.22 percent households from 85.00 percent VSS in intervention with an average collection of 3.81 MT (4.64 quintal per year per HH) and 5.66 MT (7.09 quintals per year per HH) respectively.

Different types of non-timber forest produce (NTFP) are collected (seasonal basis) by 48.94 percent households from 83.33 percent VSS in control and 48.23 percent households from 80.0 percent VSS in intervention with an average collection of 0.87 MT per year (1.47 quintal per year per HH) and 2.58 MT per year (3.93 quintal per year per HH) respectively. Collection of NTFPs by families in the forest fringe villages are more frequent (number of households collecting NTFP and volume of collection) in comparison to households living in habitations that are relatively in a distant place from the forest. Dependency on major harvests (timber / wood) is limited to 13.53 percent households in 30.00 percent VSS in control and 17.81 percent households in 35.00 percent VSS respectively, which is again dependent upon obtaining clearance from the VSS. Average annual collection per VSS has been 29 numbers in control and 20 in intervention. Overall, majority of the households at the village level, especially in the forest fringe villages, are dependent upon forest resources for different reasons. Percentage of households depending upon forest resources from VSS is presented in the matrix.

Table 23: Forest Dependency by VSS; AJY

Control / Intervention		VSS (%) and HH (%) Dependency on Different Forest Resources; AJY				
		Leaf / Fodder	Small Timber / Firewood	Kendu Leaf	NTFP	Major Harvest
Control	VSS %	60.00	96.67	63.33	83.33	30.00
	HH %	52.77	78.77	50.27	48.94	13.53
Intervention	VSS %	67.50	85.00	64.17	80.00	35.00
	HH %	53.20	63.22	43.50	48.23	17.81
Total	VSS %	66.00	87.33	64.00	80.67	34.00
	HH %	53.11	66.29	44.84	48.37	16.97

Table 24: Major NTFP Products; AJY

Major NTFPs Available	Control and Intervention; AJY			
	Intervention		Control	
	VSS, where Available (%)	Avg. Quantity of Collection per VSS (Qt.)	VSS, where Available (%)	Avg. Quantity of Collection per VSS (Qt.)
Amla	5.83	1.01		
Bahada	8.33	1.81		
Broom	2.50	180.0		
Char	31.67	2.48	23.33	2.71
Harida	16.67	2.36		

Harida & Bahada	4.17	2.0		
Kendu	5.00	5.58		
Kendu Leaf	33.33	1707.25	50.00	1,220.0
Kusum Seeds	2.50	5.97		
Mahua	93.33	150.64	86.67	119.23
Mushroom	6.67	13.73		
Sal Leaf	22.50	50537.04	26.67	90,000.0
Sal Seed	24.17	25.67		
Tamarind	15.83	40.16	13.33	8.5
Tola	21.67	52.12	20.00	20.33

Initially it was thought of that forest area assigned to different VSS may have some degree of bearing on their performance. It was hypothesized that there is no difference ($H_0: \mu_0 = \mu_1$) in organizing GB meeting, an indication of performance of VSS with different assigned forest area for management. The study finds this true as there is no significant difference in forest area assigned and conducting GB meetings. The practice of organizing GB meeting is more uniform across the VSS, irrespective of the assigned area. Though less than two GB meetings per year organized in some VSS where assigned forest area, on an average, is more than some other VSS, but such trend is sporadic in nature. Similar situation prevails in terms of documentation and organizing EC meetings.

2.2.11 Forest Protection and Management Requirements:

The members of VSS have expressed different needs, which are categorized in to 11 broad areas and needs are presented against each broad area. The identified needs are categorized in to (a) forest protection needs, (b) wildlife protection needs, (c) biodiversity conservation needs, (d) catchment area restoration needs, (e) water resource management needs, (f) protection of eco sensitive areas, (g) micro planning, (h) plantation of indigenous species, (i) plantation of medicinal plants, (j) prevention of encroachment, and (k) product market linkage.

Table 25: Forest Protection and Management Requirements

SN	Specifications	Forest Protection & Management Requirements
1	Forest Protection	1. Periodic awareness program, 2. Watch & ward on rotational basis, 3. Fire line work twice annually, 4. Proper green fencing / fencing of the forest area, 5. Periodic cleaning of forest floor, especially before onset of summer, 6. Better coordination between VSS and forest officials, 7. Controlled and rotational grazing of animals in the forest areas, 8. Fire extinguisher / fire protection equipment to VSS / villagers, 9. Required number of guards to protect forest, 10. Barbed wire fencing.
2	Wildlife Protection	1. Drinking water facility in the forest for wild animals, 2. Construction of trenches to prevent elephant entry in to villages, 3. Livelihood diversification / support to prevent poaching, 4. Wire fencing to protect wild animals, 5. Increasing forest area to improve wildlife habitat, 6. Increasing awareness and training to VSS for wildlife management, 7. Plantation of fodder plants for wild animals.
3	Biodiversity Protection	1. Increasing plantation of indigenous species, 2. Forest fire control measures, 3. Preventing entry of domesticated animals to forest area, 4. Training VSS on biodiversity assessment and its management, 5. Plantation of different plant species, 6. Protection of indigenous species.
4	Protection of Catchment Area	1. Periodic maintenance and supervision of catchment area, 2. Soil moisture conservation measures in the catchment, 3. Increasing the plantation in the catchment area.
5	Water Resources Management	1. Bunding around existing water sources, 2. Water conservation measures,

SN	Specifications	Forest Protection & Management Requirements
		- Pond / check dam construction, - Renovation and restoration of water bodies.
6	Identification of Eco Sensitive Zone	- Identification of eco sensitive zone/s, - Declaring eco sensitive areas as regulated area, - Special activity as per the micro plan.
7	Micro Plan Preparation	- Greater involvement of VSS in plan preparation, - Situational analysis before preparing plan, - Implementation of all planned activities as per the micro plan, - Making convergence as part of the micro planning, - Periodic updating of micro plan, covering emerging needs, - Micro plan focusing on village development along with forest management.
8	Plantation of Indigenous Species	- More plantation of species that provide NTFP for income growth, - More plantation of indigenous species.
9	Plantation of Medicinal Plants	- Special training to villages on medicinal values of trees / herbs, - Special focus on plantation of medicinal plants along with other species, - Mapping existing medicinal plants, - Considering medicinal plants as a part of livelihood approach, - Promotion of medicinal plants in the forest & non-forest area.
10	Prevention of Encroachment	- Active involvement of VSS in prevention of encroachment, - Evacuation of encroached area by VSS & dept., - Plantation of trees in the encroachment areas, - Periodic demarcation and assessment of forest area, - Pillar posting to prevent encroachment of forest area, - Strict action against the encroaching people by Govt. officials.
11	Product Market Linkage	- Identification & quantification of available NTFP, - Awareness of people on scientific gathering of NTFP, - NTFP aggregation strategy for better market price, - VSS / SHG can be the aggregator of NTFP for marketing, - Training on NTFP value addition, - Market information on NTFP selling price, - Need storage and transportation facility for products / commodities from forests.

2.3 Self-Help Group (SHG):

2.3.1 Overview:

The SHGs have been formed and nurtured to provide an opportunity for earning by taking up economic activities. This also helps in reducing dependency on money lenders, giving access to formal financial institutions, creating an environment where resources are generated among the members and used to meet the requirements and overall, a strategic medium for empowerment. SHG is a group formed by the community, which has specific number of members. In such a group the poorest would come together for emergency, disaster, social reasons, economic support to each other, have ease of conversation, social interaction and economic interactions⁸. Women Self-Help Groups (WSHGs) are the mode of engaging women in various livelihood generation activities that not only empower women socially but also economically and decreases biases against them. The inclusion of SHGs in this project is to not only achieve the objects of the projects but also to promote women empowerment in the longer run. The SHGs need to graduate into clusters to increase the reach to higher markets and processing initiatives.

Based on the objective of the project, emphasis has been given to self-help groups (SHGs) for the promotion and strengthening of household livelihood. As SHGs are already an organized informal community structure, existing at the village level, they are in a more suitable position for promotion of income generating activities. All the studied villages observed having women SHG/s, organized, and promoted by different institutions / organization, including private entities. The studied villages, on an

⁸ JICA & MoEFCC. Joint Forest Management: A Handbook.

average is having around 6-7 women SHGs, and they have been involved in different socio-economic activities. In most of the villages (control: 51.7 percent, intervention: 49.6 percent), there are more than 5 SHGs existing on an average; and in 3.4 percent control and 7.6 percent intervention villages, at least one women SHG is existing. So, in 96.6 percent control and 92.4 percent intervention villages, more than one WSHG is existing.

Table 26: Village Categorization by SHG Prevalence; AJY

Control / Intervention	Ranking of Villages by Number of SHGs (% Distribution); AJY				Total
	=1	>1 & <=3	>3 & <=5	>5	
Control	3.4	20.7	24.1	51.7	100.0
Intervention	7.6	27.7	15.1	49.6	100.0
Total	6.8	26.4	16.9	50.0	100.0

2.3.2 Age of SHGs:

Categorization of SHGs by their year of formation reveals that majority of the SHGs (control: 44.8 percent; intervention: 49.6 percent) are formed between 2016 to 2018 (i.e., in the last 4-5 years) and least number of SHGs (control: 3.4 percent; intervention: 2.5 percent) are formed after 2018. So, most of the SHGs are more than 4 years old and all the SHGs have been at different functional stages.

Table 27: Distribution of SHGs by Year of Formation; AJY

Control / Intervention	Year of Formation of SHGs (% Distribution); AJY					Total
	Before 2010	2010 to 2014	2014 to 2016	2016 to 2018	After 2018	
Control	24.1	20.7	6.9	44.8	3.4	100.0
Intervention	31.1	10.1	6.7	49.6	2.5	100.0
Total	29.7	12.2	6.8	48.6	2.7	100.0

2.3.3 SHG Governance and Management

As a community organization, major governance mechanism revolves around periodicity of meetings, qualitative discussion among the members of the SHGs and group / member level transactions they carry out. As the SHGs in control and intervention villages do not have their own space for functioning, normally commonly available village structures or houses of the members are used for functioning. For financial transaction, SHG have their bank account (100.0 percent) in the nearest bank branches.

2.3.4 Inclusion of Poor:

Membership profile of the SHGs shows mixed socio-economic groups in the SHGs with the prioritized inclusion of members from STs (based on their prevalence) and economically poor sections. On an average, 69.0 percent members of the SHGs in control and 68.9 percent in intervention belong to poor economic category (based on village specific relative perception on economic classification). Hence, the SHGs are the emerging community level organizations that have been promoting and supporting alternate income generation opportunities for the people belonging to poor economic status.

Table 28: SHG Members by Economic Status; AJY

Control / Intervention	Distribution of Members in SHG by Economic Category (%); AJY		Total
	<=75.0	>75.0	
	Relatively Better Off	Relatively Poor	
Control	31.0	69.0	100.0
Intervention	31.1	68.9	100.0
Total	31.1	68.9	100.0

Table 29: Poor / Relatively Poor Households in SHG

Control / Intervention	Poor Household (%) in SHG			
	<25 %	26% to 50%	51% to 75%	76% to 100%
Intervention	1.68	5.04	3.36	89.92
Control	3.45	13.79	0.0	82.76

Note: Distribution of poor households is from total poor households in SHG

2.3.5 Record Keeping:

The SHGs have been maintaining different documents / registers to record their activities. Major documents maintained are like (a) meeting register (100.0 percent SHGs in control and intervention), (b) cash book (100.0 percent SHGs in control and intervention), (c) loan register (control: 69.0 percent; intervention: 55.5 percent), (d) loan repayment register (control: 65.5 percent; intervention: 52.1 percent) etc. Documents are being updated periodically by the SHG members or with the support of Cluster Resource Persons (CRP).

Table 30: Records Maintained by SHGs (%); AJY

SN	Records / Registers Maintenance	% of SHGs; AJY		
		Control	Intervention	Total
1	Minutes Book (Meeting Register)	100.0	100.0	100.0
2	Loan Register	69.0	55.5	58.1
3	Ledger Book	48.3	40.3	41.9
4	Member List	100.0	100.0	100.0
5	Asset Register	3.4	3.4	3.4
6	Petty Cash Book	27.6	31.9	31.1
7	Savings Register	100.0	100.0	100.0
8	Loan Repayment Register	65.5	52.1	54.7
9	Bank Reconciliation Statement	65.5	42.9	47.3
10	Cash Book	100.0	100.0	100.0

Note: With reference to documents produced and status of records reviewed during the study.

2.3.6 SHG Meetings:

Meetings of the SHGs are mostly organized on monthly basis but in certain cases, it is also organized weekly. Distribution of SHGs by regularity of meetings demonstrate that majority of the SHGs (control: 62.1 percent; intervention: 77.3 percent) conduct meeting on regular basis in >90 percent cases whereas regularity of meeting has been less in 6.9 percent SHGs in control and 1.7 percent in intervention (<=50.0 percent).

Table 31: Frequency of Meeting; AJY

Intervention / Control; AJY	Frequency of Meeting at SHG Level (SHG %)				
	Weekly	Fortnightly	Monthly	Bi-monthly	No Schedule
Intervention	0.84	-	99.16	-	-
Control	-	-	100.0	-	-

Table 32: Regularity of Meetings; AJY

Control / Intervention	SHG Distribution (%) by Meeting Regularity (%); AJY				Total
	<=50%	>50<=70%	>70<=90%	>90%	
Control	6.9	10.3	20.7	62.1	100.0
Intervention	1.7	5.0	16.0	77.3	100.0
Total	2.7	6.1	16.9	74.3	100.0

2.3.7 Thrift and Internal Credit

The practice of disciplined thrift can help members of SHGs from approaching money lenders and paying high interests. Regular savings can help in avoiding the burden of debt and loan from external parties. The SHGs make thrift by collecting uniform amount from the members to meet the emergency needs of the members. Per member saving per period (weekly / monthly) varies between Rs.10.00 to Rs. 100.00 as per group norm. All the SHGs (100.0 percent in control and intervention) have been involved in thrift and credit activities to meet their financial requirements. The norm of group level saving is mostly on monthly basis (control: 100.0 percent; intervention: 99.2 percent). However, some groups also having weekly thrift norm (0.8 percent in intervention; no SHG in control).

Average per group savings in intervention areas (Rs.47,268.39) is comparatively higher than control areas (Rs. 35,317.28). Looking at individual savings (savings of the individual member with the group), it is evident that on an average, per member savings is Rs. 3375.38 in control and Rs. 4276.32 in intervention, irrespective of the day of formation of group or their membership in the group. The pattern remains same at the individual level, i.e., higher the group savings, higher per member savings and vice versa.

Ranking of SHGs based on their member savings illustrate that 17.24 percent SHGs in control and 24.58 percent SHGs in intervention areas are having group savings of > Rs. 50,000. On the other hand, 3.45 percent SHGs in control and 7.63 percent SHGs in intervention are having average group savings amounting to <=Rs.10,000.00.

Table 33: SHG Rating by Per Group Savings; AJY

Control / Intervention	Ranking of SHGs (%) by Group Savings; AJY					Total
	<=10,000	>10,000 <=20,000	>20,000 <=30,000	>30,000 <=50,000	>50,000	
Control	3.4	24.1	24.1	31.0	17.2	100.0
Intervention	7.6	12.7	22.9	32.2	24.6	100.0
Total	6.8	15.0	23.1	32.0	23.1	100.0

In case of average individual savings of members at the group level, average savings of the members is in the range of >Rs.3,000/- & <=Rs. 5,000/- in 27.6 percent groups in control and 31.4 percent groups in intervention. Per member savings in the range of >Rs.5,000/- is in 17.2 percent SHGs in control and 19.5 percent SHGs in intervention. Individual savings amount with the group differs based on the year of formation, year of membership in the SHG, and amount of saving per month.

Table 34: SHG Rating by Per Member Savings; AJY

Control / Intervention	Ranking of SHGs (%) by Per Member Savings (Rs.); AJY					Total
	<=1,000	>1,000 <=2,000	>2,000 <=3,000	>3,000 <=5,000	>5,000	
Control	3.4	24.1	27.6	27.6	17.2	100.0
Intervention	7.6	16.1	25.4	31.4	19.5	100.0
Total	6.8	17.7	25.9	30.6	19.0	100.0

It is expected that with the age of the group, amount of savings will increase, and highest amount of group savings would be with the groups that are oldest. But because of consistent performance issues, many old SHGs have less amount of group savings in comparison to groups that are formed afterwards. In case of Control, 16.7 percent SHGs, those are formed between 2010 to 2014 having group savings <=10,000 and in case of intervention, 8.3 percent groups fall into the same category. In comparison to this, the groups, which were formed between 2014 & 2016 have no group in the same group savings range in both control and intervention. Ranking of the groups by average group savings and year of formation is presented in the matrix.

Table 35: Average Group Savings by Year of Formation of SHG; AJY

Control / Intervention	Year of Formation Rank	Group Savings Ranking (SHG %); AJY					Total
		<=10,000	>10,000 <=20,000	>20,000 <=30,000	>30,000 <=50,000	>50,000	
Control	<=2010	0.0	57.1	28.6	0.0	14.3	100.0
	>2010 & <=2014	16.7	0.0	16.7	16.7	50.0	100.0
	>2014 & <=2016	0.0	0.0	0.0	50.0	50.0	100.0
	>2016 & <=2018	0.0	23.1	30.8	46.2	0.0	100.0
	>2018	0.0	0.0	0.0	100.0	0.0	100.0
	Total	3.4	24.1	24.1	31.0	17.2	100.0
Intervention	<=2010	0.0	10.8	2.7	29.7	56.8	100.0
	>2010 & <=2014	8.3	0.0	8.3	41.7	41.7	100.0
	>2014 & <=2016	0.0	12.5	50.0	37.5	0.0	100.0
	>2016 & <=2018	10.2	16.9	35.6	32.2	5.1	100.0
	>2018	100.0	0.0	0.0	0.0	0.0	100.0

Control / Intervention	Year of Formation Rank	Group Savings Ranking (SHG %); AJY					Total
		<=10,000	>10,000 <=20,000	>20,000 <=30,000	>30,000 <=50,000	>50,000	
	Total	7.6	12.7	22.9	32.2	24.6	100.0
Total	<=2010	0.0	18.2	6.8	25.0	50.0	100.0
	>2010 & <=2014	11.1	0.0	11.1	33.3	44.4	100.0
	>2014 & <=2016	0.0	10.0	40.0	40.0	10.0	100.0
	>2016 & <=2018	8.3	18.1	34.7	34.7	4.2	100.0
	>2018	66.7	0.0	0.0	33.3	0.0	100.0
	Total	6.8	15.0	23.1	32.0	23.1	100.0

Discussion with SHGs divulges that credit is outstanding with the members in 34.5 percent control SHGs with an average of Rs.6,235.0 and 42.9 percent intervention SHGs with an average of Rs.7,775.0.

Table 36: Credit Outstanding; AJY

Control / Intervention	SHGs with Outstanding Credit (SHG %)	Average Credit Outstanding Per Gr. (Rs.)	Average Credit Outstanding Per Member (Rs.)
Control	34.48	68,330.00	6,235.10
Intervention	42.86	85,473.04	7,774.55
Total	41.22	82,662.70	7,522.18

2.3.8 External Credit Linkage

The SHG-Bank Linkage Program (SHG-BLP) and Swarna Jayanti Gram Swarajgar Yojana (SGSY) has provided opportunities to rural individuals and as a group in form of SHG to earn from their skills. The SGSY scheme was implemented for financing in group mode for betterment of BPL families. Whereas the SHG-BLP provides finances to poor families via SHGs without collateral. The two programs provide opportunities for creating sustainable livelihood sources to the poor families in rural areas. These programs have also helped in reducing the gender gap in financial inclusion in India. As per the reports of Findex Database 2017, this gap has reduced from 20% in 2014 to 6% in 2017. Therefore, financially empowering women has led to their active participation in household finances⁹.

The values of SHGs linkage with bank and loan disbursement has increased over past years. In Odisha, with total SHGs being 7.03 lakh as of Mar 31st, 2020, their value calculated to be INR 1,81,137.2 lakhs. The percentage of women exclusive SHGs is high among total with as many as 6.47 lakh out of total SHGs with SHG savings of INR 1,67,536.9 lakhs. The loan disbursed in Odisha to SHGs in 2019-20 valued at INR 2,36,334.16 lakh. Out of this the value of loan disbursed to all women SHGs (INR 2,36,334.16 lakh), share of NRLM/SGSY is INR 2,02,222.5 lakh for 1.17 lakh SHGs.

Table 37: Credit Sources for SHGs; AJY

Intervention / Control	Status of External Credit link at SHG level		
	% Of SHGs availed loan from Banks	% Of SHGs availed loan from NRLM	% Of SHGs availed loan from Others
Intervention	14.29	13.45	0.00
Control	13.79	34.48	0.00

Note: Credit access in 2019-20

Of the total studied SHGs, 62.1 percent SHGs in control and 48.7 percent SHGs in intervention accessed credit (from different sources) in last 3 years. Looking at the age of the group and credit linkage (SHG-Bank linkage), it is pertinent that many SHGs (control: 37.9 percent, intervention: 52.1 percent) have not taken any credit from the bank due to various reasons like no plan for credit utilization, absence of specific credit needs, own fund or funds accessed from different sources is adequate to meet their internal demand, no such business development plan that demands credit linkage, poor performance of the SHG for which banks would have found unsuitable for providing credit etc.

⁹ The status of Microfinance in India, 2019-20. NABARD.

Table 38: Year of Formation of SHG & Credit Accessibility; AJY

AJY	Year of Formation (Rank)	Bank Credit (No. of Times) by SHG (%): Last 3 Years					Total
		0	=1	>1 <=3	>3 <=5	>5	
Control	<=2010	57.1	28.6	14.3			100.0
	>2010 & <=2014	33.3	50.0	16.7			100.0
	>2014 & <=2016	0.0	100.0	0.0			100.0
	>2016 & <=2018	38.5	61.5	0.0			100.0
	>2018	0.0	100.0	0.0			100.0
	Total	37.9	55.2	6.9			100.0
Intervention	<=2010	51.4	29.7	16.2		2.7	100.0
	>2010 & <=2014	41.7	16.7	41.7		0.0	100.0
	>2014 & <=2016	37.5	50.0	12.5		0.0	100.0
	>2016 & <=2018	54.2	37.3	8.5		0.0	100.0
	>2018	100.0	0.0	0.0		0.0	100.0
	Total	52.1	32.8	14.3		0.8	100.0
Total	<=2010	52.3	29.5	15.9		2.3	100.0
	>2010 & <=2014	38.9	27.8	33.3		0.0	100.0
	>2014 & <=2016	30.0	60.0	10.0		0.0	100.0
	>2016 & <=2018	51.4	41.7	6.9		0.0	100.0
	>2018	75.0	25.0	0.0		0.0	100.0
	Total	49.3	37.2	12.8		0.7	100.0

In the state of Odisha, the amount loan disbursed stands at INR 3,69,789.89 lakh in 2019-20. The number of SHGs that has been disbursed these loans are as many as 3.29 lakh in Odisha. Out of these 3.12 lakh SHGs are all women SHGs with value of loan disbursed of 3,48,021.1 lakh¹⁰.

The value of loan disbursed has increased over past years, that is since 2017 until 2020. Average bank credit per group linked with the banks in last 3 years has been Rs. 1,15,555.56 in control, and Rs. 1,73,250.0 in intervention, irrespective of times of linkage with the banks. Bank credit found outstanding with 41.4 percent SHGs in control (average of Rs. 70,948.83) and 34.5 percent SHGs in intervention (average of Rs. 80,292.83).

Source of funds for SHGs have been primarily its members (in the form of savings and interest paid for the credit). Credit accessibility through associated federations is also observed in 20.69 percent SHGs in control and 20.17 percent intervention SHGs. Percentage of SHGs accessing funds from federations is not significantly different between control and intervention. Average funds accessibility by SHGs from federations in intervention areas is observed to be Rs. 95,416.67 and Rs. 58,333.00 in control area. Accessibility of funds by SHGs from other sources like government schemes / programs (excluding Mission SHAKTI / NRLM), CSR activities, NGOs etc. are limited to less than 5.0 percent SHGs in both control and intervention areas.

2.3.9 Involvement in IGA

Involvement of SHGs in IGA (both individual and group) found in 27.59 percent groups in control and 35.29 percent groups in intervention. Further, of the total groups involved in IGA, 62.50 percent in control and 69.05 percent in intervention are involved in group IGA (group IGA refers to any one activity that is being carried out by a group of members of the SHG collectively. It also refers to a particular activity performed by members individually). Individual IGA observed in 37.5 percent SHGs in control and 30.95 percent SHGs in intervention. Group IGA is more prominent in both intervention and control SHGs.

Different IGAs have been taken up by the SHGs / members of the SHGs but in majority cases, it has been agricultural activities where funds are invested. Prevalence of IGA activities in aggregation, processing, value addition, supply chain management and over and above in off-farm and non-farm

¹⁰ The Status of Microfinance in India, 2019-20; NABARD

sector is rare. In the IGAs, selected members of the SHGs are involved. Of the total SHGs involved in IGA, in 37.5 percent SHGs, ≤ 25.0 percent members are involved in control, whereas in intervention ≤ 25.0 percent members are involved in 31.0 percent SHGs. In many SHGs, basically where group based IGAs have been taken up, participation of members is more. On an average, >75.0 percent members are observed involved in IGA activities in 62.5 percent SHGs in control and 59.5 percent SHGs in intervention.

Table 39: Involvement of SHG / Member in IGA; AJY

	Control & Intervention; AJY	
	Control	Intervention
Agriculture	20.69	52.10
Fishery	3.45	0.00
Animal Husbandry	0.00	1.68
Value Addition (NTFP, Tamarind)	3.45	1.68
Service (MDM Etc.)	0.00	0.84
Business	3.45	0.00
Other	0.00	0.00

Note: Agriculture refers to field crop cultivation, including cotton farming; mushroom cultivation, and vegetable cultivation. Value addition covers leaf plate making, dish wash preparation, tamarind processing, bidi preparation, weaving, and broom making. Animal husbandry refers to goat rearing, and dairy farming. Business refers to shop keeping / petty business. Multiple IGA activities at group level, i.e., different members within a SHG are engaged in different activities.

While involvement of groups / its members in IGA is around 50.0 percent, it was believed that the SHGs who are having significant percentage of members from economically poor section, are more involved in IGA activities in comparison to groups where percentage of members from poor economic background is comparatively less. It was observed that no such difference persists ($P > 0.05$) among the studied groups (irrespective of control / intervention). Even where proportionately less members are from poor economic categories, the group or its members are involved in IGA.

2.3.10 SHG Leadership Responsibilities:

The leadership of SHGs have been taking different steps to support its members in different aspects like providing guidance to members on IGA, solving problem of individual members, conflict resolution etc. Different activities taken up by the current leadership of SHGs are presented in the matrix. The overall trend, irrespective of intervention and control, shows that when it comes to managing financial matter of the SHG, leadership is quite supportive to members. But in some other respects, like business activity promotion, preparing group level plans for IGA, collaboration and negotiation with others etc. performance of the groups have been poor. Such poor leadership support across SHGs reflects that the capacity of the leaders in such aspects has been poor to provide such services to its members.

Table 40: SHG Leadership Support to Members; AJY

SHG Leadership Support Aspects	Control / Intervention; AJY	
	Control	Intervention
Providing guidance to members on IGA	31.0	43.7
Assisting in information sharing among members	100.0	95.0
Helping define problems and identify solutions	100.0	100.0
Facilitating appraisal of member performance	72.4	76.5
Encouraging members to offer ideas and opinions	86.2	82.4
Resolving conflicts / Disputes among members	100.0	100.0
Conducting meetings and facilitating group decisions	100.0	100.0
Organizing, implementing and coordinating group plans	24.1	26.1
Facilitating financial transactions during group meetings	100.0	100.0
Maintaining and keeping records of accounts	100.0	100.0
Maintaining a bank account	100.0	100.0
Representing the group's interests to outside bodies	-	5.0
Negotiations and doing business with others	6.9	1.7
Rendering truthful and correct accounts to members	100.0	100.0
Selecting leaders on consensual basis	100.0	100.0

SHG Leadership Support Aspects	Control / Intervention; AJY	
	Control	Intervention
Developing functional systems and procedures	-	11.8
Mechanism for rotation of leadership	41.4	43.7
Changing leadership in case of requirement	72.4	68.1
Training / Capacity Building of Members	65.5	66.4

2.3.11 Capacity Building:

The NRLM helps in capacity building of SHGs by providing continuous capacity building of the targeted families, SHGs, SHG federations, NGOs and other key stakeholders. It also deploys ICT for knowledge disseminations and increasing the effectiveness of the training programs. Also, there are other NABARD financed schemes for capacity building of SHGs such as training for SHG-BL program, Micro Enterprise Development Program, Livelihood and Enterprise Development Programs and collaboration with NRLM for a) training of trainer's program b) conduct of Village Level Programs c) Smooth transition of WSHGs promoted in NRLM intensive blocks to SRLMs.¹¹

The NRLM has developed a handbook for capacity building of staff and therefore the functioning of the SHGs. The SHGs and concerned staff are trained for SHG concept and management, financial inclusion of SHG, bookkeeping, Micro Credit Plan, Participatory Training Methods, Gender sensitization, and training for food nutrition and WASH activities¹². However, studies have suggested that the effectiveness of the trainings depend on the type of training, duration of training, intend of attending the training. It also suggested that 62.5% of the members suggested that the trainings are useful whereas, 5% believe the trainings are not effective.

Similarly, the staff members of partner NGOs, forest guard and forester are trained for 1) formation of SHGs 2) Process of formation of SHGs 3) Characteristics and functions of SHGs and 4) Bank Linkage of SHGs for effective formation of SHG and their functioning¹³.

2.3.12 Benefits of SHG Involvement:

Association of households in SHGs found helpful in many ways for the families. Accessibility to banking institutions has increased. There has been improvement in credit accessibility, enhancement in household savings, better household investment capacity, awareness on different schemes / provisions of government etc. Detail ranking of benefits of the households due to their association in the SHG is presented in the table. However, it is worth noting that the benefits are not exclusive due to SHG involvement, rather other endogenous and exogenous (overall environment) factors have also some influence upon the outcomes.

Table 41: Benefit Due to SHG Involvement; Households; AJY (Control)

SN	Impact Aspects	AJY Control			
		No Change	Marginal (+)	Higher (+)	NR
1	Accessibility to Banks / Financial Institutions	7.59	65.52	23.45	3.45
2	Having Bank Account for Transactions	6.90	73.10	17.24	2.76
3	Availability of Credit	10.34	47.59	23.45	18.62
4	Individual Savings	7.59	68.97	20.69	2.76
5	Starting Business / Enterprise / IGA	15.17	8.97	7.59	68.28
6	Household Food Expenses	35.86	53.79	5.52	4.83
7	Household Investment Capacity	16.55	64.14	16.55	2.76
8	Household Savings	11.72	68.97	13.79	5.52
9	Expenses in Household Assets (New)	44.14	31.03	4.83	20.00
10	Expenditure in Children's Education	37.93	31.03	11.72	19.31
11	Household Health Care Expenses	25.52	39.31	15.17	20.00

¹¹ NABARD sponsored schemes. (<https://www.nabard.org/content1.aspx?id=688&catid=683&mid=>)

¹² NRLM Resource Cell, NIRDPR. NRLM Handbook on staff capacity building.

¹³ OFSDS. AJY CB Manual-Training Module No. 3.

SN	Impact Aspects	AJY Control			
		No Change	Marginal (+)	Higher (+)	NR
12	Awareness of Schemes / Provisions	33.10	31.03	30.34	5.52
13	Social / Business Mobility	35.86	46.21	12.41	5.52
14	Access to Market (Purchase / Selling)	53.10	38.62	4.83	3.45
15	Entertainment Expenses	66.21	11.72	1.38	20.69

Note: NR: No Response; Some SHG members also have the opinion about negative changes in their household front which cannot be attributed to their involvement in SHG or caused due to SHG.

Table 42: SHG Impact on Households; AJY (Intervention)

SN	Impact Aspects	AJY Intervention			
		No Change	Marginal (+)	Higher (+)	NR
1	Accessibility to Banks / Financial Institutions	6.11	68.15	22.11	3.63
2	Having Bank Account for Transactions	7.59	66.83	21.12	4.46
3	Availability of Credit	12.87	41.91	26.73	18.48
4	Individual Savings	15.51	58.25	21.29	4.95
5	Starting Business / Enterprise / IGA	15.51	9.24	3.63	71.62
6	Household Food Expenses	41.25	49.01	5.78	3.96
7	Household Investment Capacity	23.10	63.37	9.90	3.63
8	Household Savings	17.00	65.18	13.86	3.97
9	Expenses in Household Assets (New)	45.21	28.38	6.77	19.64
10	Expenditure in Children's Education	47.19	24.92	8.75	19.14
11	Household Health Care Expenses	28.38	37.29	15.68	18.65
12	Awareness of Schemes / Provisions	29.70	37.29	29.21	3.80
13	Social / Business Mobility	29.21	53.96	11.72	5.12
14	Access to Market (Purchase / Selling)	44.72	44.55	6.11	4.62
15	Entertainment Expenses	56.60	19.47	3.14	20.80

Note: NR: No Response; Some SHG members also have the opinion about negative changes in their household front which cannot be attributed to their involvement in SHG or caused due to SHG.

2.3.13 Rating of SHGs:

The studied SHGs were rated on different parameters, i.e., membership from poor socio-economic background (ST and economically poor), SHG governance and management, financial transactions, social involvement and involvement in forest and environment related activities. Rating of SHGs in different aspects and overall rating is presented in the matrix below.

Table 43: Ranking of SHGs; AJY

AJY	R.1	R.2	R.3	R.4	R.5
	S: <=50	S: >50 <=65	S: >65 <=75	S: >75 <=85	S: > 85
Inclusiveness (ST / Poor HH)					
Control	10.3	6.9	10.3	34.5	37.9
Intervention	11.8	6.7	13.4	36.1	31.9
Total	11.5	6.8	12.8	35.8	33.1
Awareness (Schemes / Programs)					
Control	31.0	6.9	17.2	20.7	24.1
Intervention	16.8	16.8	27.7	26.9	11.8
Total	19.6	14.9	25.7	25.7	14.2
Overall Ranking of SHGs					
Control	10.3	13.8	24.1	41.4	10.3
Intervention	4.2	16.0	27.7	47.9	4.2
Total	5.4	15.5	27.0	46.6	5.4

Table 44: SHG Ranks by Year of Formation; AJY

AJY	SHG Formation Rank	SHG Ranks (SHG Distribution by %); AJY				
		R.1	R.2	R.3	R.4	R.5
		S: ≤50	S: >50 ≤65	S: >65 ≤75	S: >75 ≤85	S: > 85
Control	≤2010		14.3	28.6	28.6	28.6
	>2010 & ≤2014			16.7	83.3	
	>2014 & ≤2016			100.0		
	>2016 & ≤2018	23.1	15.4	15.4	38.5	7.7
	>2018		100.0			
	Total	10.3	13.8	24.1	41.4	10.3
Intervention	≤2010	5.4	10.8	29.7	48.6	5.4
	>2014 & ≤2016	12.5		25.0	62.5	
	>2018			33.3	66.7	
	Total	4.2	16.0	27.7	47.9	4.2
Total	≤2010	4.5	11.4	29.5	45.5	9.1
	>2014 & ≤2016	10.0		40.0	50.0	
	>2018		25.0	25.0	50.0	0.0
	Total	5.4	15.5	27.0	46.6	5.4

Note: S: Score. R: Rank

Total savings generated by groups are found significantly different in control and intervention villages, including significant difference in per member savings at the SHG level in both the cases ($p < 0.05$). So, the assumption of no difference in average group savings and member savings across control and intervention ($H_0: \mu_0 = \mu_1$) SHGs stands rejected ($H_1: \mu_0 \neq \mu_1$, $p < 0.05$). There is no difference in average group and individual savings among SHGs based on percentage of members from poor economic category. So, the assumption about higher percentage of poor member may impact on savings is rejected as significant difference is not observed in groups that have more economically poor member and groups that have less ($p > 0.05$).

2.4 Key Requirements of Community Organizations:

Table 45: Requirements of Community Organizations

Community Organization	Key Activities	Key Requirements
Farmer's Group	- Leaf Plate Making - Vegetable Cultivation	- Capacity Building: Mushroom Cultivation - Capacity Building: Leaf Plate Making - Leaf Plate Making Machine Support - Quality Seeds for Vegetables
Women SHGs	- Awareness Creation - Thrift and Credit - Different IGA for Livelihood - MDM Management - Association in Plantation (rarely)	- Bank Linkage for Credit - Capacity Building: IGA Specific - Machinery Support for Leaf Plate Making - Credit for IGA Activities - Market Linkage Support - Skill Base Development - IGA specific Machinery / Equipment Support
W&S Committee	Maintenance of Motor Pump for Drinking Water Supply	No Specific Needs (Some asked about Financial Support)
GKS	- Community Awareness (Health) - Village / Road Cleaning - Conducting Meetings - Implementing Health & Sanitation Activities of Govt.	Financial and non-financial support from Govt.
Watershed Committee	Water Conservation & Management	Irrigation Facility
Cultural Group	Organize Cultural Programs	Govt. Support (Financial)
Producer Group	- Vegetable Collection & Selling - IGA Activities like Incense Stick Making, Backyard Poultry, Fishery, Stitching Masks and School Uniform	- Stock Room for Produces - Capacity Building Training (IGA) - Credit Support - Market Linkage (for higher price)

Community Organization	Key Activities	Key Requirements
VSS	1. SMC Works, including Check Dam 2. Fire Protection 3. Forest Protection and Management 4. Wild Animal Protection 5. VSS Management Activities	1. Separate Funds for VSS Management 2. Forest Boundary / Ag. Field Boundary 3. Charger Light and Furniture 4. Cashew Based Farm Forestry 5. NTFP Marketing Support 6. More Plantation of Fruit Bearing Trees 7. NTFP Storage Facility (Room) 8. VSS Building Construction 9. Support for IGA 10. Capacity Building: IGA Specific

2.5 Conclusion

The SHGs in Odisha have increased in number and become more active in past few years. The improved income generation activities and growing demand of NTFP based products has brought an added advantage and opportunities for growing profits. However, certain challenges on the progress of the SHG members and related activities are yet to be addressed in totality. The ignorance of participants, inadequate training and flow of information, unavailability of local market facilities and marketing linkages, lack of processing equipment, infrastructure unavailability, weaker management of finances, lower returns etc. are some of the challenges. This affects the level of involvement of SHG members and hence, hinders the income from ongoing IGAs. The long-term effect of these challenges either lead to exit of members, friction among members or disinterest. Therefore, to avoid dissolution of groups, it is necessary to keep them engaged with income generating activities by imparting continuous training at time intervals for skill development, product making and value addition, market linkages etc.



Section III
Sustainable Forest / Biodiversity Management

Section III: Sustainable Forest / Bio-Diversity Management

3.1 Forest Area and Trend of Forest Coverage:

The Recorded Forest Area (RFA) gives the extent of forest in terms of legal status or definition of land as “forest” irrespective of actual forest canopy cover. The area under forest has increased in past years. The RFA of India as per ISFR 2019 is 7,67,419 sq. km. and the RFA for the state of Odisha is reported to be 61,204 sq. km. Both this value has increased since the year 2017.

Table 46: Status of Forest in India and Odisha

State	Geographical Area	Recorded Forest	Protected Forest	Unclassed Forests	Total RFA	% Geographical Area
India	3,287,469	434,853	218,924	113,642	767,419	23.34
Odisha	155,707	36,049	25,133	22	61,204	39.31

Source: ISFR, 2019

Although, the forest cover in India has increased in the past years, the percentage of very dense forest remains lowest with only 3.02 percent. There is slight variation in percentage of open forest with 9.26 percent and moderately dense forest with 9.39 percent. This makes up the total 21.67 percent of forest cover in India. The increase that has been observed since 2017 until 2019 is highest in the area of open forest with 2,702 sq. km.; however, the increase in very dense forest during this period is only 1,120 sq. km. and is only 154 sq. km. in moderately dense forest¹⁴. Similar trend is observed in the forest cover of Odisha with forest cover of 51,619 sq. km. (33.15 percent of GA). The total area of very dense forest in the state has increased by 3 sq. km. only, whereas moderately dense forest has increased by 182 sq. km. and open forest by 89 sq. km.¹⁵.

Forest of Odisha is well stocked, diverse, multi-storied and dense in nature. Recorded Forest Area (RFA) in the State is 61,204 sq. km. (39.31% of State geographical area) of which 36,049 sq. km. (58.90 percent of recorded forest area) is Reserved Forest (RF), 25,133 sq. km. is Protected Forest (PF) (40.75 percent of recorded forest area), and 22 sq. km. is Unclassed Forests (UF) (0.35 percent of the recorded forest area). The state has raised 6,30,896 ha of plantations in the last two years. Two National Parks and 19 Wildlife Sanctuaries constitute the Protected Area network of the State covering 5.19% of its geographical area. In terms of forest canopy density classes, the State has 6,969.71 sq. km. under Very Dense Forest (VDF), 21,551.93 sq. km. under Moderately Dense Forest (MDF) and 23,096.87 sq. km. under Open Forest (OF). Forest Cover in the State has increased by 273.51 sq. km. as compared to the 2017 ISFR assessment.

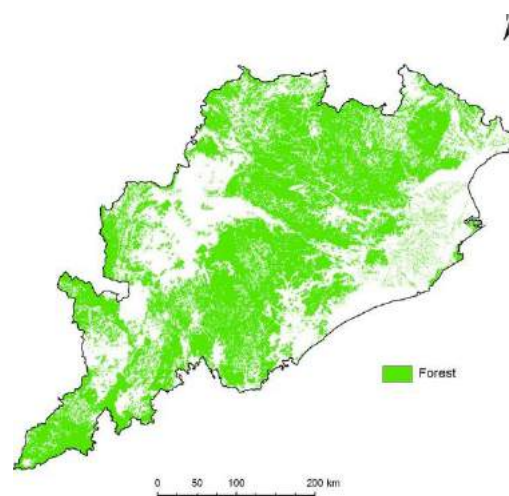


Figure 8: Forest Cover map of Odisha

¹⁴ Forest Survey of India. India State of Forest Report. 2019

¹⁵ Forest Survey of India. India State of Forest Report. 2019

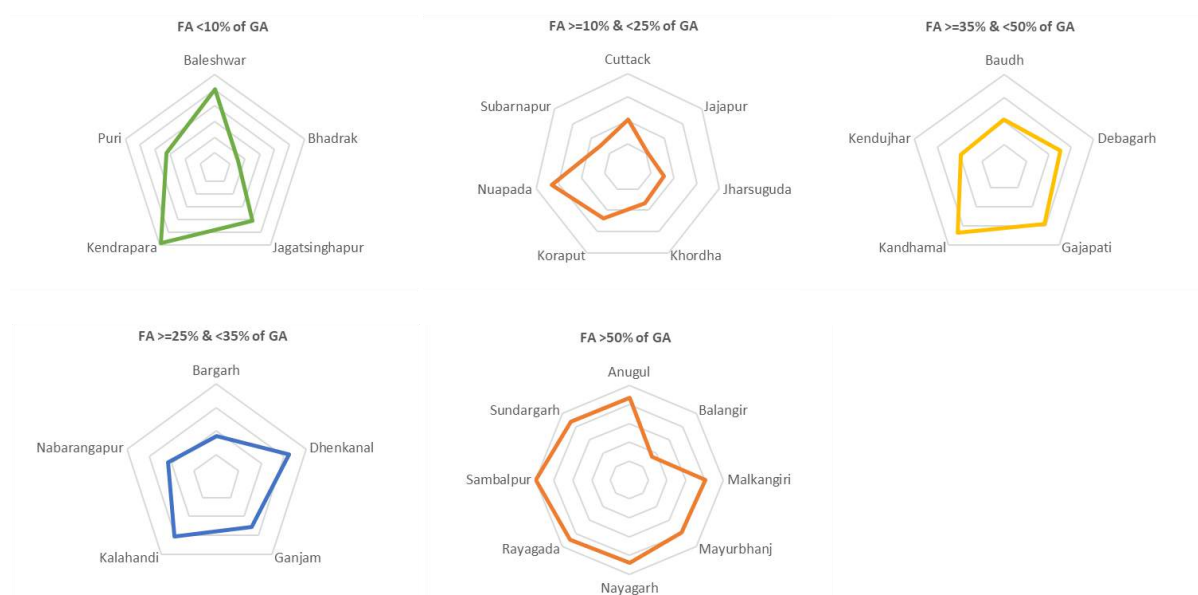


Figure 9: Forest Area (FA) to Geographical Area (GA)

Categorization of forest area percentage to total geographical area of the District reveals that in five Districts, less than 10.0 percent of the geographical area is covered under forest (Balasore, Bhadrak, Jagatsinghpur, Kendrapada and Puri); seven Districts have forest area to the tune of ≥ 10.0 percent and < 25 percent (Cuttack, Jajpur, Jharsuguda, Khurdha, Koraput, Nuapada and Subarnapur); five Districts have forest area in the range of ≥ 25 & < 35 percent of the District geographical area (Bargarh, Dhenkanal, Ganjam, Kalahandi and Nabarangpur); eight Districts have forest area to the total geographical area in the range of ≥ 35 & < 50 percent (Angul, Bolangir, Malkangiri, Mayurbhanj, Nayagarh, Rayagada, Sambalpur, and Sundargarh). Remaining five Districts, namely, Boudh, Debagarh, Gajapati, Kandhamal and Keonjhar have ≥ 50 percent of the geographical area covered under forest.

3.2 Forest Degradation and its Impact on Local Habitations:

The FAO has defined forest degradation as the reduction of the capacity of a forest to provide goods and services¹⁶. The forest depletion is a major concern due to industrialization, urbanization and overuse of resources. The Net Present Value (NPV) as calculated for the Indian forests is worth \$1.7 trillion in 2017¹⁷. This is the total economic value of the forest stands in the country. The degradation of forest also leads to the flooding of region, resulting in losses of crop, infrastructure and life. These flooding occur due to two major effects, (1) by reducing the tree fountain effect and (2) by soil compaction and poor soil structure¹⁸. There is also supply and demand gap with regard to forest products.

As explained by a study (Aggrawal. A et al.), the demand supply gap of firewood, timber and fodder is prevailing in almost all the states. Along with this the ISFR 2011 provided an estimate of consumption and production of forest products such as wood, firewood, and livestock dependence on forests¹⁹.

¹⁶ Markku Simula. Forest Resource Assessment, working paper 154. Towards defining forest degradation: comparative analysis of existing definitions. 2009

¹⁷ Umashanker Singh. Deforestation in India and climate change. 2018

¹⁸ Rima Kumari, Ayan Banerjee et al. Deforestation in India: Consequences and sustainable solutions.

¹⁹ A. Aggarwal, Paul V, and S. Das. Forest Resources: Degradation, livelihoods and climate change. 2009

Table 47 Dependency on Forest Resources

Forest Products	Demand in MT	Sustainable Supply in MT	Gap/unsustainable Harvest in MT
Firewood	228	128	100
Fodder (green and dry)	1594	741	853
Timber	55	41	14

Source: ISFR 2019

Table 48 Forest Resource Consumption and Production

Forest Products	Consumption	Production
Wood (RWE in m cum)	48.0	45.95
Firewood from forests (million tonnes)	58.47 (27.14%)	19.254
Livestock dependence on forest (in million)	199.58 (38.49%)	

Source: ISFR 2019

3.3 Forest Development and Management Activities:

The government of India has been implementing three major schemes, i.e., (1) National Afforestation Program for improvement of degraded forest lands and ecological restoration, (2) National Mission for Green India for improving the forest cover and cross sectoral activities on landscape basis and, (3) Forest Fire Prevention and Management Scheme for controlling forest fires and prevention across the country. As much as INR 343.08 crore has been released under Green India Mission (GIM) for afforestation activities in an area of 126,916.32 ha²⁰. Various approaches have been adopted for forest and biodiversity conservation such as dedicated biosphere reserves, national parks, preservation of sacred groves, seed bank etc.²¹.

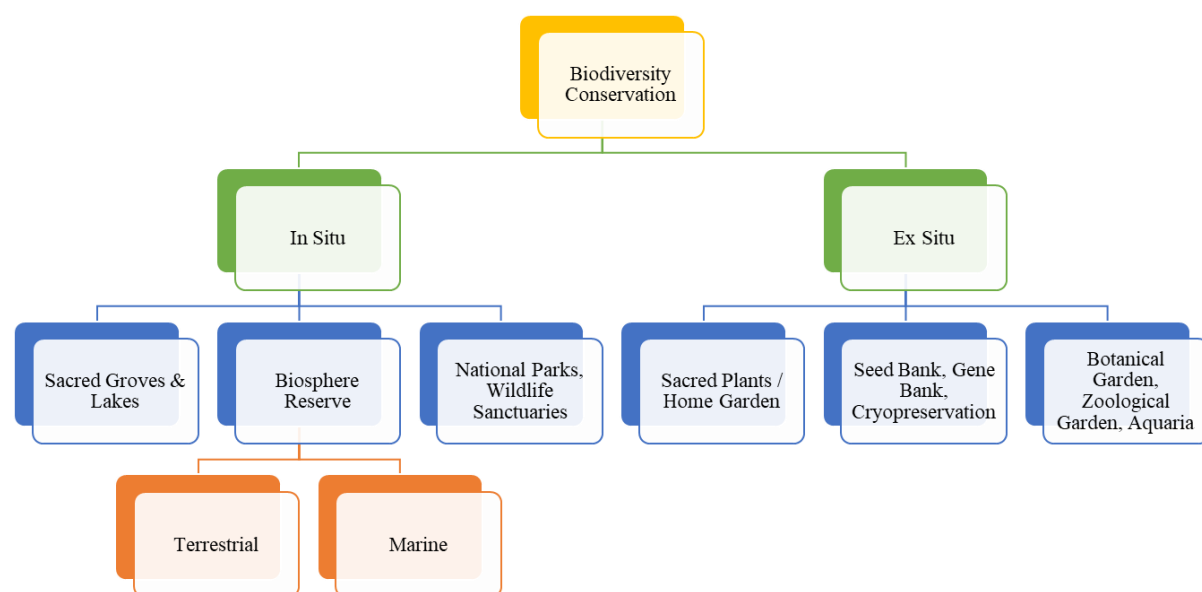


Figure 10 Approaches for Biodiversity Conservation

Afforestation activities were taken up during the year 2010-11 to 2017-18 under various schemes in Odisha. The details of the same has been describe in the table below²².

²⁰ Ministry of Finance, GoI. Economic Survey 2019-20, Volume 2. 2020.

²¹ M.S. Umesh Babu and Sunil Nautiyal. Conservation and management of forest resources in Inida: Ancient and current perspectives. 2015

²² <https://odishaforest.in/en/afforestation/>

Table 49 Afforestation Activities in Odisha

Year	AR (in ha.)	ANR with Gap Planation (in Ha.)	ANR without Gap Plantation (in Ha.)	Total Plantation (in Ha.)	Avenue Plantation (in RKM)	Seedlings Planted (in lakh)	Seedlings Distributed (in lakh)
2010-11	70842	60084	102519	233445	241	1086.10	128.34
2011-12	22950	10291	148946	182187	769	358.92	195.92
2012-13	18603	20230	68454	107287	3107	321.66	211.92
2013-14	24966	38023	40296	103285	4506	467.53	304.14
2014-15	24600	60253	114038	198891	4755	692.17	550.00
2015-16	16576	98540	241975	357091	4607	487.98	460.96
2016-17	15322	127973	258121	401416	5838	497.75	376.57
2017-18*	5523.17	20366.94	208524.96	234415.07	3234.50	159.57	145.14
Total	199382.17	435760.94	1182873.96	1818017.07	27057.50	4071.68	2372.99

Source: <https://odishaforest.in/en/afforestation/>

3.4 Forest Quality:

The quality of forest has been classified under 4 categories on the basis of tree cover, i.e., Very Dense, Moderately Dense, Open Forest Scrub and Non-Forest.

Table 50 Type of Forests

Forest Type	Criteria
Very Dense Forest	All Lands with tree cover (Including mangrove cover) of canopy density of 70% and above
Moderately Dense Forest	All lands with tree cover (Including mangrove cover) of canopy density between 40% and 70% above
Open Forest	All lands with tree cover (Including mangrove cover) of canopy density between 10% and 40%
Scrub	All forest lands with poor tree growth mainly of small or stunted trees having canopy density less than 10 percent
Non-Forest	Any area not included in the above classes

As discussed, the quality of the forests has changed in the last years which is reflected in the table describing variation in type of forests since 2017 and percentage of change. The forest area in the studied Ranges / Divisions that are assigned to and managed by VSS, mostly fall into moderately dense category.

Table 51 Quality of Forest Cover

State	Total Forest Cover 2019 in sq. km	VDF 2019 in sq. km	MDF 2019 in sq. km	OF 2019 in sq. km	Change in area of VDF in sq. km since 2017	Change in area of MDF in sq. km since 2017	Change in area of OF in sq. km since 2017	Total Change in sq. km
India	7,12,249	99,278	3,08,472	3,04,499	1,120	154	2,702	3,976
Odisha	51,619	6,970	21,552	23,097	3	182	89	279

Source: ISFR 2019; VDF: Very Dense Forest; MDF: Moderately Dense Forest; OF: Open Forest

3.5 Existing Nurseries, Production and Plantation Support:

A nursery is a managed site designed to produce seedlings grown under favourable conditions until they are ready for planting. A total of 5,217 nursery sites have been developed in state of Odisha, raising around 15,50,41,375 seedlings across 52 Forest Circles by 2020. These seedlings were raised to fulfil the requirement under the various schemes and purposes such as CAMPA, Green Mahanadi Mission, increasing green cover, MGNREGS, National Afforestation Program, OEMF, OFSDP, District Mineral Fund, CSR, OMC funding, OMBADC, Bald Hill Plantation Special and miscellaneous²³.

²³Odisha Forest Management System. <https://odishaforestgis.in/ofms-report/>

3.6 Farm Forestry Promotion:

Farm Forestry, in general, refers to growing trees on farmlands for commercial purposes like timber production or for variety of non-commercial purposes like groundwater control, prevention of soil erosion, prevention of polluting nutrients in the soil etc. The farm forestry has a number of positive outcomes like (a) production of quality small timber products, (b) increase in farm incomes, (c) create scope of employment, and (d) provide ecosystem services and environmental benefits. Farm forestry incorporates commercial tree growing into farming systems. It is the management of trees for a specific purpose within a farming context. However, farm forestry is the outcome that, to a large extent, is dependent upon the decision of the landholder. The performance of farm forestry depends upon the interest, resources and involvement of landholders and their ability to manage farm forestry effectively.

Different farm forestry models have been promoted by OFSDS like (a) Agri-Horti-Silvi (mixed) model, (b) Timber model, (c) Pulpwood model, (d) Horti-NTFP model, and (e) field bund-dyke model. Adoption of farm forestry models is observed in 20.69 percent households in the control and 20.30 percent households in the intervention areas. Households belonging to other social categories (OC) area having better adoption (control: 36.67 percent; intervention: 25.0 percent) in comparison to SC (control: 17.39 percent; intervention: 17.86 percent) and ST households (control: 16.30 percent; intervention: 18.45 percent). Further economically better off households have higher adoption rate in control areas (50.00 percent) whereas poor households have better adoption in intervention (20.38 percent). Looking by land holding categories, it is evident that farm forestry is better adopted by semi-medium and medium farmers in comparison to marginal and small farmers in control. However, marginal and small farmers in intervention areas are more involved in farm forestry in comparison to control.

Table 52: Farm Forestry by Households; AJY

Categories	Particulars	HH with Farm Forestry (%)	
		Control	Intervention
HH with Farm Forestry	HH %	20.69	20.30
Farm Forestry by Social Gr.	Other Caste (OC, %)	36.67	25.00
	Scheduled Caste (SC, %)	17.39	17.86
	Scheduled Tribe (ST, %)	16.30	18.45
	Total	20.69	20.30
Farm Forestry by Economic Gr.	Poor (%)	18.52	20.38
	Better Off (%)	50.00	18.75
	Total	20.69	20.30
Farm Forestry by Land Holding	Marginal Farmer (%)	21.33	24.92
	Small Farmer (%)	11.11	24.43
	Semi-Medium Farmer (%)	44.44	22.22
	Medium Farmer (%)	100.00	0.00
	Total	20.69	20.30

Average area devoted for farm forestry is about 0.28 ha. in case of control and 0.23 ha. in case of intervention. Area devoted for farm forestry has been relatively higher in case of semi-medium farmer in control and marginal farmer in intervention.

Table 53: Area (Ha.) Under Farm Forestry; AJY

Categories	Particulars	Area Under Farm Forestry	
		Control	Intervention
Average Area	Area under Farm Forestry (Ha.)	0.28	0.23
Farm Forestry Area by Holding Category	Marginal Farmer (Ha.)	0.22	0.24
	Small Farmer (Ha.)	-	0.22
	Semi-Medium Farmer (Ha.)	0.45	0.12
	Medium Farmer (Ha.)	0.04	-
	Total	0.28	0.23

Categories	Particulars	Area Under Farm Forestry	
		Control	Intervention
Farm Forestry Area by Social Group	Other Caste (OC, Ha.)	0.15	0.24
	Scheduled Caste (SC, Ha.)	0.33	0.26
	Scheduled Tribe (ST, Ha.)	0.33	0.18
	Total	0.28	0.23

Note: Response of many households not available on area covered under farm forestry. Hence, in computation, such households excluded.

3.7 Plant Preference:

Preference has been given to timber and fruit bearing species like Teak (*Tectona grandis*), Eucalyptus (*Eucalyptus globulus*), Mango (*Mangifera indica*), Cashew (*Anacardium occidentale*), Sal (*Shorea robusta*) Arjuna, Acacia, Guava, Gambhari, Sahaja, Nilgiri, Chakunda, Bamboo etc. The plants are planted mostly in bund of agricultural land, followed by uncultivable waste land. Adoption of farm forestry model inside the cultivated land is less. Farm forestry models expected to be beneficial to the adopting families in different ways like, getting fruits for consumption and sale, wood for furniture, firewood for family use, and getting different major benefits they have been accessing from the local forest (except NTFP).

3.8 Causes of Non-Adoption:

The households who have not adopted farm forestry model are due to various reasons like insufficient land, anticipated impact on crop productivity due to shade of tree species, low plant survival rate due to wild animal attack, poor irrigation facility, no space available in the existing cultivated land etc. It is observed that while uncultivated and culturable waste land are lying barren, owning farmers have not adopted farm forestry in such category of land due to such apprehensions.

Table 54: Reasons of Poor/Non-Adoption of Farm Forestry

SN	Reasons of not Practicing Farm Forestry	SN	Reasons of not Practicing Farm Forestry
1	Affect Agricultural Production	9	No Quality Planting Materials as no Nursery Nearby
2	Higher Plant Mortality due to Domestic Animals	10	Plant will not Grow in the existing Soil (Low Soil Productivity)
3	Growth of Field Crops Impacted Upon	11	Destruction due to Wild Animals (Monkey Menace)
4	Reduce Crop Production	12	Yet to Receive any such Support for farm forestry
5	Fertility / Productivity of Land will Reduce	13	Problem of Watch and Ward in Growing Stage of Plants
6	No Irrigation Facility to Water Plants	14	Having only Forest Land
7	Not Required as House is in the Forest Fringe	15	Not Interested in Plantation Crops
8	No / Insufficient Land Available for farm forestry		

3.9 Farm Forestry and Income:

It is commonly accepted that farm forestry gives better return to the farmers in comparison to agricultural mono cropping. However, farmers have a different understanding on farm forestry. During interaction, farmers expressed that farm forestry would reduce the crop production because of shades on the field crops and reduction in crop area due to planting of horticultural / forest species. Farmers were also of the opinion that they do not have required land available for plantation of fruit bearing and forest species. In the study, it is observed that income of the households, who have existing farm forestry is comparatively higher than those who do not have farm forestry, irrespective of control and intervention areas. The difference in level of income is statistically significant ($p < 0.05$) between families having farm forestry and families not having farm forestry, keeping all other factors constant. It is to mention that these families have adopted farm forestry for years and projects have initiated the process to augment the coverage further. So, the assumption of equal income of families having or not having farm forestry is rejected ($H_1: \mu_0 \neq \mu_1, p < 0.05$).

3.10 Forest Fire Protection and Management:

Incident of forest fire is reported to happen once in control area in case of 3.33 percent VSS in 2018-19 and 2019-20. In intervention areas, 12.50 percent VSS experienced and managed forest fire in 2018-19 which was happened once. In the year 2019-20, forest fire occurred in 7.50 percent VSS which was managed by them with the support of forest officials. Occurrence of forest fire (number of times) and percentage of VSS managed it is presented in the matrix.

Table 55: Forest Fire Protection and Management; AJY

	Forest Fire 2018-19			Forest Fire 2019-20			
	No Forest Fire	Once	Total	No Forest Fire	Once	Twice	Total
Control	96.67	3.33	100.00	96.67	3.33	0.00	100.00
Intervention	87.50	12.50	100.00	92.50	7.50	0.00	100.00
Total	89.33	10.67	100.00	93.33	6.67	0.00	100.00

Note: Incident of forest fire refers to forest fire in the area assigned to VSS only

3.11 Treatment in Assigned Area:

In case of AJY, two activities were observed in the studied sites, i.e., (a) ANR without gap plantation, and (b) Block Plantation. Of the total assigned forest area, the average degraded area taken up for operation under ANR without gap is around 49.69 ha. and implemented by 96.43 percent VSS. About 3.57 percent VSS have taken up Block Plantation in average area of 10.0 ha.

Table 56: Plantation / Treatment Area (Ha.) of the Assigned Area; AJY

Plantation / Silviculture	VSS (%)	Average Treatment Area (Ha.)
ANR without Gap	96.43	49.69
Block Plantation	3.57	10.00
Total	100.0	48.28

The plantation assessment was conducted in 29 sample plots, each of 1000 sq. mt., and 29 VSS were covered in the assessment. The mean area of the covered VSS found to be 54.99 ha. Of the total VSS covered under AJY, 64.29 percent are having assigned forest area ≤ 50 ha., whereas 32.14 percent are in the range of $>50 \leq 100$ ha. and remaining 3.57 percent are having $>100 \leq 150$ ha. of assigned forest area. The details of the sample plots with geo-coordinate are presented in the matrix below.

Table 57: VSS Ranking Based on Assigned Forest Area (Ha.); AJY

Assigned Forest Area Category (VSS %)				Total
≤ 50	$>50 \leq 100$	$>100 \leq 150$	>150	
64.29	32.14	3.57	0.00	100.0

Table 58: Sample Sites; AJY

SN	Division	Range	Name of the VSS	Type of Plantation	Geo-Coordinate of Plot (N.)	Geo-Coordinate of Plot (E.)
1	Angul	Durgapur	Durgapur	ANR without Gap	20° 56' 15.1"	84° 52' 12.4"
2	Baliguda	Baliguda	Sigamila	ANR without Gap	20° 14' 00.02"	83° 87' 38.48"
3	Baliguda	Tumudibandha	Kurtamgada Deulasahi	ANR without Gap	20° 06' 93.95"	83° 74' 57.54"
4	Bargarh	Bhatli	Belbahali	ANR without Gap	21° 51' 65.23"	83° 59' 22.25"
5	Bargarh	Bhatli	Dekhulia	ANR without Gap	21° 50' 74.88"	83° 41' 31.95"
6	Bargarh	Bhatli	Amalipali	ANR without Gap	21° 45' 79.27"	83° 37' 04.42"
7	Bolangir	Bolangir	Dhulusar	ANR without Gap	20° 71' 38.2"	83° 44' 78.48"
8	Bolangir	Bolangir	Bandhapoda	ANR without Gap	20° 52' 08.56"	83° 53' 11.73"
9	Bolangir	Bolangir	Gendabanei	ANR without Gap	20° 71' 80.4"	83° 37' 49.8"
10	Bonai	Kuliposh	Jagti	ANR without Gap	21° 63' 90.16"	85° 12' 05.59"
11	Bonai	Kuliposh	Angul	ANR without Gap	21° 71' 32.41"	85° 05' 54.84"
12	Bonai	Kuliposh	Raikalaposh	ANR without Gap	21° 77' 72.13"	84° 98' 77.67"
13	Bonai	Kuliposh	Bichhonapati	ANR without Gap	21° 77' 86.9"	85° 01' 05.97"
14	Deogarh	Deogarh	Singhabalani	ANR without Gap	21° 32' 15.9"	84° 47' 22.9"

15	Deogarh	Deogarh	Gajuribani	ANR without Gap	21° 31' 25.3"	84° 48' 59.0"
16	Kalahandi (N)	M. Rampur	Kabichandrapur	Block Plantation	20° 31' 87.75"	83° 50' 65.95"
17	Kalahandi (N)	M. Rampur	Muchelpadar	ANR without Gap	20° 35' 85.53"	83° 66' 67.38"
18	Keonjhar	Keonjhar	Jharbeda	ANR without Gap	21° 32' 01.6"	85° 44' 14.0"
19	Nawarangapur	Nawarangapur	Dharnabeda	ANR without Gap	19° 19' 24"	82° 31' 07.0"
20	Nawarangapur	Nawarangapur	Dharniguda	ANR without Gap	19° 45' 74.87"	82° 54' 98.64"
21	Nawarangapur	Nawarangapur	Panasduka	ANR without Gap	19° 25' 43.77"	82° 71' 70.11"
22	Rayagada	Rayagada	Meenapai	ANR without Gap	19° 08' 97.54"	83° 19' 06.28"
23	Rayagada	Rayagada	Bhatakbal	ANR without Gap	19° 24' 17.28"	83° 28' 82.37"
24	Rayagada	Rayagada	Tileru	ANR without Gap	19° 18' 98.22"	83° 27' 62.69"
25	Rayagada	Rayagada	Gouda Mirabali	ANR without Gap	19° 08' 88.2"	83° 52' 60.57"
26	Redhakhol	Redhakhol	Similipali	ANR without Gap	21° 20' 37.18"	84° 47' 04.79"
27	Redhakhol	Pur	Kankdar	ANR without Gap	21° 33' 57.42"	84° 30' 77.56"
28	Rourkela	Rajgangapur	Ghagari	ANR without Gap	22° 11' 64.70"	84° 62' 10.85"
29	Rourkela	Rajgangapur	Karlakhaman	ANR without Gap	22° 16' 24.38"	84° 48' 88.62"

In AJY, the measured sites are of two types, i.e., ANR without gap plantation and Block Plantation. Both the activities, i.e., ANR without gap and Block Plantation have been taken up in more than 20.0 percent area of the total assigned area. Of the total assigned forest area to the VSS, percentage of area taken up for minimizing the degraded forest area and improving forest coverage is presented in the matrix.

Table 59:: Area (% of Assigned Area) Under Different Measures; AJY

	Ranking of Area (% of Assigned Area in Ha.) Covered under Different Measures				
	<=5%	>5% <=10%	>10% <=15%	>15% <=20%	>20%
ANR without Gap					100.0
Block Plantation					100.0
Total					100.0

Forest rejuvenation / degraded forest treatment measures have been taken up for more than 5 years under AJY. Different measures that have been taken under AJY is presented in the matrix.

Table 60: Year of Operation in Selected Sites; AJY

	Year of Operation						
	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
ANR without Gap	3.7	14.8	48.1	18.5	3.7	7.4	3.7
Block Plantation			100.0				
Total	3.6	14.3	50.0	17.9	3.6	7.1	3.6

In AJY, emphasis has been given to ANR without gap plantation in different years in the studied area and in one case, Block Plantation was taken up during 2016-17. Mean maximum height of the plant measured to be 5.0 mt. and mean minimum height is of 0.5 mt. Mean max. GBH/GCH of the plant has been 30 cm. and mean min. GBH/GCH is 6 cm.

3.11.1 Growth of Natural Species:

A number of natural species observed existing in the assessed plots covered under ANR without gap plantation. The naturally grown plant species that are found are presented in the matrix below. The number of species varies widely by area.

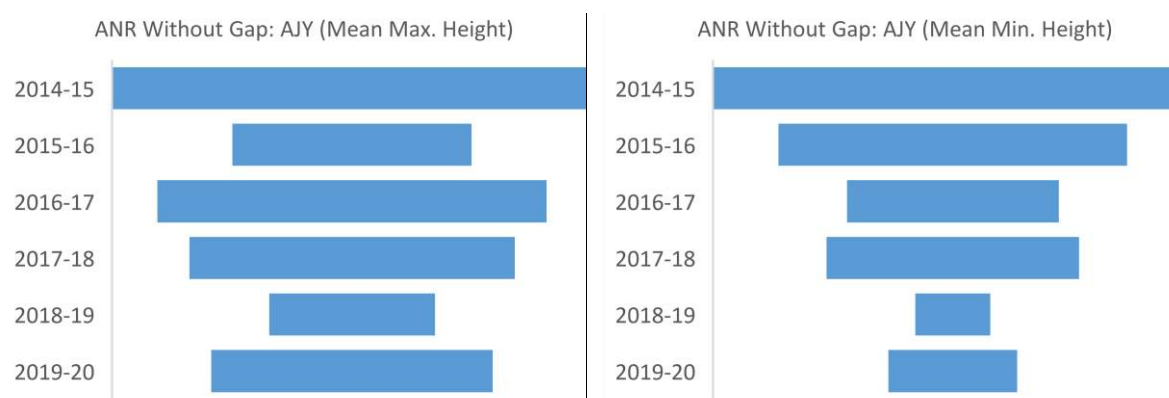


Figure 11: Plant Height: AJY

Looking at the year of silvicultural operations in ANR without gap plantation, the plant growth observed to be relatively less in areas of operations taken up during the year 2015-16 and 2018-19 in comparison to other years. The mean max. height of the plants found to be highest for 2014-15 followed by 2016-17 and lowest for 2018-19. More or less similar trend was observed in case of mean min. height, mean max. GBH/GCH and mean min. GBC/GCH.

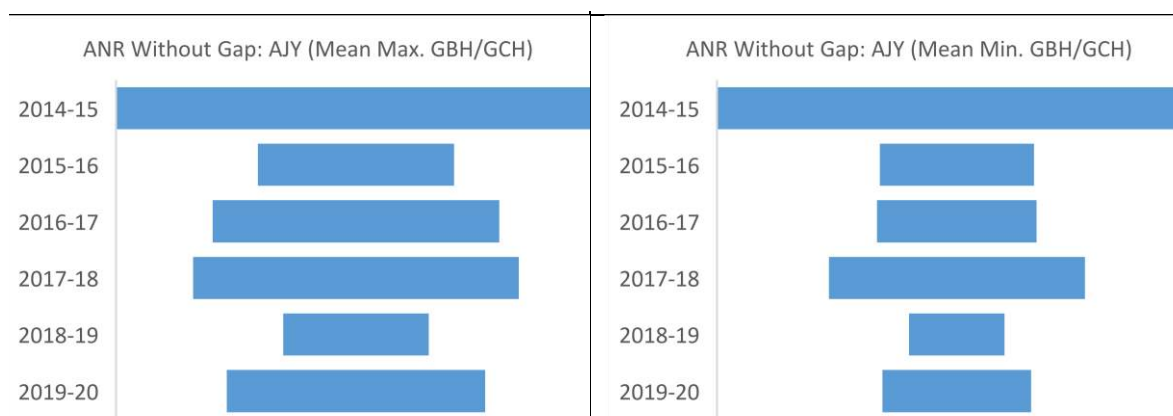


Figure 12: Plant GBH / GCH: AJY

About 14 different species were observed in the ANR with gap treatment area taken up during 2014-15 whereas a maximum of 11 plant species were witnessed in ANR-without gap treatment area taken up during 2015-16, maximum of 20 different species were observed in areas under treatment during 2016-17, around 10 species (max.) in the treated area of 2017-18, around 13 speices (max.) in the area treated during 2018-19 and 17 different species (max.) in area treated during 2019-20.

Table 61: Mean Maximum and Mean Minimum Height and GBH / GCH; AJY

Species (Natural)	Mean Max. Height	Mean Min. Height	Mean Max. GBH	Mean Min. GBH
Ainla	3.9	2.4	20.8	12.1
Anchhu	3.3	2.0	20.3	11.0
Asana	9.1	9.4	37.3	23.2
Bahada	6.6	3.3	29.3	13.5
Bela	11.8	2.0	25.3	10.5
Bhalia	6.4	2.8	38.6	15.4
Chakunda	8.0	4.0	51.0	16.0
Char	6.7	3.3	45.6	17.1
Chhena	10.0	8.0	33.0	16.0
Dhaben	4.0	1.0	35.0	8.0
Dhaura	7.2	2.8	34.7	17.0
Dhobani	11.8	5.5	70.8	26.8
Gambhari	5.2	4.6	31.9	20.3
Gangasiuli	3.7	1.5	20.3	10.2

Species (Natural)	Mean Max. Height	Mean Min. Height	Mean Max. GBH	Mean Min. GBH
Ghantu	3.0	1.0	18.0	8.0
Gindola	3.0	1.0	18.0	7.0
Giridi	3.0	1.0	17.0	9.0
Halan	8.0	6.0	42.0	28.0
Harada	5.5	1.2	35.6	20.3
Harida	5.7	3.2	32.2	16.4
Jamrdi	4.0	2.0	45.0	24.0
Jamu	8.3	3.6	44.7	17.6
Kadamba	5.5	2.4	27.9	15.2
Kalakendu	10.0	6.0	60.0	29.0
Kanchan	4.3	2.2	29.0	15.4
Karada	6.5	8.1	28.1	16.4
Karanja	3.4	2.1	24.1	12.7
Karla	5.0	3.0	27.0	20.0
Kasi	10.7	4.7	57.0	35.5
Kataka	3.0	1.0	16.0	10.0
Kekat	6.0	4.0	57.5	20.0
Kendu	6.9	2.0	27.6	14.6
Kerchi	1.5	1.0	12.0	6.0
Kerenala	10.0	5.0	70.0	15.0
Khagada	6.0	2.8	35.0	24.0
Khaira	10.5	6.5	44.5	10.0
Khil	2.0	1.0	15.0	12.0
Korla	6.0	4.0	18.0	20.0
Kumbhui	5.0	3.0	24.0	15.0
Kurei	1.7	0.8	13.7	6.3
Kuruma	7.4	2.6	28.4	15.6
Limba	5.7	3.7	27.3	14.7
Mahi	7.0	3.5	58.2	20.0
Mahula	8.4	9.9	57.6	20.8
Mal Dhaura	8.0	4.0	23.0	12.0
Mankada Kendu	5.3	2.0	28.7	11.3
Mitkania	2.0	1.0	7.0	5.0
Mundi	6.7	3.5	31.3	12.5
Patamasu	3.5	0.8	38.0	8.0
Piasala	9.5	5.9	57.2	25.4
Pitamari	1.2	0.5	12.0	7.0
Raj Mai	20.0	20.0	102.0	100.0
Rohani	5.0	2.4	28.8	16.7
Sahaj	8.4	4.2	42.5	17.9
Sal	11.8	5.2	75.6	26.0
Sana Chakunda	3.5	2.0	30.0	14.0
Sana Patrimai	5.0	2.0	26.0	12.0
Sidha	3.7	0.8	13.3	4.0
Simaruba	6.1	2.4	40.6	17.8
Sirisa	3.8	2.0	20.0	14.0
Sneha	8.0	2.0	45.0	12.0
Sunari	3.7	2.2	21.1	12.5
Tangini	6.6	4.1	36.2	24.6
Teak	8.9	5.1	30.8	17.0
Veru / Bheru	8.0	6.0	30.0	25.0

Note: Plants are in local name

Irrespective of the age of ANR without gap operation, major species that are found in maximum sites are Kendu (85.7 percent sites), Sal (78.6 percent sites), Mahula (57.1 percent sites), Piasala (50.0 percent sites), Char (50.0 percent sites), Sahaj (39.3 percent sites), Asana (32.1 percent sites), and Kuruma (32.1 percent sites) etc. Apart from these, there are a number of species that are found existing in different sites with varied numbers. Average number of natural plant species per site also differs widely from a minimum of one to a maximum of 113.

3.11.2 Plant Regeneration:

Different species found regenerating in different areas are like Sal, Teak, Simaruba, Bija, Jamu etc. During assessment, it is observed that Char is the species which has regenerated in 85.71 percent sites, followed by Sal (25.0 percent sites).

Table 62: Regeneration of Plant Species; AJY

SN	Species	Sites (%)
1	Char	85.7
2	Dhataki	3.6
3	Harida	3.6
4	Karada	3.6
5	Kendu	7.1
6	Mahula	7.1
7	Pitamari	3.6
8	Sal	25.0
9	Teak	3.6

3.11.3 Herbs and Shrubs:

Apart from tree species, several herb and shrub species were also observed in the sites. Average prevalence of number of herbs and shrubs by its type is presented in the tables.

Table 63: Type of Shrubs; AJY

SN	Shrubs	Sites (%)	Average No.
1	Anchu	3.6	3.00
2	Aswagandha	7.1	5.50
3	Bana Barkoli	3.6	1.00
4	Bana Khajuri	3.6	2.00
5	Bansola	7.1	9.50
6	Bhuin Ainla	3.6	150.00
7	Bhuinkuruma	3.6	5.00
8	Dhataki	14.3	4.50
9	Dhontenti	7.1	3.00
10	Gandri	3.6	19.00
11	Gangasiuli	3.6	1.00
12	Ghutuli	3.6	1.00
13	Gonthia Lata	3.6	12.00
14	Gurubaha	3.6	7.00
15	Jhadu	3.6	5.00
16	Kanteikoli	7.1	3.00
17	Kolatha	3.6	13.00
18	Kurei	7.1	3.00
19	Lajakuli	3.6	5.00
20	Mamagva	3.6	1.00
21	Nogbal	3.6	3.00
22	Phanphania	3.6	1.00
23	Poka Sungha	7.1	4.50
24	Putuli	3.6	5.00
25	Satabari	3.6	12.00
26	Sidha	3.6	1.00
27	Suna Regeda	3.6	8.00
28	Sunari	3.6	1.00
29	Telkuruma	3.6	6.00

Table 64: Type of Herbs; AJY

SN	Herbs	Sites (%)	Average No.
1	Badamula	3.6	10.00
2	Bana Kolatha	185.7	4.67
3	Bariainla	3.6	3.00
4	Bausuli	3.6	6.00
5	Bhuin Limba	3.6	5.00
6	Bisakhapuri	3.6	3.00
7	Lata Kasturi	3.6	2.00
8	Muthamula	3.6	5.00
9	Sabli	3.6	2.00

3.12 Plant Biodiversity Index:

In order to understand plant diversity (trees, herbs and shrubs) in the assessed plots (plot of 1000 Sq. Mt. for plantation / tree species, 25 Sq. Mt. for shrubs and 1 Sq. Mt. for herbs) that represent the studied forest area, two indices are computed, i.e., Shannon Index (also known as Shannon-Wiener Index) (H) and Simpson Index (D). The observations against each index are discussed below.

3.12.1 Shannon-Wiener Index:

Shannon-Wiener Index was computed to understand plant diversity in the assessed plots. Based on species abundancy, the index was computed separately for each category of operation (ANR without gap plantation and Block plantation). The score (H) obtained for each treatment category is further ranked to understand the distribution of sites by plant diversity. The “**Rank 1**” refers to low diversity and “**Rank 4**” is termed as high diversity. In case of AJY, 7.1 percent sites fall in to “**Rank 1**” (low diversity), 42.9 percent to “**Rank 2**”, 50.0 percent to “**Rank 3**” and no site found in “**Rank 4**” category.

Table 65: Distribution of Sites by Bio-diversity Index (Shannon Index); AJY

SN	Ranks	Sites (%)
1	Rank 1 (≤ 1.0) (Low Diversity)	7.1
2	Rank 2 ($> 1.0, \leq 2.0$)	42.9
3	Rank 3 ($> 2.0, \leq 3.0$)	50.0
4	Rank 4 (> 3.0) (High Diversity)	0.0
Total		100.0

Table 66: Shannon Index of Sites: AJY

SN	Plantation / Silviculture	VSS / Sites	INDEX	RANK
1	ANR without Gap	Singhabalani	1.73	2
2	ANR without Gap	Gajuribani	2.15	3
3	ANR without Gap	Jharbeda	1.22	2
4	ANR without Gap	Durgapur	1.73	2
5	ANR without Gap	Dhulusar	1.99	2
6	ANR without Gap	Bandhapoda	1.51	2
7	ANR without Gap	Gendabanei	2.61	3
8	ANR without Gap	Dharnabeda	1.37	2
9	ANR without Gap	Dharniguda	1.82	2
10	ANR without Gap	Panasduka	1.53	2
11	Block Plantation	Kabichandrapur	0.46	1
12	ANR without Gap	Muchelpadar	0.96	1
13	ANR without Gap	Jagti	1.19	2
14	ANR without Gap	Angul	2.15	3
15	ANR without Gap	Bichhonapali	1.50	2
16	ANR without Gap	Panchabati	2.44	3
17	ANR without Gap	Dekhulia	2.36	3
18	ANR without Gap	Amalipali	2.22	3
19	ANR without Gap	Meenapai	2.00	2

SN	Plantation / Silviculture	VSS / Sites	INDEX	RANK
20	ANR without Gap	Bhatakbal	2.38	3
21	ANR without Gap	Tileru	2.55	3
22	ANR without Gap	Gouda Mirabali	2.72	3
23	ANR without Gap	Similipali	1.92	2
24	ANR without Gap	Kankdar	2.13	3
25	ANR without Gap	Sigamila	2.32	3
26	ANR without Gap	Kurtamgada Deulasahi	2.55	3
27	ANR without Gap	Ghagari	2.62	3
28	ANR without Gap	Kurlukhaman	2.80	3

Apart from combined index (for all observed species in tree, herb and shrub category), Shannon index was computed separately for tree species (plantation and natural species), herbs and shrubs in assessment sites. The index value of sites is presented below by operation (ANR without gap and Block Plantation) for plantations taken up in assessment sites, natural species existing and shrubs and herbs observed in the site. As sites under AJY are without plantation (only silvicultural operation), computation of Shannon Index for plantation is excluded for AJY.

Table 67: Shannon Index by Operations: AJY

SN	Plantation / Silviculture	VSS / Site	Natural		Shrubs		Herbs	
			H	RANK	H	RANK	H	RANK
1	ANR without Gap	Singhabalani	1.38	2	0.99	1	1.32	2
2	ANR without Gap	Gajuribani	1.96	2	0.00	1	1.07	2
3	ANR without Gap	Jharbeda	0.62	1	0.68	1	1.09	2
4	ANR without Gap	Durgapur	1.49	2	0.00	1	1.24	2
5	ANR without Gap	Dhulusar	1.43	2	0.82	1	1.06	2
6	ANR without Gap	Bandhapoda	1.13	2	0.14	1	0.00	1
7	ANR without Gap	Gendabanei	2.53	3	0.96	1	0.69	1
8	ANR without Gap	Dharnabeda	0.95	1	0.56	1	0.67	1
9	ANR without Gap	Dharniguda	1.55	2	0.00	1	1.33	2
10	ANR without Gap	Panasduka	0.86	1	0.56	1	0.56	1
11	ANR without Gap	Muchelpadar	0.96	1	0.00	1	0.00	1
12	ANR without Gap	Jagti	0.38	1	1.07	2	0.68	1
13	ANR without Gap	Angul	2.15	3	0.00	1	0.00	1
14	ANR without Gap	Bichhonapali	1.45	2	0.00	1	0.00	1
15	ANR without Gap	Panchabati	2.43	3	0.00	1	0.00	1
16	ANR without Gap	Dekhulia	2.28	3	0.00	1	0.96	1
17	ANR without Gap	Amalipali	2.22	3	0.00	1	0.00	1
18	ANR without Gap	Meenapai	1.92	2	0.00	1	1.10	2
19	ANR without Gap	Bhatakbal	2.28	3	0.00	1	1.10	2
20	ANR without Gap	Tileru	2.43	3	0.00	1	0.69	1
21	ANR without Gap	Gouda Mirabali	2.67	3	0.00	1	0.64	1
22	ANR without Gap	Similipali	1.76	2	0.64	1	0.00	1
23	ANR without Gap	Kankdar	2.06	3	0.00	1	0.00	1
24	ANR without Gap	Sigamila	2.03	3	0.68	1	0.69	1
25	ANR without Gap	Kurtamgada Deulasahi	2.23	3	0.60	1	1.09	2
26	ANR without Gap	Ghagari	2.37	3	0.66	1	0.69	1
27	ANR without Gap	Kurlukhaman	2.38	3	1.05	2	1.08	2
28	Block Plantation	Kabichandrapur	0.00	1	0.00	1	1.20	2

3.12.2 Simpson's Diversity Indices:

Three related indices under Simpson's Diversity Index were calculated, i.e., (a) Simpson's Index (D), (b) Simpson's Index of Diversity, and (c) Simpson's Reciprocal Index. Index value of the sites (Reciprocal Index) is presented below by type of plantation / silvicultural area. Based on the Reciprocal Index Value, the sites were ranked to understand distribution of sites by diversity index. The "**Rank 1**" refers to low diversity and "**Rank 4**" is marked as high diversity. The Simpson's Diversity Index was computed separately for each site by nature of operation (ANR without gap plantation and Block Plantation). About 21.4 percent sites fall in to "**Rank 1**" (low diversity), 28.6 percent in to "**Rank 2**",

28.6 percent in to “**Rank 3**” and remaining 21.4 percent in to “**Rank 4**” (high diversity). Index value of each site covered under the study is presented in the table.

Table 68: Distribution of Sites by Bio-diversity Index (Simpson's Reciprocal Index)

SN	Ranks	AJY
1	Rank 1 (≤ 3.0) (Low Diversity)	21.4
2	Rank 2 ($> 3.0, \leq 6.0$)	28.6
3	Rank 3 ($> 6.0, \leq 9.0$)	28.6
4	Rank 4 (> 9.0) (High Diversity)	21.4
Total		100.0

Table 69: Simpson's Index: AJY

SN	Plantation / Silviculture	VSS / Sites	INDEX	RANK
1	ANR without Gap	Singhabalani	2.91	1
2	ANR without Gap	Gajuribani	6.29	3
3	ANR without Gap	Jharbeda	1.96	1
4	ANR without Gap	Durgapur	3.20	2
5	ANR without Gap	Dhulusar	4.45	2
6	ANR without Gap	Bandhapoda	3.28	2
7	ANR without Gap	Gendabanei	8.67	3
8	ANR without Gap	Dharnabeda	2.32	1
9	ANR without Gap	Dharniguda	3.81	2
10	ANR without Gap	Panasduka	3.31	2
11	ANR without Gap	Muchelpadar	2.34	1
12	ANR without Gap	Jagti	1.95	1
13	ANR without Gap	Angul	6.88	3
14	ANR without Gap	Bichhonapali	3.27	2
15	ANR without Gap	Panchabati	7.95	3
16	ANR without Gap	Dekhulia	8.84	3
17	ANR without Gap	Amalipali	7.10	3
18	ANR without Gap	Meenapai	5.57	2
19	ANR without Gap	Bhatakbal	8.45	3
20	ANR without Gap	Tileru	12.43	4
21	ANR without Gap	Gouda Mirabali	12.99	4
22	ANR without Gap	Similipali	4.40	2
23	ANR without Gap	Kankdar	7.90	3
24	ANR without Gap	Sigamila	9.59	4
25	ANR without Gap	Kurtamgada Deulasahi	12.32	4
26	ANR without Gap	Ghagari	13.68	4
27	ANR without Gap	Kurlukhaman	17.19	4
28	Block Plantation	Kabichandrapur	1.22	1

3.13 Human-Wild Life Conflict and Redressal of Issues:

Wild animal impacting agricultural field is reported by many villagers in the forest fringe villages. Villagers normally manage the situation and try to keep the wild animals out of their fields. But Human wildlife conflict is also reported in some of the studied villages. It has been one of the causes for poor cropping intensity and thereby poor agricultural income of the farmers. Due to wild animals, crop damage is reported to be common in these villages and gross farm output has been low. In many villages, farmers are of the opinion of having fencing with solar power to prevent wild animals from entering agricultural land and human habitations.

Table 70: Human Wildlife Conflict; AJY

AJY	Human Animal Conflict_2018_19 (VSS %)						Human Animal Conflict_2019_20 (VSS %)			
	No Conflict	Once	Twice	Thrice	More than Thrice	Total	No Conflict	<= 2 Times	> 2 Times	Total
Control	100.0					100.0	100.0			100.0
Intervention	100.0					100.0	100.0			100.0
Total	100.0					100.0	100.0			100.0

Note: No human wildlife conflict is as per the VSS record. However, people in general have the opinion of damage of crops by wild animals. Interaction between human and wildlife is not negative in spite of impact of wildlife on resources and hence it is in general not considered human wildlife conflict.

3.14 Conclusion:

The need of the hour is co-existence with forest and green cover. The growing population and critical biodiversity need to exist sustainably. The practice of monoculture and artificial afforestation will not be as helpful as naturally occurring forests that maintain biodiversity. Therefore, it is necessary to depend on forest in such a way that the degradation does not occur, and species diversity is maintained, even in afforestation activities. The communities residing within and on fringes of forest depend heavily on these forests and therefore, the knowledge dissemination for preserving the natural resources is important. However, making the already existing practices beneficial such as NTFP collection, sacred groves etc. can be further encouraged. The necessary training for NTFP collection, product value, processing of raw material and marketing will be provided to increase the benefits of rural and tribal communities. However, to improve the green cover of rural areas and to sequester the carbon the practice of farm forestry should be encouraged. Certain misconceptions and lack of information about profitability of farm forestry was found to be discouraging the farmers from adopting these practices. But a good flow of information to the people with exposure visit and demonstration can improve the forest cover outside forest and enhance the income of the farmers.



Section IV Livelihood Scenario

Section IV: Livelihood Scenario

4.1 Household and Population:

In the AJY intervention villages, average number of households is 106. The control villages of AJY are having on an average around 99 households. The residing households are from different social and economic categories and social / caste composition of the studied villages differs between control and intervention. In intervention and control villages, number of ST households are found comparatively higher, followed by OC households. Distribution of households by social structure is presented below.

Table 71: Average and Total Households; AJY

Caste	Control			Intervention			Total		
	No. of Village	Average HH	Total HH	No. of Village	Average HH	Total HH	No. of Village	Average HH	Total HH
SC	16	29.31	469	71	26.61	1,889	87	27.10	2,358
ST	29	55.66	1,614	113	57.15	6,458	142	56.85	8,072
OC	21	42.62	895	85	50.33	4,278	106	48.80	5,173
Total	30	99.27	2,978	119	106.09	12,625	149	104.72	15,603

Note: SC: Scheduled Caste; ST: Scheduled Tribe; OC: Other Caste

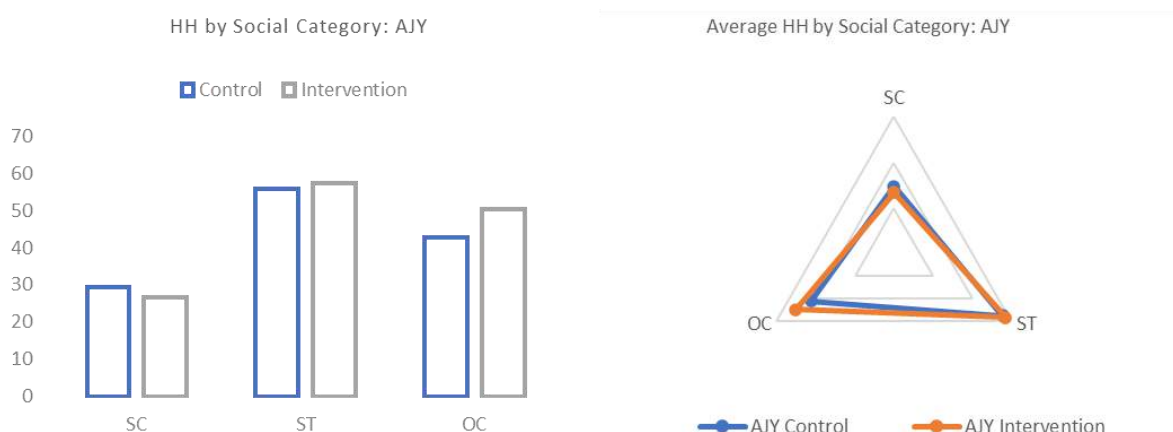


Figure 13: Household Distribution; AJY

Further, the studied villages were categorized by number of households, irrespective of their caste wise distribution. Based on this classification, it is observed that 37.0 percent villages in intervention and 16.7 percent villages in control are in ≤ 50 households per village category. Around 36.7 percent villages in control and 26.9 percent villages in intervention fall in to >50 & ≤ 100 households per village category. The category >100 & ≤ 150 HH is having 30.0 percent villages of control and 11.8 percent villages of intervention. The remaining 16.7 percent villages of control and 24.4 percent villages of intervention fall into the village category of >150 households per village.

Table 72: Village / VSS Categories by HH; AJY

AJY	Ranking of Villages by No. of HH (% Distribution)				Total
	≤ 50 HH	>50 & ≤ 100 HH	>100 & ≤ 150 HH	>150 HH	
Control	16.7	36.7	30.0	16.7	100.0
Intervention	37.0	26.9	11.8	24.4	100.0
Total	32.9	28.9	15.4	22.8	100.0

The studied villages were also ranked based on the population, irrespective of the social categories. The ranking was done based on four scales, i.e., (1) Rank I: ≤ 200 population, (2) Rank II: >200 & ≤ 400 population, (3) Rank III: >400 & ≤ 600 population, and (4) Rank IV: > 600 population. Ranking of villages by population distribution is presented in figure and matrix.

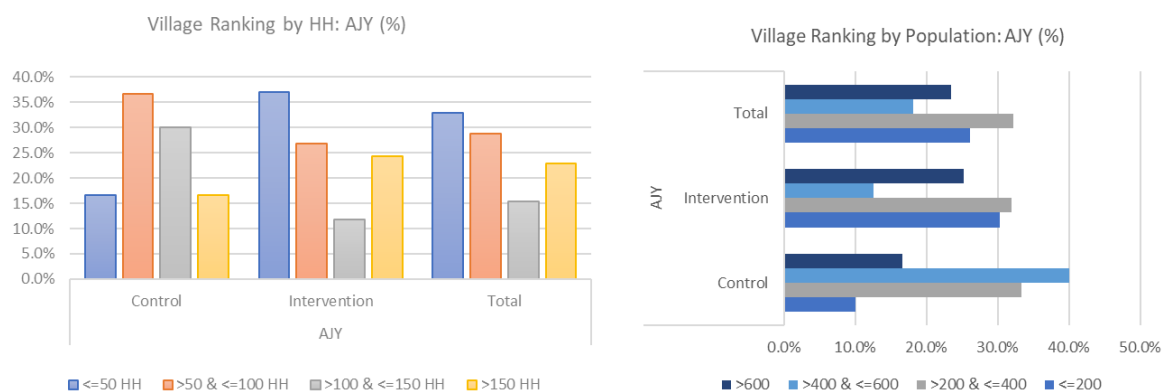


Figure 14: Village Categorization: HH & Population; AJY

Table 73: Villages / VSS Categories by Population; AJY

AJY	Ranking of Villages by Population (% Distribution)				Total
	≤ 200	>200 & ≤ 400	>400 & ≤ 600	>600	
Control	10.0	33.3	40.0	16.7	100.0
Intervention	30.3	31.9	12.6	25.2	100.0
Total	26.2	32.2	18.1	23.5	100.0

4.2 Housing Condition:

The studied villages are having different types of houses, i.e., kutcha, pucca and mixed. Percentage of Kutcha houses are relatively higher in control villages in comparison to intervention whereas percentage of mixed houses is comparatively higher in intervention villages. Proportion of mixed houses to total houses are more or less same in intervention and control villages. Further, it is evident that percentage of kutcha houses in both intervention and control villages is higher than pucca and mixed houses.

Table 74: House Type: Village Level; AJY

Control / Intervention	House Type (Village / VSS Level; %)			
	Kutcha	Pucca	Mixed	Total
Control	48.05	28.74	23.20	100.0
Intervention	43.60	27.03	29.38	100.0
Total	44.45	27.35	28.20	100.0

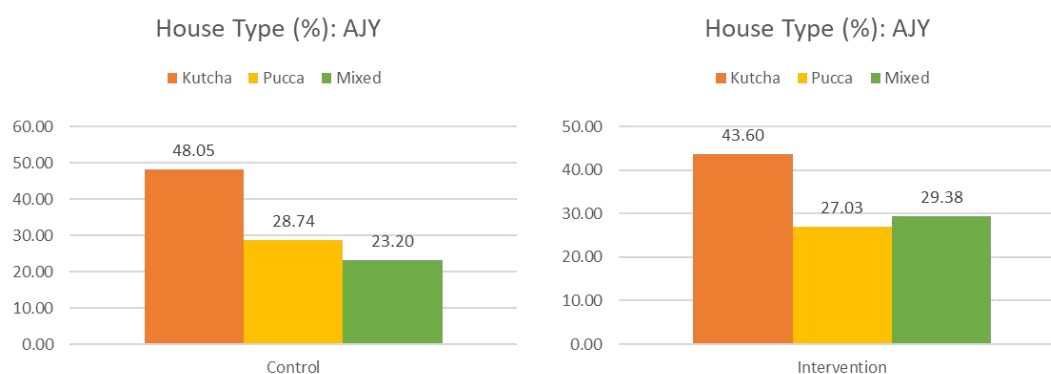


Figure 15: House Type in Studied Village / VSS Level; AJY

The villages are categorized based on house types, i.e., ≤50 kutcha / pucca / mixed houses (R I), >50 & ≤100 kutcha / pucca / mixed houses (R II), >100 and ≤150 kutcha / pucca / mixed houses (R III), and > 150 kutcha / pucca / mixed houses (R IV). Ranking of villages based on this ranking is presented in the matrix and figure below.

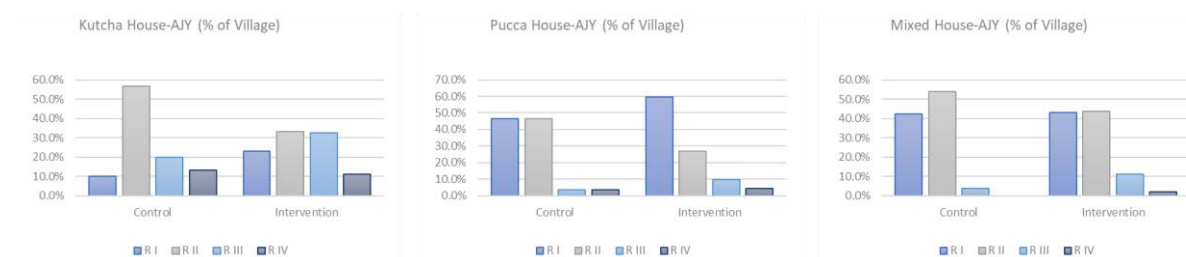


Figure 16: Household Distribution of House Type: AJY

Table 75: Ranking of Villages by House Type; AJY

House Type	Ranks	Control	Intervention	Total
Kutcha Houses	≤50	10.0	23.1	20.4
	>50 & ≤100	56.7	33.3	38.1
	>100 & ≤150	20.0	32.5	29.9
	>150	13.3	11.1	11.6
	Total	100.0	100.0	100.0
Pucca House	≤50	46.7	59.5	56.8
	>50 & ≤100	46.7	26.7	30.8
	>100 & ≤150	3.3	9.5	8.2
	>150	3.3	4.3	4.1
	Total	100.0	100.0	100.0
Mixed House	≤50	42.3	42.9	42.7
	>50 & ≤100	53.8	43.9	46.0
	>100 & ≤150	3.8	11.2	9.7
	>150	0.0	2.0	1.6
	Total	100.0	100.0	100.0

In case of sample households, on an average 32.67 percent are kutcha houses, 33.0 percent are mixed houses and 38.32 percent are pucca houses in the intervention villages. In the control sites, kutcha houses found to be 22.76 percent whereas mixed and pucca houses are 28.97 percent and 48.28 percent, respectively. Percentage of pucca houses of the covered sample VSS and SHG members in both control and intervention villages are comparatively higher than kutcha and mixed house type. Further, percentage of kutcha house type is comparatively less in control villages in comparison to intervention whereas percentage of mixed house type is comparatively more in intervention villages in comparison to control.

Table 76: House Types; Sample Households; AJY

House Type	Control	Intervention	Total
Kutcha	22.76	32.67	30.76
Pucca	48.28	38.32	37.02
Mixed	28.97	33.00	32.22
Total	100.0	100.0	100.0

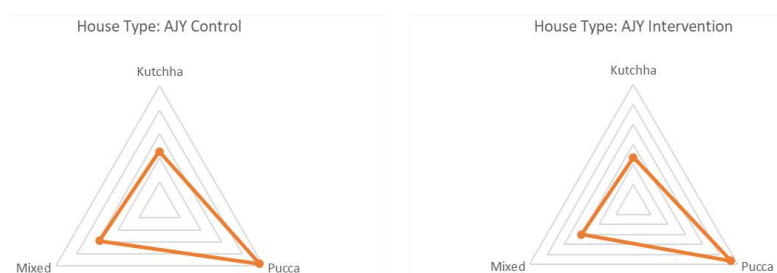


Figure 17: House Type in Village / VSS: AJY

As observed, most of the households having their own house (control: 100.00 percent, intervention: 99.8 percent) Majority of houses people live in are pucca (control: 48.3 percent, intervention: 34.3 percent), followed by mixed (control: 29.0 percent, intervention: 33.0 percent) and kutchha houses (control: 22.8 percent; intervention: 32.7 percent).

Table 77: House Type; AJY

Particulars	Control	Intervention
Own House	100.0	99.8
House Type		
Kutchha	22.76	32.67
Pucca	48.28	34.32
Mixed	28.97	33.00
Total	100.0	100.0

4.3 Economic Condition:

To understand the economic status, ration card was considered as the benchmark, i.e., households having ration card (under NFSM) are considered poor in comparison to households not having ration card. In the category of more than 75.0 percent houses, having ration cards (i.e., belonging to poor category), there are 93.3 percent villages from control and 92.4 percent villages from intervention. Categorization of villages by percentage of households having ration card is presented in the figure and matrix.

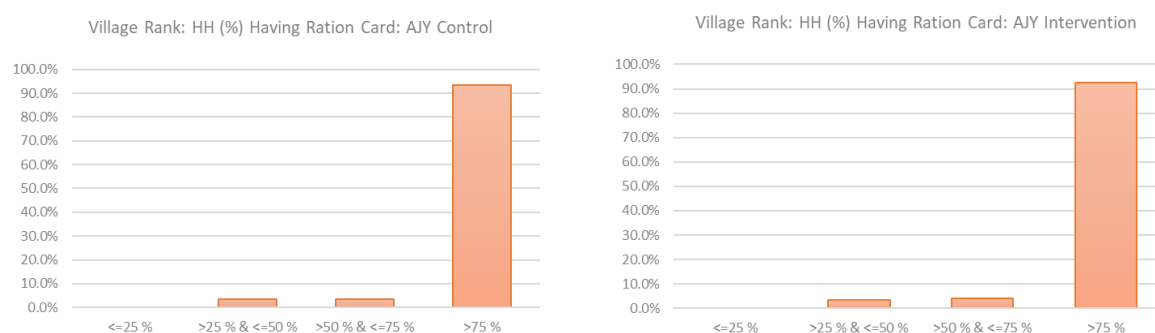


Figure 18: Village Ranking by Ration Card Holding: AJY

Table 78: Village / VSS by HH Having Ration Card; AJY

Control / Intervention	Categorization of Villages / VSS by Percentage of HH Having Ration Card				Total
	<=25 %	>25 % & <=50 %	>50 % & <=75 %	>75 %	
Control	0.0	3.3	3.3	93.3	100.0
Intervention	0.0	3.4	4.2	92.4	100.0
Total	0.0	3.4	4.0	92.6	100.0

In AJY, 93.10 percent households in control and 94.72 percent in intervention areas are having ration card.

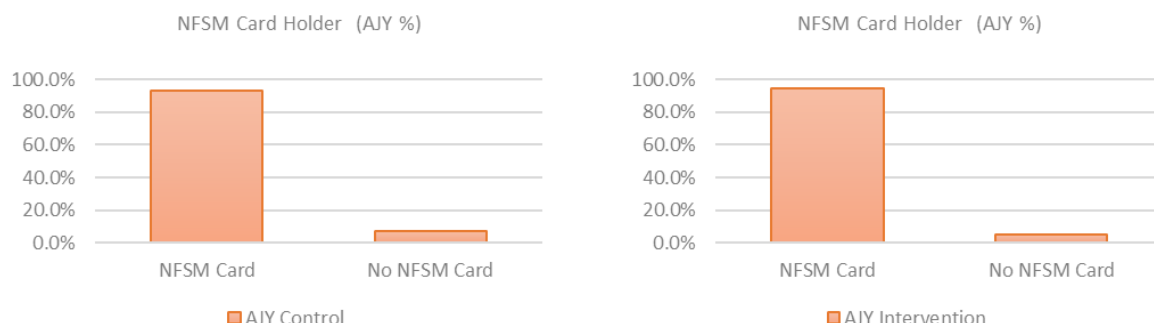


Figure 19: NFSM Card Holding: AJY

Table 79: Ration Card Holder, AJY

Control / Intervention	Ration Card (HH %)		Total
	Having Ration Card	Not Having Ration Card	
Control	93.10	6.90	100.00
Intervention	94.72	5.28	100.00
Total	94.41	5.59	100.00

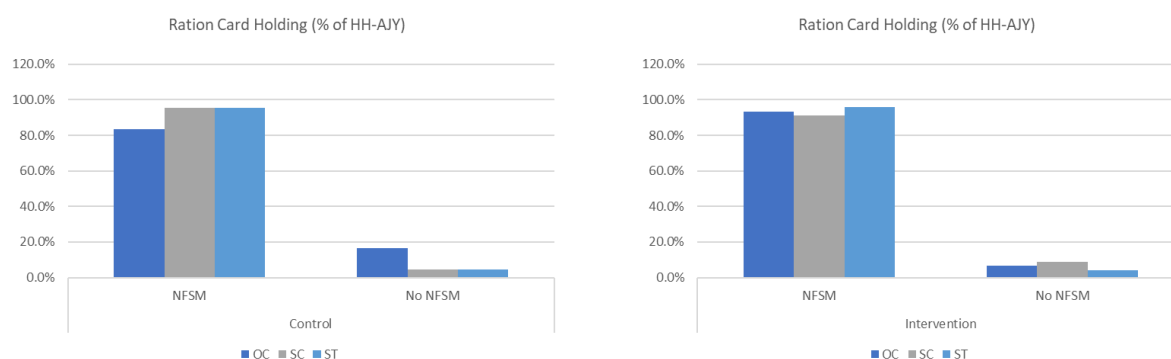


Figure 20: Household Distribution by Ration Card Holding: AJY

In all the social categories, majority of the households are having ration card in both control and intervention areas. Looking by holding of ration card by social categories (of the total card possessor), it is evident that ST households are having higher enrolment in comparison to other social categories, followed by households belonging to OC categories among the total card holders. Further, looking by card holding in each social category, it is observed that percentage of SC (95.65 percent) households of the total SC household and percentage of ST households (95.65 percent) of the total ST households have higher enrolment in comparison to OC households in Control areas. But in intervention areas, ST households have better holding in comparison to SC and OC households and number of OC households having ration card is marginally higher than SC households.

Table 80: Holding of NFSM Card by Social Categories; AJY

Control / Intervention	SC	ST	OC	Total
Control	16.30	65.19	18.52	100.0
Intervention	8.89	62.54	28.57	100.0
Total	10.30	63.05	26.66	100.0

Note: Distribution by social category from total card holding; OC: Other Caste; SC: Scheduled Caste; ST: Scheduled Tribe

Table 81: Holding Ration Card by Social Category; AJY

Social Category	Control		Intervention	
	Ration Card	No Ration Card	Ration Card	No Ration Card
SC	95.65	4.35	91.07	8.93
ST	95.65	4.35	95.99	4.01
OC	83.33	16.67	93.18	6.82
Total	93.10	6.90	94.72	5.28

Note: Distribution by social category based on households of each social category; OC: Other Caste; SC: Scheduled Caste; ST: Scheduled Tribe

4.4 Educational Infrastructure:

Pre-school facility is available through Anganwadi centres in both control and intervention villages (96.7 percent control and 92.4 percent intervention villages are having pre-school facility). The remaining villages, where such facility is not available, are tagged to the nearest *Anganwadi* centre for pre-school education. Total existing pre-schools are in a functional stage in both control and intervention areas, though number of children attending the school varies.

Table 82: Educational Facility; AJY

Educational Institution	Village (%)		
	Control	Intervention	Total
Pre-School	96.7	92.4	93.3
Primary	76.7	79.0	78.5
Secondary	3.3	13.4	11.4

Primary school is available and functioning in 76.7 percent control and 79.0 percent intervention villages. Though, secondary schools are not available in most of the villages in both control and intervention areas, facility is available in the nearby locations for the education of children. But some villages also having secondary schools, i.e., 13.4 percent villages in intervention and 3.3 percent control village. Some villages in AJY area, having students from tribal communities, also have access to nearby *Ashram* and *Sewashram* educational institutions. Different issues are associated with such educational institutions, such non-availability of electricity facility, poor or no availability of toilet facility, road to educational institution is in poor condition, drinking water problem in school etc.

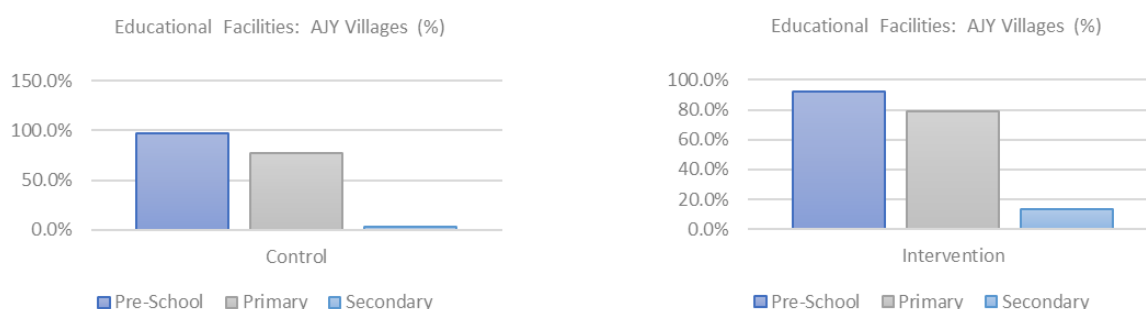


Figure 21: Educational Facilities at Village Level; AJY

4.5 Health Infrastructure:

Anganwadi centre is available in all the villages, or the villages are tagged to the nearest Anganwadi centre to access health care facility in both intervention and control villages. In villages where Anganwadi centre is physically not present, the distance of nearest Anganwadi centre is on an average less than one km. Average distance of sub-centres is about 3 to 4 km. from the villages in both intervention and control areas. Distance of PHC in both the cases (intervention and control areas) ranges between 6-8 km and CHC from 17 to 18 km. Distance of District Headquarter Hospital / other hospital has been 36 to 40 km from the villages. It is to note that in many villages, people prefer to go to the

CHC rather than PHC as distance of CHC is less and health care facility is better. Similarly, where PHC is nearby, people prefer to access PHC facilities than facilities available in the sub-centre. Due to less or no accessibility by majority of the villagers, awareness about ayurvedic or homoeopathic dispensaries is low. However, average distance of such facilities ranges between 13 to 23 Km. Dependency on local quacks seems reducing with increasing awareness, but some people also found accessing their services at the time of need.

Table 83: Average Distance of Different Health Care Facilities; AJY

Control / Intervention	Average Distance of Health Care Facilities (in Km.)						
	AWC	Sub-Centre	Clinic	PHC	CHC	Hospital	Ay. Dispensary
Control	0.0	4.1	12.9	6.3	16.8	35.7	22.8
Intervention	0.1	3.7	11.3	9.0	18.1	39.6	13.1
Total	0.1	3.7	11.6	8.4	17.9	38.8	15.0

Note: 0.0 refers to health facility is available in the village or within one km. The average distances of the facilities from the village are mapped only for the villages where such facility is not available within one km. distance; Ay.: Ayurvedic; Ho: Homoeopathic.

4.6 Drinking Water Source:

All the intervention and control villages are having open well facility which is used for drinking, bathing and other purposes. Average no. of open wells in control villages of AJY are 7 and average of 6 open wells in intervention villages. In some villages, water quality of some of the existing open wells is reported poor but water remain available throughout the year and deficiency is minimal. Apart from open wells, all the villages also have tube well / bore wells, mostly used for drinking purpose. Apart from quality specific issues, as reported in some control and intervention villages, water remain available throughout the year, even during summer season. Average number of tube wells per village have been 5-6, depending upon the population and requirement of the villagers.

Stand posts (pipe supply) for fetching water is not common in all the control or intervention villages. About 30.0 percent villages in control and 24.4 percent intervention villages are having stand posts for water supply. While water availability in these stand posts remain adequate, quality of water reported poor in some cases. Majority of the villages do not have pipe water supply in both intervention and control areas. Majority of the villages in the intervention and control areas are having 2-3 tanks / ponds. These sources are used mostly for bathing, washing and livestock drinking purpose. But water availability in some of these tanks remain inadequate in summer. Around 70.0 percent control and 78.0 percent intervention villages are having such water structures at the village level. Where such tanks / ponds are not available, they depend upon nearby tank / pond of other villages.

Majority of the household access portable drinking water from tube / bore well (Control: 89.66 percent; Intervention: 77.56 percent), followed by open well. Pipe water supply is also available at household level (Control: 3.45 percent; Intervention: 4.95 percent). Accessibility to portable drinking water by house type shows that while majority are dependent upon tube well / bore well, accessibility of pucca and mixed houses is comparatively higher to tube well / bore well than families living in kutcha houses in both intervention and control. Accessibility to open well sources is higher in case of families having kutcha houses than pucca and mixed houses. Dependency on pond / nala / river / stream is marginal and for limited period. So, for portable drinking water, high dependency is on tube / bore well source, followed by open well.

Table 84: Drinking Water Sources for Households; AJY

Control / Intervention	Primary Source of Drinking Water (HH %)						Total
	Tube/Bore Well	Pond/Nala	Open Well	River / Stream	Pipe Water	Other	
Control	89.66	0.00	5.52	0.69	3.45	0.69	100.00
Intervention	77.56	0.83	16.01	0.66	4.95	0.00	100.00
Total	79.89	0.67	13.98	0.67	4.66	0.13	100.00

Note: Source dependency varies, and households also access water from different other sources at the time of need.

Table 85: Drinking Water Sources by House Type; AJY

Control / Intervention	House Type	Primary Source of Drinking Water (HH %)						Total
		Tube / Bore Well	Pond / Nala	Open Well	River / Stream	Pipe Water	Other	
Control	Kutcha	78.79	0.00	18.18	0.00	3.03	0.00	100.00
	Pucca	94.29	0.00	0.00	0.00	5.71	0.00	100.00
	Mixed	90.48	0.00	4.76	2.38	0.00	2.38	100.00
	Total	89.66	0.00	5.52	0.69	3.45	0.69	100.00
Intervention	Kutcha	70.71	1.52	22.22	1.01	4.55	0.00	100.00
	Pucca	82.21	0.00	13.94	0.48	3.37	0.00	100.00
	Mixed	79.50	1.00	12.00	0.50	7.00	0.00	100.00
	Total	77.56	0.83	16.01	0.66	4.95	0.00	100.00
Total	Kutcha	71.86	1.30	21.65	0.87	4.33	0.00	100.00
	Pucca	85.25	0.00	10.43	0.36	3.96	0.00	100.00
	Mixed	81.40	0.83	10.74	0.83	5.79	0.41	100.00
	Total	79.89	0.67	13.98	0.67	4.66	0.13	100.00

Note: Source dependency varies, and households also access water from different other sources at the time of need.

In case of social categories, majority of OC households fetch drinking water from tube / bore well in control whereas majority of ST households fetching water from tube / bore well in intervention areas. Social and economic category wise dependency on different sources of water for drinking purpose is presented in the matrix.

Table 86: Drinking Water Source by Social Category; AJY

Control / Intervention	Social Category	Primary Source of Drinking Water (HH %)						Total
		Tube / Bore Well	Pond / Nala	Open Well	River / Stream	Pipe Water	Other	
Control	OC	96.67	0.00	0.00	0.00	0.00	3.33	100.00
	SC	86.96	0.00	4.35	0.00	8.70	0.00	100.00
	ST	88.04	0.00	7.61	1.09	3.26	0.00	100.00
	Total	89.66	0.00	5.52	0.69	3.45	0.69	100.00
Intervention	OC	71.59	0.57	22.73	0.00	5.11	0.00	100.00
	SC	69.64	3.57	16.07	0.00	10.71	0.00	100.00
	ST	81.55	0.53	12.83	1.07	4.01	0.00	100.00
	Total	77.56	0.83	16.01	0.66	4.95	0.00	100.00
Total	OC	75.24	0.49	19.42	0.00	4.37	0.49	100.00
	SC	74.68	2.53	12.66	0.00	10.13	0.00	100.00
	ST	82.83	0.43	11.80	1.07	3.86	0.00	100.00
	Total	79.89	0.67	13.98	0.67	4.66	0.13	100.00

Note: Source dependency varies, and households also access water from different other sources at the time of need.

Table 87:: Drinking Water Source by Economic Category; AJY

Control / Intervention	Economic Category	Primary Source of Drinking Water (HH %)						Total
		Tube / Bore Well	Pond / Nala	Open Well	River / Stream	Pipe Water	Other	
Control	Poor	88.89	0.00	5.93	0.74	3.70	0.74	100.00
	Non-Poor	100.00	0.00	0.00	0.00	0.00	0.00	100.00
	Total	89.66	0.00	5.52	0.69	3.45	0.69	100.00
Intervention	Poor	77.53	0.70	16.20	0.52	5.05	0.00	100.00
	Non-Poor	78.13	3.13	12.50	3.13	3.13	0.00	100.00
	Total	77.56	0.83	16.01	0.66	4.95	0.00	100.00
Total	Poor	79.69	0.56	14.25	0.56	4.80	0.14	100.00
	Non-Poor	83.33	2.38	9.52	2.38	2.38	0.00	100.00
	Total	79.89	0.67	13.98	0.67	4.66	0.13	100.00

Note: Source dependency varies, and households also access water from different other sources at the time of need.

4.7 Sanitation Facility:

In majority of the villages, more than 75.0 percent households have toilet facility, in both control and intervention areas. Around 60.0 percent villages in control and 69.7 percent villages in intervention have >75.0 percent households who have toilet. Distribution of villages by percentage of households having toilet facility is presented in figure and matrix. Some of the villages also have community toilet facility for the use of villagers.

Table 88: Ranking of Villages (%) by % of HH with Toilet (%); AJY

Control / Intervention	Ranking of HH Percent with Toilet				Total
	<=25 %	>25 % & <=50 %	>50 % & <= 75 %	> 75 %	
Control	3.3	23.3	13.3	60.0	100.0
Intervention	5.9	10.1	14.3	69.7	100.0
Total	5.4	12.8	14.1	67.8	100.0

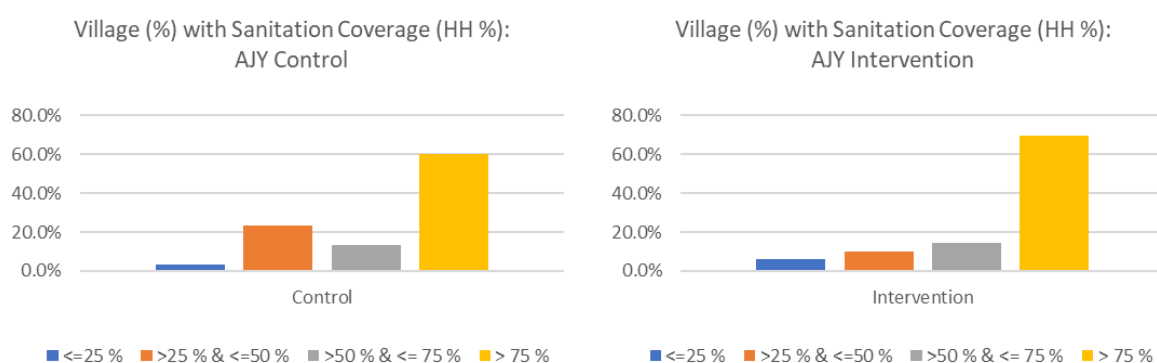


Figure 22: Village Sanitation Facility; AJY

In case of studied sample, 81.36 percent households have toilet facility in control and 71.12 percent households in intervention area. So, percentage of households with toilet facility is marginally higher in control in comparison to intervention. Percentage of household with toilet facility in control and intervention areas is presented in the matrix.

Table 89: Households Having Toilet; AJY

Control / Interventions	Household with Toilet (%)		Total
	Having Toilet	No Toilet	
Control	81.38	18.62	100.00
Intervention	71.12	28.88	100.00
Total	73.10	26.90	100.00

Availability of toilet facility found to be higher in case of ST households (84.78 percent) in control and OC households in intervention (77.84 percent). Percentage of SC and ST households having toilet is comparatively more in control than intervention, whereas percentage of OC households is marginally higher in intervention in comparison to control. Households by social category having toilet facility is presented in the matrix.

Table 90: Households with Toilet by Social Category; AJY

Control / Intervention	Social Category	Having Toilet	No Toilet	Total
Control	SC	78.26	21.74	100.00
	ST	84.78	15.22	100.00
	OC	73.33	26.67	100.00
	Total	81.38	18.62	100.00
Intervention	SC	62.50	37.50	100.00
	ST	69.25	30.75	100.00
	OC	77.84	22.16	100.00
	Total	71.12	28.88	100.00
Total	SC	67.09	32.91	100.00
	ST	72.32	27.68	100.00
	OC	77.18	22.82	100.00
	Total	73.10	26.90	100.00

Looking by availability of toilet facility by house type, it is evident that majority of pucca houses are having toilet facility in both control and intervention areas, followed by mixed house type. But of the total households having toilet, percentage of kutcha and mixed houses is less in control than intervention whereas percentage of pucca houses is more in control in comparison to intervention.

Table 91: Availability of Toilet Facility by House Type (%); AJY

House Type	Control	Intervention	Total
Kutcha	23.73	29.00	27.87
Pucca	49.15	37.35	39.89
Mixed	27.12	33.64	32.24
Total	100.00	100.00	100.00

Availability of toilet facility by poor (ration card holder) and non-poor (no ration card) shows that majority of the households are having toilet facility in case of both poor and non-poor households. But percentage of non-poor of the total non-poor households having toilet facility is comparatively higher than poor households having toilet facility of the total poor households in control. In case of intervention, difference is marginal between poor and non-poor having toilet facility.

Table 92: Toilet Facility by Poor & Non-Poor; AJY

Control / Intervention	Ration Card	Having Toilet	No Toilet	Total
Control	Poor (Ration Card)	80.74	19.26	100.00
	Non-Poor (No Ration Card)	90.00	10.00	100.00
	Total	81.38	18.62	100.00
Intervention	Poor (Ration Card)	71.08	28.92	100.00
	Non-Poor (No Ration Card)	71.88	28.13	100.00
	Total	71.12	28.88	100.00
Total	Poor (Ration Card)	72.92	27.08	100.00
	Non-Poor (No Ration Card)	76.19	23.81	100.00
	Total	73.10	26.90	100.00

Further, of the total households having toilet facility (distribution of households from the total households having toilet), poor are in a better situation in comparison to non-poor about availability of toilet facility. This is mostly because majority of the households in both control and intervention fall into poor category (having ration card).

Table 93: Toilet Facility; Poor and Non-Poor; AJY

Control / Intervention	Ration Card	Having Toilet	No Toilet	Total
Control	Poor (Ration Card)	92.37	96.30	93.10
	Non-Poor (No Ration Card)	7.63	3.70	6.90
	Total	100.00	100.00	100.00
Intervention	Poor (Ration Card)	94.66	94.86	94.72
	Non-Poor (No Ration Card)	5.34	5.14	5.28
	Total	100.00	100.00	100.00
Total	Poor (Ration Card)	94.17	95.05	94.41
	Non-Poor (No Ration Card)	5.83	4.95	5.59
	Total	100.00	100.00	100.00

4.8 Electrification:

All the villages in control are found to be having electricity supply, while 97.48 percent villages are electrified in intervention villages. About 97.93 percent houses in control and 96.20 percent houses in intervention are having electricity connection. Looking at percentage of houses electrified, it is evident that different type of houses (kutcha, pucca and mixed) is covered under rural electrification.

Table 94: Households Electrified; AJY

Control / Intervention	Electrified	To be Electrified	Total
Control	97.93	2.07	100.00
Intervention	96.20	3.80	100.00
Total	96.54	3.46	100.00

Table 95: Household Electrification by Social Category; AJY

Control / Intervention	Social Category	Electrified	To be Electrified	Total
Control	SC	95.65	4.35	100.00
	ST	97.83	2.17	100.00
	OC	100.00	0.00	100.00
	Total	97.93	2.07	100.00
Intervention	SC	94.64	5.36	100.00
	ST	95.99	4.01	100.00
	OC	97.16	2.84	100.00
	Total	96.20	3.80	100.00
Total	SC	94.94	5.06	100.00
	ST	96.35	3.65	100.00
	OC	97.57	2.43	100.00
	Total	96.54	3.46	100.00

Household electrification by social category shows that in both intervention and control areas, percentage of OC households having electricity is marginally higher than ST and SC households, followed by ST households. Household electrification by economic categories shows that poor households have better access to electricity in intervention villages whereas coverage of non-poor households is marginally higher in control areas.

Table 96: Household Electrification by Economic Category; AJY

Control / Intervention	Economic Category	Electrified	To be Electrified	Total
Control	Poor (Ration Card)	97.78	2.22	100.00
	Non-Poor (No Ration Card)	100.00	0.00	100.00
	Total	97.93	2.07	100.00

Control / Intervention	Economic Category	Electrified	To be Electrified	Total
Intervention	Poor (Ration Card)	96.86	3.14	100.00
	Non-Poor (No Ration Card)	84.38	15.63	100.00
	Total	96.20	3.80	100.00
Total	Poor (Ration Card)	97.04	2.96	100.00
	Non-Poor (No Ration Card)	88.10	11.90	100.00
	Total	96.54	3.46	100.00

Of the total households electrified in control and intervention in different house types, marginally higher percentage of pucca houses are electrified both in control (98.57 percent) and intervention villages (98.08 percent). Percentage of kutcha and mixed houses electrified are more or less same in intervention and control villages. But of the total households electrified, majority are pucca houses (Control: 48.59 percent, Intervention: 34.99 percent) in both intervention and control. Status of households electrified by house type in control and intervention is presented in the matrix.

Table 97: Household Electrification by House Type; AJY

Control / Intervention	House Type	Electrified	To be Electrified	Total
Control	Kutcha	96.97	3.03	100.00
	Pucca	98.57	1.43	100.00
	Mixed	97.62	2.38	100.00
	Total	97.93	2.07	100.00
Intervention	Kutcha	95.45	4.55	100.00
	Pucca	98.08	1.92	100.00
	Mixed	95.00	5.00	100.00
	Total	96.20	3.80	100.00
Total	Kutcha	95.67	4.33	100.00
	Pucca	98.20	1.80	100.00
	Mixed	95.45	4.55	100.00
	Total	96.54	3.46	100.00

Table 98: Household Electrification (%) by House Type; AJY

House Type	Control (HH Electrified %)	Intervention (HH Electrified %)
Kutcha	22.54	32.42
Pucca	48.59	34.99
Mixed	28.87	32.59
Total	100.00	100.00

4.9 Rural Connectivity (All Weather Road):

All the control villages in AJY are having all weather road, whereas 88.2 percent in intervention area are having all weather road. All the villages, in control and intervention area are having road connectivity to their GP headquarters. Existing road connectivity to GP in majority of villages with all-weather road helps in promoting business activities, especially for product marketing and strengthening the supply chain.

4.10 Infrastructural Facilities:

Different livelihood supportive infrastructures and facilities were mapped to understand distance of such facilities from the villages and, in case of taking up different livelihood promotional activities, these facilities can be utilized. Further, wherever it is required, additional facilities can be created to support livelihood promotional activities.

Table 99: Infrastructural Facilities & Distance; AJY

AJY		Daily / Weekly Market	Livestock Market	Cold Storage	Warehouse / Godown	NTFP Selling Centre	Process Unit	Ag. Centre	Packaging Unit	Transport Service
Control	V (%)	100.0	100.0	46.7	46.7	36.7	83.3	33.3	13.3	83.3
	Av.	5.62	17.80	30.57	27.07	8.55	4.86	32.30	21.25	15.58
Intervention	V (%)	100.0	92.4	26.1	36.1	37.8	88.2	30.3	13.4	79.0
	Av.	6.68	16.56	30.48	14.43	10.36	8.21	18.28	18.63	16.03
Total	V (%)	100.0	94.0	30.2	38.3	37.6	87.2	30.9	13.4	79.9
	Av.	6.46	16.83	30.51	17.54	10.00	7.56	21.33	19.15	15.93

Note: V (%): Percentage of Villages, Av.: Average Distance (Km.), Ag. Centre: Aggregation Centre; Responses of villages on certain facilities and services is not clear like aggregation centre, packaging house etc. as they are not aware of such facilities due to no accessibility to such units.

Table 100: Infrastructural Facilities & Distance; AJY

AJY		AI Centre / Veterinary Distance	Bank Branch	Post Office	Agri. Co-op Society	TDCC Office	Bus Stop	Railway Station	Block Office	Dist. HQ
Control	V (%)	100.0	100.0	96.7	93.3	33.3	96.7	100.0	100.0	100.0
	Av.	6.28	7.72	4.22	34.71	19.10	4.57	38.03	17.57	74.30
Intervention	V (%)	100.0	97.5	100.0	95.0	26.9	99.2	95.8	98.3	98.3
	Av.	6.62	10.28	4.43	8.57	28.78	5.74	44.49	19.36	54.33
Total	V (%)	100.0	98.0	99.3	94.6	28.2	98.7	96.6	98.7	98.7
	Av.	6.55	9.76	4.39	13.76	26.48	5.51	43.15	18.99	58.40

Note: V (%): Percentage of Villages, Av.: Average Distance (Km.)

Some livelihood supportive infrastructures like cold storage, processing & packaging units etc. are located at a distant place from different villages. But certain facilities like daily / weekly markets, veterinary centres etc. are at shorter distance from the villages and are commonly accessible to the people. Transportation means like railway station or place of availability of transport services (roadway transport service) are relatively at a distant place from the villages. Hence, commodity transportation through these means can be utilised in a more cost-effective manner when scale of production and its market linkage is improved which will make the venture economically viable.

4.11 Engagement and Income:

Agriculture has been the primary occupation of most of the able-bodied members, followed by wage / daily wage. About 40.1 percent persons in control and 34.4 percent in intervention are primarily engaged in agriculture. Wage (agriculture / daily wage) has been the primary occupation of 25.1 percent people in control and 30.8 percent in intervention. For a segment of population, 8.0 percent in control and 9.6 percent in intervention, NTFP collection and its selling is the primary occupation. People engaged in salaried job, both temporary and permanent, amounts to 10.3 percent in control and 9.3 percent in intervention. Getting pension has been one of the sources of income for 9.0 percent people in control and 7.4 percent in intervention. People are also engaged in petty business (control: 5.4 percent; intervention: 6.1 percent) and small-scale processing / trading (control: 0.3 percent, intervention: 0.3 percent). Engagement in Artisan (arts & crafts) works (control: 0.3 percent, intervention: 0.7 percent) and getting remittance (control: 0.5 percent, intervention: 0.3 percent) is comparatively less in both control and intervention.

Table 101: Primary Occupation of People (%); AJY

Primary Occupation	Control	Intervention	Total
Ag. & Allied	40.05	34.39	35.53
Wage	25.06	30.76	29.62
NTFP	8.01	9.59	9.27
Petty Business	5.43	6.09	5.96
Local Trading	0.26	0.32	0.31
Salaried	10.34	9.26	9.48

Primary Occupation	Control	Intervention	Total
Arts & Crafts	0.26	0.71	0.62
Remittance	0.52	0.32	0.36
Pension	9.04	7.38	7.72
Other	1.03	1.17	1.14

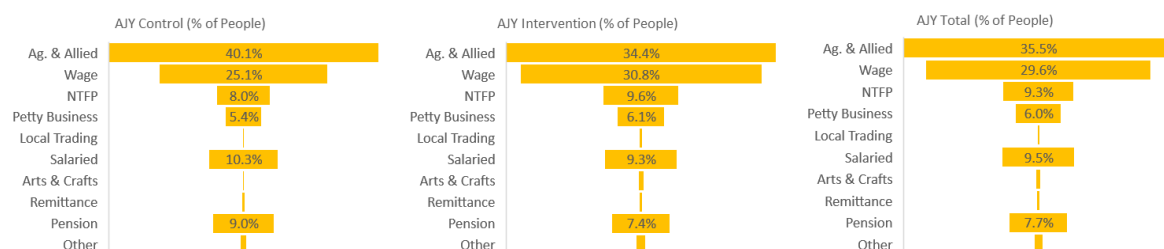


Figure 23: Occupational Distribution of Households (Primary); AJY

People also remain engaged in different other livelihood activities, considered to be secondary sources of income. Wage related engagement and NTFP collection has been major secondary sources of income for people, irrespective of intervention and control. Apart from this, agriculture and allied sector engagement and pension has been the secondary source of income for the people in both intervention and control areas.

Table 102: Secondary Occupation of People (%); AJY

Secondary Occupation	Control	Intervention	Total
Ag. & Allied	19.40	20.29	20.13
Wage	38.81	31.37	32.73
NTPF	28.36	37.25	35.63
Petty Business	4.48	3.77	3.90
Local Trading	0.00	0.11	0.09
Salaried	1.99	1.22	1.36
Arts & Crafts	0.50	0.22	0.27
Remittance	0.50	0.00	0.09
Pension	3.98	2.66	2.90
Other	1.99	3.10	2.90

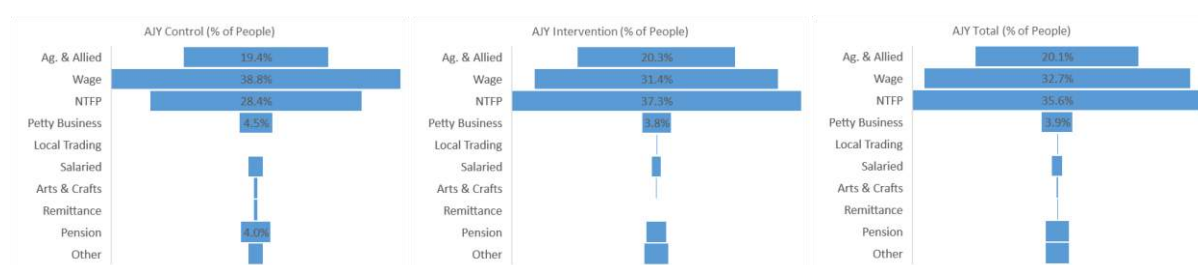


Figure 24: Engagement in Secondary Occupations; AJY

The persons engaged in different primary occupations and their association in different secondary occupation is presented in the matrix. It is observed that in control area, 65.5 percent people who remain engaged in agricultural activities are also involved in wage (daily wage / agricultural wage), followed by 22.4 percent people who primarily engaged in agriculture and allied activities, also collect, and sell NTFP.

Table 103: Primary and Secondary Occupation of Persons; AJY

Primary Occupation	Secondary Occupation (Persons in %)										Total
	Ag. & Allied	Wage	NTFP	Petty Business	Small Trading	Salaried	Artisan	Remittance	Pension	Other	
CONTROL											
Ag. & Allied		65.5	22.4	6.0		3.4	0.9		1.7		100.0
Wage	41.8		43.6	1.8				1.8	3.6	7.3	100.0
NTFP		33.3							66.7		100.0
Petty Business	58.3		33.3						8.3		100.0
Salaried	57.1	7.1	21.4	7.1					7.1		100.0
Pension	100.0										100.0
Total	19.4	38.8	28.4	4.5		2.0	0.5	0.5	4.0	2.0	100.0
Intervention											
Ag. & Allied	0.2	54.9	31.7	5.4	0.2	1.5	0.4		3.7	1.9	100.0
Wage	42.0	1.2	50.8	1.2		1.2			1.6	2.0	100.0
NTFP	13.9	55.6	2.8							27.8	100.0
Petty Business	66.7	3.9	21.6	2.0		2.0			2.0	2.0	100.0
Trading			100.0								100.0
Salaried	49.1	1.9	30.2	9.4					3.8	5.7	100.0
Artisan	85.7		14.3								100.0
Pension	19.0		81.0								100.0
Other	18.2	9.1	72.7								100.0
Total	20.5	31.4	36.9	3.8	0.1	1.2	0.2		2.7	3.1	100.0
TOTAL											
Ag. & Allied	0.2	57.0	29.9	5.5	0.2	1.9	0.5		3.3	1.6	100.0
Wage	42.0	1.0	49.5	1.3		1.0		0.3	2.0	3.0	100.0
NTFP	12.8	53.8	2.6						5.1	25.6	100.0
Petty Business	65.1	3.2	23.8	1.6		1.6			3.2	1.6	100.0
Trading			100.0								100.0
Salaried	50.7	3.0	28.4	9.0					4.5	4.5	100.0
Artisan	85.7		14.3								100.0
Pension	22.7		77.3								100.0
Other	18.2	9.1	72.7								100.0
Total	20.3	32.8	35.3	3.9	0.1	1.4	0.3	0.1	2.9	2.9	100.0

Note: NTFP collection by households / people in forest fringe villages is common. Even people who are engaged in different other secondary occupation, also collect NTFP.

Average income of the household and its members from different sources of engagement is considered to understand the income levels in different categories. About 71.7 percent members in control and 70.9 percent in intervention are having average annual income in the range of <60,000. Looking by sex, it is pertinent that 57.6 percent male and 91.8 percent female fall into the lowest range in control and 54.2 percent male, and 93.1 percent female fall into the lowest income range in intervention. So, a greater number of females, engaged in different occupations, have lower income in comparison to their male counterpart. More percentage of male members observed in second (>60,000 <=1,20,000) and third (>1,20,000) income category in both control and intervention areas. Distribution of members by sex falling into different income categories in control and intervention areas is presented in the matrix.

Table 104: Average Annual Income Rank of Persons; AJY

AJY	Sex	Income Rank of Earning Members (% of Persons)			Total
		<60,000	>60,000 <=1,20,000	>1,20,000	
Control	Male	57.6	25.0	17.4	100.0
	Female	91.8	7.0	1.3	100.0
	Total	71.7	17.5	10.7	100.0
Intervention	Male	54.2	34.0	11.9	100.0
	Female	93.1	6.0	0.9	100.0
	Total	70.9	22.0	7.2	100.0
Total	Male	54.9	32.2	13.0	100.0
	Female	92.8	6.2	1.0	100.0
	Total	71.0	21.1	7.9	100.0

Average annual income of male engaged in different occupations has been comparatively higher than that of female. The income difference between male and female is significant, irrespective of the sector of employment ($p < 0.05$, sig.: .000). In control area, observation remains the same whereas significant difference is observed between male and female headed households, with households headed by male members ($p < 0.05$, sig.: .000) having higher income.

Like individuals (persons), same ranking parameters were used to rank households into different income slabs. Majority of the households across the social structures (SC, ST and OC) fall in to second category ($\geq 60,000$ & $\leq 1,20,000$), followed by third category ($> 1,20,000$). Distribution of households by social groups in different income slabs in control and intervention areas is presented in the matrix.

Table 105: Average Income Ranking of Households; AJY

AJY		Average Household Income Rank (% of HH)			Total
		< 60,000	$\geq 60,000$ & $\leq 1,20,000$	> 1,20,000	
Control	SC	17.4	43.5	39.1	100.0
	ST	12.0	48.9	39.1	100.0
	OC	3.3	23.3	73.3	100.0
	Total	11.0	42.8	46.2	100.0
Intervention	SC	12.5	33.9	53.6	100.0
	ST	22.2	40.7	37.1	100.0
	OC	17.6	43.2	39.2	100.0
	Total	20.0	40.8	39.3	100.0
Total	SC	13.9	36.7	49.4	100.0
	ST	20.2	42.3	37.5	100.0
	OC	15.5	40.3	44.2	100.0
	Total	18.2	41.2	40.6	100.0

4.12 Household Income Difference:

4.12.1 Engagement and Income:

Income difference by occupational engagement is observed among the persons engaged in different livelihood activities. The significant difference in income level by occupational category is presented in the matrix.

Table 106: Occupations and Significance in Income Difference; AJY

Total Income Sources & Difference Significance		Intervention		Control	
		P Value	Sig.	P Value	Sig.
Agriculture & Allied	Wage	$p < 0.05$	0.000	$p < 0.05$	0.000
	NTPF	$p < 0.05$	0.000	$p < 0.05$	0.000
	Petty Business/Shop		0.218		0.982
	Trading / Processing		1.000		
	Salaried	$p < 0.05$	0.000		1.000
	Artisan / Traditional Skill		1.000		
	Migration/Remittance		1.000		
	Pension	$p < 0.05$	0.000	$p < 0.05$	0.000
	Other		0.699		
Wage	Agriculture & Allied	$p < 0.05$	0.000	$p < 0.05$	0.000
	NTPF	$p < 0.05$	0.000		0.057
	Petty Business/Shop	$p < 0.05$	0.000	$p < 0.05$	0.021
	Trading / Processing		1.000		
	Salaried	$p < 0.05$	0.000	$p < 0.05$	0.043
	Artisan / Traditional Skill		1.000		
	Migration/Remittance		1.000		
	Pension	$p < 0.05$	0.049		0.054
	Other		1.000		
NTPF	Agriculture & Allied	$p < 0.05$	0.000	$p < 0.05$	0.000
	Wage	$p < 0.05$	0.000		0.057
	Petty Business/Shop	$p < 0.05$	0.000	$p < 0.05$	0.000

	Trading / Processing		0.836		
	Salaried	p<0.05	0.000	p<0.05	0.000
	Artisan / Traditional Skill		0.474		
	Migration/Remittance		0.970		
	Pension		0.986		1.000
	Other		0.943		
Petty Business/Shop	Agriculture & Allied		0.218		0.982
	Wage	p<0.05	0.000	p<0.05	0.021
	NTFP	p<0.05	0.000	p<0.05	0.000
	Trading / Processing		0.998		
	Salaried	p<0.05	0.000		0.968
	Artisan / Traditional Skill		0.936		
	Migration/Remittance		0.968		
	Pension	p<0.05	0.000	p<0.05	0.000
	Other		0.130		
Trading / Processing	Agriculture & Allied		1.000		
	Wage		1.000		
	NTFP		0.836		
	Petty Business/Shop		0.998		
	Salaried		0.442		
	Artisan / Traditional Skill		1.000		
	Migration/Remittance		1.000		
	Pension		0.949		
	Other		0.999		
Salaried	Agriculture & Allied	p<0.05	0.000		1.000
	Wage	p<0.05	0.000	p<0.05	0.043
	NTFP	p<0.05	0.000	p<0.05	0.000
	Petty Business/Shop	p<0.05	0.000		0.968
	Trading / Processing		0.442		
	Artisan / Traditional Skill	p<0.05	0.023		
	Migration/Remittance		0.205		
	Pension	p<0.05	0.000	p<0.05	0.000
	Other	p<0.05	0.000		
Artisan / Traditional Skill	Agriculture & Allied		1.000		
	Wage		1.000		
	NTFP		0.474		
	Petty Business/Shop		0.936		
	Trading / Processing		1.000		
	Salaried	p<0.05	0.023		
	Migration/Remittance		1.000		
	Pension		0.783		
	Other		0.998		
Migration/Remittance	Agriculture & Allied		1.000		
	Wage		1.000		
	NTFP		0.970		
	Petty Business/Shop		0.968		
	Trading / Processing		1.000		
	Salaried		0.205		
	Artisan / Traditional Skill		1.000		
	Pension		0.996		
	Other		1.000		
Pension	Agriculture & Allied	p<0.05	0.000	p<0.05	0.000
	Wage	p<0.05	0.049		0.054
	NTFP		0.986		1.000
	Petty Business/Shop	p<0.05	0.000	p<0.05	0.000
	Trading / Processing		0.949		
	Salaried	p<0.05	0.000	p<0.05	0.000
	Artisan / Traditional Skill		0.783		
	Migration/Remittance		0.996		
	Other		0.998		

4.12.2 Income by Skill:

Average income of persons with skill is comparatively higher than persons without skill. The income difference is also significant between skilled and unskilled persons (intervention: $p < 0.05$, sig.: .000; control: $p < 0.05$, sig.: .003), irrespective of the status of engagement (sector of engagement and post skill training engagement).

4.12.3 Income by Social Category:

Among social categories, difference in income is insignificant, i.e., average annual income of all social groups (SC, ST & OC) do not differ significantly (SC and ST: $p > 0.5$; sig.: .100; SC and OC: $p > 0.5$; sig.: .726; ST & OC: $p > 0.5$; sig.: .128). Average annual household income of ST is less among all the groups and average annual household income of SC is comparatively higher than OC and ST. In case of control, average annual household income of households belonging to OC category is comparatively higher than SC and ST, followed by households belonging to ST category. However, income difference between SC and ST ($p > 0.5$; sig.: .876) is insignificant; but significant income difference is observed between ST and OC households ($p < 0.5$; sig.: .000) and SC and OC households ($p < 0.5$; sig.: .000). So, it can be concluded that SC and ST households have less income in comparison to OC households.

4.12.4 Income by Economic Category:

The assumption about income difference of households by holding / not holding of NFSM card is found to be (H_1) true, i.e., there is significant difference in annual household income ($p < 0.05$, sig.: .013) between families holding card and families not having card. In case of control, the difference between households having card and households not having card is also significant ($p > 0.05$, sig.: .001).

4.12.5 Income by House Type:

Though, average annual income of households having pucca house is comparatively higher than other house categories (followed by mixed and kutcha house), difference in annual income is not significant. So, income of a family is not related to house type (kutcha and pucca: $p > 0.5$; sig.: .081; kutcha and mixed: $p > 0.5$; sig.: .917; pucca and mixed: $p > 0.5$; sig.: .189). In other sense, a household having kutcha house may also have higher income than a household having a pucca house. Similar trend observed in control area (kutcha and pucca: $p > 0.05$, sig.: .961; kutcha and mixed: $p > 0.05$, sig.: .892; pucca and mixed: $p > 0.05$, sig.: .681).

4.12.6 Income by Women Headed Household:

The assumption (H_0) of equal income between a male and female headed household, irrespective of sector of engagement is accepted ($P > 0.05$, sig.: .686) as mean income difference is insignificant between male and female headed household. In case of control significant difference in income between male and female headed household is not observed ($p > 0.05$, sig.: .485) though, average annual income of male headed household is comparatively higher than female headed households.

4.12.7 Income by Land Holding Categories:

Farmers with semi-medium size land holding (though their number is less) are having higher level of income in comparison to other land holding categories, followed by medium, small and marginal farmers. While difference in income level is not significant between marginal farmer and landless ($p > 0.05$; sig.: .372), income difference is significant between marginal and small farmer ($p < 0.05$; sig.: .019), marginal and semi-medium farmer ($p < 0.05$; sig.: .000) and small and semi-medium farmer ($p < 0.05$; sig.: .000). Difference in income is not significant between semi-medium and medium farmer ($p > 0.05$; sig.: .897). It reveals that land holding is having important bearing on household income as

agricultural dependency of families is higher in comparison to any other sectors of engagement. In case of control, difference is significant between marginal and semi-medium farmer ($p < 0.05$, sig.: .002) whereas, in other cases, income difference is insignificant, though average income of medium farmer is highest among all the categories, followed by semi-medium, small and marginal farmer.

In case of operational holding, income difference is not significant between landless and marginal farmer ($p > 0.05$; sig.: .987), landless and small farmer ($p > 0.05$; sig.: .797) and landless and medium farmer ($p > 0.05$; sig.: .463) as landless households also cultivate other land (share in, leased in and other land). But income difference is significant between landless and semi-medium farmer ($p < 0.05$; sig.: .042) and among different other holding categories. In case of control, difference is significant between landless and medium farmer ($p < 0.05$, sig.: .000); marginal and medium farmer ($p < 0.05$, sig.: .000); small and medium farmer ($p < 0.05$, sig.: .000); and also between semi-medium and medium farmer ($p < 0.05$, sig.: .000).

4.12.8 Income by Farm Forestry:

Income difference between households adopted farm forestry and households yet to adopt farm forestry is not significant ($p > 0.05$; sig.: .274) as the households who have farm forestry, have adopted in recent years and yet to realise the benefit of farm forestry. However, difference is significant in control ($p < 0.05$, sig.: .009). It indicates that the farmers have adopted farm forestry for a longer time or they have fruit and forest species that have started yielding benefits to the farmers.

4.12.9 Income by Skill Based Employment:

As discussed, members of some households have received skill-based training in different trades / vocations. Some of them were also employed in different places. But difference in level of income of persons falling to two categories, i.e., the income level of persons who got employment after skill training and those not employed, observed to be insignificant ($p > 0.05$; sig.: .131). The reasons are due to leaving the job by the employed skilled persons, low remuneration in the working place, multi sector engagement of skilled person not employed elsewhere etc. Similar trend observed in case of control ($p > 0.05$, sig.: .438).

4.12.10 Income by Expenditure Groups:

The households, who are in the expenditure level of $> 37,530$ INR have higher income and the households who are in the expenditure benchmark of $< 37,530$ INR are having lower annual income. The income difference between these two expenditure groups is significant (intervention: $p < 0.05$; sig.: .000; control: $p < 0.05$, sig.: .000)). Income difference was also found to be significant in case of families having income in the category of $> 44,064$ INR and $\leq 44,064$ INR (intervention: $p < 0.05$, sig.: .000; control: $p < 0.05$, sig.: .000), favouring the former category of households.

4.13 Land Holding:

Land holding is assessed from farming perspective in two different categories, i.e., own land holding (having hereditary or acquired land that have ROR in the name of the family) and operational holding (land cultivated either through share in or leased in or any other land under cultivation by the family). About 90.34 percent households have own land in control and 83.17 percent in intervention area. About 95.17 percent households in control and 92.74 percent households in intervention have operational land holding. Percentage of landless families (families not having own land) found to be 9.66 percent in control and 16.83 percent in intervention areas. If operational holding is taken into account (including other land cultivated), percentage of landless families reduces to 4.83 percent in control and 7.26 percent in intervention area.

Table 107: Farmer Categories; AJY

Holding Category	Own Land (HH %)		Operational Land (HH %)	
	Control	Intervention	Control	Intervention
Landless	9.66	16.83	4.83	7.26
Marginal	51.72	54.95	47.59	53.80
Small	24.83	21.62	28.97	30.53
Semi-Medium	12.41	5.94	16.55	7.43
Medium	1.38	0.66	2.07	0.99
Total	100.00	100.00	100.00	100.00

Categorization of households on the basis of land holding reflects that majority are marginal farmers in control (51.72 percent) as well as in intervention (54.95 percent) areas, having land holding below one ha. It is followed by small farmer (Control: 24.83 percent; Intervention: 21.62 percent) with holding size between one to two ha. So, together, marginal, and small farmer accounts to 76.55 percent of the total households holding land (own land) in control and 84.32 percent in intervention. Semi-medium and medium farmer account to 12.41 percent and 1.38 percent in control and 5.94 percent and 0.66 percent in intervention, respectively. No large farmer is observed in the sample who have more than 10 ha. of land.

Table 108: Average Land Holding; AJY

Control / Intervention	Average Land Holding (Ac.)	
	Own Land (Ha.)	Operational Holding (Ha.)
Control	1.20	1.35
Intervention	1.00	1.13
Total	1.04	1.17

Average land holding (own) of marginal farmers has been 0.60 ha. in control and 0.52 ha. in intervention. Small farmers, on an average hold 1.49 ha. in control and 1.55 ha. in intervention. Semi-medium and medium farmers in control hold on an average 2.71 ha. and 4.87 ha. respectively. Marginally higher average holding observed in case of semi-medium and medium farmers in intervention, i.e., 2.95 ha. and 6.20 ha. respectively. Irrespective of different land holding categories, households own 1.20 ha. in control and 1.0 ha. in intervention area.

Table 109: Average Land Holding, Own & Operational; AJY

Farmer Category	Own Land (Ha.)		Operational Land (Ha.)	
	Control	Intervention	Control	Intervention
Marginal	0.60	0.52	0.65	0.58
Small	1.49	1.55	1.48	1.52
Semi-Medium	2.71	2.95	2.67	2.92
Medium	4.87	6.20	5.45	5.77
Total	1.20	1.00	1.35	1.13

Further land holding by social categories reflect that, 94.57 percent ST households having own land, while 96.67 percent OC households and 65.22 percent SC households have own land in case of control areas. In case of intervention, 82.62 percent ST households, 80.36 percent SC households and 85.23 percent OC households have own land. The average land holding is lowest among the SCs (0.8 ha.) whereas families belonging to ST and OC categories have average holding of 1.0 ha. So, from land holding perspective, SC households are the most marginal among other social groups.

Table 110: Farmer Category by Social Segments; AJY

Particulars	Household (%)					Total
	Landless	Marginal	Small	Semi-Medium	Medium	
Control						
OC	3.33	40.00	30.00	20.00	6.67	100.0
SC	34.78	60.87	4.35	0.00	0.00	100.0
ST	5.43	53.26	28.26	13.04	0.00	100.0
Total	9.66	51.72	24.83	12.41	1.38	100.0

Intervention						
OC	14.77	63.64	15.91	5.11	0.57	100.0
SC	19.64	57.14	17.86	5.36	0.00	100.0
ST	17.38	50.53	24.87	6.42	0.80	100.0
Total	16.83	54.95	21.62	5.94	0.66	100.0
Total						
OC	13.11	60.19	17.96	7.28	1.46	100.0
SC	24.05	58.23	13.92	3.80	0.00	100.0
ST	15.02	51.07	25.54	7.73	0.64	100.0
Total	15.45	54.33	22.24	7.19	0.80	100.0

Average land holding by social categories reflect that households of OC categories have better average own land holding (1.64 Ha.) in comparison to other social groups in control areas. Whereas, in intervention, ST households have marginally higher average own land holding (1.10 Ha.) in comparison to other social categories. Similar trend is observed in case of operational holding.

Table 111: Average Land Holding by Social Categories; AJY

Social Category	Control		Intervention	
	Own Land (Ha.)	Operational Land (Ha.)	Own Land (Ha.)	Operational Land (Ha.)
SC	0.65	0.78	0.82	0.90
ST	1.14	1.31	1.10	1.22
OC	1.64	1.83	0.87	1.00
Total	1.20	1.35	1.00	1.13

4.13.1 Land Holding by Socio-Economic Categories:

There is no significant difference in land holding by social category ($p > 0.05$, sig.: .258; SC & ST: $p > 0.05$, sig.: .455; SC & OC: $p > 0.05$, sig.: .940; ST & OC: $p > 0.05$, sig.: .455) in intervention. In control, the land holding pattern reflects significant difference among the social categories ($p < 0.05$, sig.: .000; SC & ST: $p < 0.05$, sig.: .000; SC & OC: $p < 0.05$, sig.: .000; ST & OC: $p > 0.05$, sig.: .072). Difference in land holding is insignificant between ST and OC whereas difference is significant between SC and ST and between SC and OC in control.

Further difference in land holding by economic category (ration card holder & non-holder) is insignificant in intervention ($p > 0.05$, sig.: .504) as well as in control ($p > 0.05$, sig.: .557). However, significant difference is observed in land holding in case of male and female headed households in intervention where households headed by male have better land holding in comparison to households headed by female ($p < 0.05$, sig.: .008). But in control, land holding difference between male and female headed household is insignificant, though average land holding by male headed households are marginally higher than female headed households.

4.14 Agricultural Production:

Farmers have been cultivating different crops during production seasons. Paddy has been the prime among the crops during Kharif (Control: 93.79 percent farmers; Intervention: 91.91 percent farmers). Some farmers also cultivate Paddy during Rabi season, where irrigation facility is available. Average area devoted for paddy cultivation has been 0.97 ha. in control and 0.86 ha. in intervention.

Table 112: Different Crops Grown in Kharif and Rabi

Crops	Kharif	Rabi	Crops	Kharif	Rabi
Pigeon Pea (Arhar)	√	√	Kosala Saga	√	
Banana	√		Maize	√	√
Beans		√	Millet-Ragi	√	√
Bitter Gourd		√	Mustard		√

Crops	Kharif	Rabi	Crops	Kharif	Rabi
Black Gram	√	√	Okra		√
Brinjal	√	√	Onion		√
Cabbage		√	Paddy	√	√
Cauli flower		√	Pointed Gourd	√	√
Chilly	√	√	Potato	√	√
Cotton	√		Peas	4	3
Cow Pea	√	√	Pumpkin	√	√
G. Nut	√	√	Radish		√
Ginger	√		Sesame	√	√
Green Gram	√	√	Tomato	√	√
Horse Gram	√	√	Vegetables (Other)	√	√
IVY Gourd	√				

Farmers have different crop priorities and accordingly the available area is devoted for specific crops. As land holding size play an important role in area devoted for crops, there is difference in crop productivity by crop types as well as by holding categories. Average area devoted by farmers of different categories, average production and productivity of crops is presented in the matrix.

Table 113: Average Area, Production & Productivity by Holding Categories; AJY

Particulars	Average Area (Ac.)		Average Production (Qt.)		Average Productivity (Qt./Ac.)	
	Control	Intervention	Control	Intervention	Control	Intervention
Paddy						
Marginal	1.49	1.45	19.08	18.31	12.94	12.58
Small	2.92	3.08	39.49	38.59	13.55	12.77
Semi-Medium	4.45	5.44	53.55	71.89	11.86	13.26
Medium	9.00	5.88	112.50	76.75	12.50	12.88
Maize						
Marginal	0.04	0.54	0.10	4.31	2.50	6.10
Small	0.00	1.30	0.00	16.80	0.00	10.20
Semi-Medium	0.75	0.92	11.75	17.40	13.50	25.50
Finger Millet						
Marginal	0.66	0.69	0.84	1.11	1.91	1.68
Small	0.69	0.89	1.15	1.56	1.70	1.70
Semi-Medium	1.40	1.63	2.36	3.44	1.29	1.77
Groundnut						
Marginal	0.00	0.29	0.00	0.96	0.00	3.34
Small	0.47	0.93	1.50	5.21	3.17	5.18
Semi-Medium	0.00	2.00	0.00	5.00	0.00	2.50
Sunflower						
Marginal	1	0.2	1.00	0.15	1.00	0.83
Small	0.4	0.5	0.75	0.30	1.83	0.60
Niger						
Marginal	0	0.5	0.00	1.00	0.00	2.00
Sesame						
Marginal	0.00	0.44	0.00	0.34	0.00	0.86
Small	0.00	0.39	0.00	0.33	0.00	1.00
Semi-Medium	0.00	1.00	0.00	1.00	0.00	1.00
Mustard						
Marginal	0.20	0.31	0.10	0.44	0.50	1.72
Small	0.00	0.50	0.00	0.36	0.00	0.77
Black Gram						
Marginal	0.50	0.31	0.73	0.41	1.47	1.34

Particulars	Average Area (Ac.)		Average Production (Qt.)		Average Productivity (Qt./Ac.)	
	Control	Intervention	Control	Intervention	Control	Intervention
Small	0.66	0.66	0.83	0.82	1.29	1.20
Semi-Medium	0.78	1.10	1.01	1.66	1.33	1.45
Medium	1.00	1.00	1.00	1.40	1.00	1.40
Green Gram						
Marginal	0.65	0.60	0.96	0.85	1.50	1.44
Small	0.83	0.93	1.38	1.26	1.62	1.36
Semi-Medium	2.25	1.43	2.83	2.33	1.35	1.45
Medium	0.15	8.00	0.25	12.00	1.67	1.50
Pigeon Pea						
Marginal	0.44	0.45	1.19	1.16	2.59	2.47
Small	0.55	0.73	1.43	2.05	2.60	2.75
Semi-Medium	1.07	0.83	2.72	2.23	2.55	2.63
Medium	2.50	0.00	6.50	0.00	2.60	0.00
Chilly						
Marginal	0.38	0.16	1.57	0.42	4.05	2.85
Small	0.34	0.21	1.58	0.56	4.37	2.78
Semi-Medium	0.25	0.14	0.80	0.27	3.33	2.83
Garlic						
Marginal	0.00	0.13	0.00	0.33	0.00	7.52
Small	0.00	0.09	0.00	0.30	0.00	3.21
Ginger						
Marginal	0.18	0.28	4.00	6.50	23.50	24.52
Small	0.20	0.50	6.00	14.17	30.00	28.33
Semi-Medium	0.25	5.00	7.50	150.00	29.17	30.00
Turmeric						
Marginal	0.50	0.00	0.50	0.00	1.00	0.00
Cotton						
Marginal	1.36	0.78	10.43	3.80	9.71	4.27
Small	2.45	0.92	18.80	6.17	6.42	6.33
Semi-Medium	3.60	3.00	31.00	54.00	8.93	18.00

Note: Some Landless families (not having registered land in the name of the family) are also involved in agricultural activities through share in or cultivating other land.

The crop productivity is estimated for different types of crops grown by the farmers in the field. Significant difference is not observed in crop productivity in different crop categories. Significant difference in crop productivity (different crop type) is observed among social categories, families of different social category having different crops (interaction effect of crop category and social category) and different holding categories having different crops (interaction effect of land holding and crops grown). Average crop productivity of different crops in intervention and control areas is presented in the table.

Table 114: Crop Productivity (Qt./Ac.); AJY

Crops	Crop Productivity (Qt./Ac/)		Crops	Crop Productivity (Qt./Ac/)	
	Control	Intervention		Control	Intervention
Cereal			Spices		
Paddy	12.88	12.54	Ginger	27.06	28.07
Maize	9.83	13.10	Chilly	4.07	3.09
Finger Millet	1.69	1.69	Garlic		6.29
Cereal Total	12.82	12.54	Spices Total	11.06	8.21
Pulses			Vegetables		
Pigeon Pea	2.62	2.58	Onion		19.34

Crops	Crop Productivity (Qt./Ac/)		Crops	Crop Productivity (Qt./Ac/)	
	Control	Intervention		Control	Intervention
Black Gram	1.33	1.31	Potato	19.92	24.70
Green Gram	1.52	1.42	Tomato	24.51	25.24
Pulses Total	1.75	2.13	Brinjal	17.57	25.88
Oil Seeds			Vegetable Total	20.43	26.22
Mustard		1.36			
G. Nut	3.17	3.95			
Sesame		1.03			
Oil Seeds Total	2.10	2.15			

4.15 Emerging Production Clusters and Support Requirement:

Manufacturing more than 8,000 products, the MSME employs 40% of labor force and 20% of it is in rural areas.²⁴ The major artisanal clusters responsible for production of creative and artistic products that varies from pottery to jewellery to textile products are as listed below.

Table 115 Artisanal Clusters of Odisha (Laghu Udyog Nigam)

Location	Product	Location	Product
Angul	Brass and copper Art ware	Jharsuguda	Cane of Bamboo Basketries
	Cane of Bamboo Basketries	Kendrapada	Cane of Bamboo Basketries
	Earthen ware/pottery	Keonjhar	Cane of Bamboo Basketries
Balasore	Cane of Bamboo Basketries		Jute Carpets & Rugs
Baragarh	Bleach/Dye/Print Sild Tex		Metalware
	Brass and Copper Art ware	Khalikote	Conch-shell
	Cane of Bamboo Basketries		Folk Paintings
	Crocheted Textile Product		Stone Carving
	Earthenware & Pottery		Theatre, Costumes & Puppets
	Silver jewellery		Wood Carving
Barpali	Dolls & Toys	Khiching	Stone Carving
	Textiles Handlooms	Khmda	Appliqued Bed covers etc
Berhampur	Cane & Bamboo		Brass & Copper Art ware
	Dolls & Toys	Koraput	Metalware
	Metal Images Folks		Shopping bag/ fancy Items
	Wood Turning & Laquerware		Wood Turning & Laquerware
Bhograi	Wood Inlay	Kujang	Zari
Bolangir	Cane of Bamboo Basketries	Mayurbhanj	Metalware
Boudh	Bleach/Dye/Print Silk Jen	Narangpur	Wood Turning & Laquerware
Boulgadia	Stone Carving	Nawarangpur	Crocheted Textile Product
Cuttack	Horn & Bone		Earthenware & Pottery
	Metalware	Nayagarh	Brass & Copper Art ware
	Pottery & Clay	Nuapada	Cane of Bamboo Basketries
	Textiles Hand Printed	Phulban	Lead based articles
	Wood Inlay		Folk Paintings
	Bleach/Dye/Print Silk Jen		Stone Carving
	Cane of Bamboo Basketries		Textiles Hand Embroidered
	Cane of Bamboo Basketries		Textiles Handlooms
	Gold/ Silver gift Items		Wood Carving
	Metal Brass and Copper Art ware	Puri	Dolls & Toys
	Silver jewellery		Jewellery
			Metalware
Dharakot	Wood Turning & Lacquerware		Appliqued Handicrafts
Dhenkanal	Pottery & Clay		Cane of Bamboo Basketries
	Brass & Copper Art ware		Coconut Fiber Articles
	Finishing Articles		Lead based articles
Gajapati	Brass and Copper Art ware	Rayagada	Stone Artware
	Cane of Bamboo Basketries		Cane of Bamboo Basketries
Hayarbhaiy	Brass & Copper Art ware		Earther ware/pottery
	Cane of Bamboo Basketries		

²⁴ Sonia Mukherjee. Challenges to Indian micro small scale and medium enterprises in the era of globalization. 2018.

	Earthenware & Pottery	Sambalpur	Metalware
	Stone Artware		Pottery & Clay
Jagatsinghpur	Cane of Bamboo Basketries		Wood Carving
	Lead based articles		Brass & Copper Art ware
Jajpur	Brass & Copper Art ware	Sonepur	Cane of Bamboo Basketries
	Cane of Bamboo Basketries		Earthier ware/ pottery
	Silver jewellery		Bach/Dye/Print Silk Tex
Jeypore	Horn & Bone		Cane of Bamboo Basketries
Tarva	Metalware	Sundargarh	Earthenware & Pottery
			Metalware

Source: <http://laghu-udyog.gov.in/clusters/clus/rclus.htm>

The table below lists the top five clusters from Odisha that are major in fruit and vegetable production. The districts also produce other fruits and vegetables, but its scale of production is limited.

Table 116: Top 5 District-wise Production Clusters of Fruits and Vegetables

District	Estimated Total Production (in 1000 MT)	Major Fruits	Major Vegetables
Keonjhar	753	Mango, Limes, Lemons, Guava	Brinjal, Tomato, Cauliflower, Cabbage
Balangir	626	Banana, Mango, Watermelon, Jackfruit	Onion, Brinjal, Tomato, Cabbage, Pumpkin
Mayurbhanj	597	Mango, Limes, Lemons, Banana	Brinjal, Tomato, Cauliflower, Cabbage, Sweet Potato, Okra, Pumpkin
Ganjam	542	Mango, Limes, Lemons, Banana	Brinjal, Tomato, Cauliflower, Cabbage, Sweet Potato, Okra, Pumpkin
Sundargarh	524	Mango, Limes, Lemons, Banana, Jackfruit	Brinjal, Tomato, Cauliflower, Cabbage, Sweet Potato, Okra

Source: Ministry of Food Processing Industries (https://mofpi.nic.in/sites/default/files/indicative_list_of_identified_agri-horti_production_clusters_fruits_vegetables_0_0.pdf)

The major challenges are market competition, access to market whether domestic or international, safeguarding the intellectual properties such as artisanal knowledge and innovations and promotion of cottage industry and small-scale industries.²⁵ Other than this, skill training and management are yet other important challenges. The upgradation of technology is also the need of the hour for improved production and supply²⁶.

In most of the studied villages / area, there is no cluster promotion activities observed. However, there has been potential for certain commodities. Current production system is more scattered and largely confined to agricultural commodities. Forest based commodities (NTFPs) have also some degree of potentials in these villages. Assessment reveals that to attain scale of operation, size of the clusters have to be large enough so that volume of production of different commodities can be improved. Secondly, processing oriented clusters are also non-existing and scope is also limited due to low level of production and poor aggregation and supply chain management. Mapping of different commodities by Forest Division is presented in the following table.

4.15.1 Product Mapping for Cluster Development:

To understand the cluster development potentials, different produces / commodities are mapped with the VSS members, including existing skill base at the community level in the consultation process. Two aspects were examined, i.e., current level of existence (production / skill base) and the potential. Key requirements to attain the mapped potentials were also explored for different categories. The cluster characteristics were mapped for 7 key areas, i.e., (a) agriculture, (b) horticulture, (c) livestock, (d) handloom, (e) handicraft, (f) NTFP, and (g) skill base. In general, it is observed that agricultural, horticultural and NTFP produces are major ones in the studied pockets. Handloom and Handicraft is

²⁵ <http://laghu-udyog.gov.in/clusters/clus/indsme.htm>

²⁶ Sonia Mukherjee. Challenges to Indian micro small scale and medium enterprises in the era of globalization. 2018.

not prominent, barring a few pockets. Livestock sector has been emerging in many villages and reflects prominence. The assessment reflects that any production or processing cluster that is expected to come up may be based on the existing commodities. However, specific measures may be useful to promote certain other commodities, looking at the existing potential and market demand.

Pigeon pea (Arhar) has been the major production in 18.3 percent VSS and production growth potential to the tune of 37.2 percent can be achieved in 15.8 percent VSS. Black gram is commonly grown by farmers in 35.0 percent VSS and production growth potential is about 57.7 percent in case of 33.3 percent VSS. Green gram production considered to be higher in 23.3 percent VSS and 23.3 percent VSS having the production growth potential of more than 100.0 percent. Groundnut is one of the major commodities produced by farmers in 6.67 percent VSS which is having production growth potential of 46.7 percent covering all these 6.67 percent producing VSS. Details of agriculture / horticulture commodity specific potentially is presented in the table.

Table 117: Production Potential Map for Cluster Development; AJY

Particulars		Current Production (P) and Growth Potential (GP)				Current Production (P) and Growth Potential (GP)			
	Current		Potential			Current		Potential	
	V %	P (MT)	V %	GP (%)		V %	P (MT)	V %	GP (%)
Agriculture					Horticulture				
Pigeon Pea	18.3	63.7	15.8	37.2	Brinjal	22.5	886.9	21.7	59.6
Black Gram	35.0	271.1	33.3	57.7	Cauli Flower	4.17	148.0	4.17	95.3
Gram	7.5	29.6	7.5	60.8	Chilly	10.8	181.3	10.8	87.4
Green Gram	23.3	377.1	23.3	261.0	Onion	9.2	37.2	9.2	129.8
Ground Nut	6.67	231.1	6.67	46.7	Potato	13.3	77.3	14.2	74.4
Horse Gram	9.2	21.1	9.2	47.9	Tomato	13.3	111.2	13.3	110.2
Maize	25.8	820.3	21.7	40.9	Cashew	13.3	73.1	17.5	110.0
Finger Millet (Ragi)	20.0	166.8	19.2	230.8	Jack Fruit	12.5	27.4	9.2	63.1
Mustard	16.7	76.7	15.8	48.3	Mango	42.5	666.7	40.0	26.5
Sesame	7.5	29.0	7.5	76.9	Vegetables	11.7	460.7	10.0	13.7
Red Gram	12.5	102.9	12.5	24.8					

Note: V: VSS (%); P: Production (MT); GP: Growth Potential (%)

Table 118: Key Requirements for Product Cluster Development; AJY

Key Requirements	Agriculture	Horticulture	Livestock	NTFP	Skill
AJY Control					
Capacity Building					1.0
Insurance			42.5		
Irrigation Facility	5.5				
Quality Breed			10.8		
Quality Inputs (Seed, Fertilizer, Pesticides)	1.8				
Quality Seeds & Inputs on Time	0.7				
Soil Test	0.4				
Storage Structure (TDCC / Other)				12.9	
Technical Guidance	2.6				
AJY Intervention					
Capacity Building					2.4
Cold Storage	0.1	2.0			
Fund Support	0.1	0.2			
Horticultural Planting Materials & Inputs		0.2			
Insurance			34.2		
Irrigation Facility	3.2	1.9			
Mushroom Farming					0.1
More Credit & Training Support					0.3
Oil Extraction Unit (Oil milling)				0.7	
Protection of Crops from elephants	0.1				
Quality Brid			8.5		

Key Requirements	Agriculture	Horticulture	Livestock	NTFP	Skill
Quality Inputs (Seed, Fertilizer, Pesticides)	4.1	2.2			
Quality Nursery (for Hybrid Planting Materials)		0.3			
Quality Seeds & Inputs on Time	2.2	0.2			
Shed for livestock			7.3		
Skill Development Training					1.7
Soil Test	1.5				
Solar Fencing for Crop Protection	0.1				
Storage Structure (TDCC / Other)	0.2	0.5		17.0	
Subsidized Loan			0.8		
Technical Guidance	2.8				
Value Addition & Market Linkage	0.2	2.5		2.2	
Availability of Plant Variety (High Yield)		0.2			

4.16 Skill Base:

The studied villages have persons with different skill base in different areas such as tailoring, handloom, handicraft, driving, mechanical, electrician etc. While skilled persons in certain areas are less like handloom and handicraft, a greater number of skilled persons were observed in some other areas in both control and intervention villages, like tailoring, driving and mason works. However, looking at the total population of able bodied between 18 and 60, the skill base found to be poor. Some villages also have persons with traditional skills like potter, black smith, barber etc. but their presence is limited. Available skill base of the villages (average number of skilled persons) is presented in the matrix.

Table 119: Village Skill Base; AJY

AJY		Village Skill Base (% of Villages)								
		Tailoring	Handloom	Handicraft	Driving	Mechanic	Electrical	Electronics	Beautician	Mason
Control	V (%)	80.0	3.3	23.3	76.7	33.3	36.7	10.0	6.7	70.0
	Av.	5.75	3.00	1.50	8.81	1.88	2.44	1.33	8.00	8.63
Intervention	V (%)	70.6	16.8	16.0	160.5	18.5	20.2	5.9	4.2	193.3
	Av.	4.55	5.00	7.83	6.87	2.15	2.33	1.64	18.75	7.24
Total	V (%)	72.5	15.8	1.7	4.9	2.3	1.7	1.5	1.2	6.1
	Av.	4.81	4.50	6.89	7.29	2.07	2.34	1.55	16.60	7.54

Note: V (%): Percentage of Villages / VSS, Av.: Average No. of Persons having the Skill; Percentage of villages is cumulative (cannot be added up to 100.0 percent) as different skill sets persist in the same village.

Table 120: Skill Base Development Requirements

Skills	Key Requirements
Tailoring	Skill Development Training Creating Scope for Stitching Works
Driver	Support for Vehicles Purchase Availability of Vehicle on Rental Basis Further Skill Building (Other People)
Mason	Wage Payment as per Skilled Worker

4.16.1 Employable Skill Base at Household Level:

Employable skill base of the members in different skill categories observed in 6.10 percent people of sample households in control and 9.72 percent in intervention. Poor skill base is observed in both intervention and control areas. Comparing persons having different skill base by sex, it is evident that around 9.22 percent male and 2.87 percent female in control; and 14.27 percent male and 4.94 percent female in intervention area are having different skills (calculated taking population >6 & <60 years).

Table 121: Persons (%) Having Skill Base; HH Level; AJY

AJY Control & Intervention	Persons (%) Having Skill Base		
	Male	Female	Total
Control	9.22	2.87	6.10
Intervention	14.27	4.94	9.72
Total	13.24	4.52	8.98

Among different sets of skill that support for employment in control and intervention area are like carpenter, computer operator, driving, electrician, mason, and tailoring etc.

Table 122: Household Level Skill Base; AJY

Skill Base	Control	Intervention	Skill Base	Control	Intervention
Artisan		√	Mechanical	√	
Auto Repairing	√	√	Mushroom Cultivation	√	
Carpenter	√	√	Nursery Preparation		√
Computer	√	√	Painter		√
Cooking (professional)		√	Papad Preparation		√
Driving	√	√	Potter		√
Electrician	√	√	Tailoring	√	√
Fitter	√		Terracotta		√
Goldsmith	√		Farming / Cultivation		√
Handicraft		√	Tube well Repairing		√
ITI / Diploma	√	√	Veterinary (Management)		√
JCB Operator		√	Welding	√	√
Mason	√	√			

4.16.2 Skill Based Training:

While govt. has been focusing upon skill development, members of about 7.59 percent households in control and 12.54 percent households in intervention have received skill-based training on different skills / trades. The major skill areas / trades on which members have been trained by control and intervention is presented in the matrix.

Table 123: Skill Training Areas; AJY

Skill Training Areas	Control	Intervention	Skill Training Areas	Control	Intervention
Carpenter	0.00	0.83	Led operator	0.00	0.17
Computer	0.69	1.32	Mason	0.69	0.50
Dairy	0.00	0.33	Mechanical	0.69	0.00
Dressing attendant	0.00	0.17	Mushroom Cultivation	0.69	0.00
Driving	0.00	1.32	Plantation	0.00	0.17
Electrician	0.69	0.66	Poultry	0.00	0.17
Enumerator Training	0.00	0.17	Poultry, Agriculture	0.00	0.17
Farming	0.00	0.17	Security	0.00	0.17
Fishery	0.00	0.17	Tailoring	2.76	3.14
Fitter	0.00	0.17	Terracotta Making	0.00	0.50
Horticulture	0.00	0.17	Agriculture	0.00	0.50
Horticulture & Agriculture	0.69	0.00	Vehicle Mechanic	0.00	0.17
ITI	0.00	0.99	Veterinary Vaccination	0.00	0.17
JCB operator	0.00	0.17	Welding	0.69	0.00

Of the total, who got skill-based training, 45.45 percent in control and 31.58 percent in intervention got employment in different places (inter and intra state like Bangalore, Chhattisgarh, Dhenkanal, Burla, Bonai etc.) with average monthly remuneration of about Rs. 6,000.00 in control and Rs.10,500.00 in intervention. For various reasons, some skilled / trained people did not get employment, and reasons are found to be (a) poor salary structure, (b) inadequate workplace facility, (c) employment in distant place (d) family problem (not able to move out) etc. Some trained persons preferred for self-employment adopting the acquired skill and, on an average, earning about Rs. 4,600.00 per month in control and Rs. 7,700.00 in intervention.

4.16.3 Skill Base Development Needs:

Households (control: 51.72 percent, intervention: 50.33 percent) have expressed additional skill-based training requirement in different skill areas like (a) tailoring, (b) goat rearing / dairy (animal husbandry), (c) mason, (d) computer operation and DTP, (c) driving, (d) Bamboo goods making, (e) mobile repairing

etc. Developing skill base in farm forestry / agroforestry and agriculture / horticulture have also been one of the skill requirements of the families.

4.17 Household Expenditure:

Food expenditure of 29.66 percent households in control and 25.21 percent households in intervention is observed ≥ 57.0 percent of the total household expenditure, whereas remaining households have food expenditure < 57.0 percent of their total expenditure. Taking monthly per capita expenditure benchmark of Rs. 695.00 (Rs.37, 530 per family per year with average family size of 4.5) for Odisha (Tendulkar committee estimation), it is observed that 92.41 percent households in control and 87.46 percent households in intervention are having annual expenditure more than Rs. 37,530.00, which means 7.59 percent households in control and 12.54 percent households in intervention do less expenditure than the benchmark and continue to be below the poverty line. Considering national benchmark of Rs. 816.00 per capita expenditure (Rs. 44,064 per family per year with average family size of 4.5), it is observed that around 88.28 percent households in control and 82.34 percent in intervention expend more than the benchmark. Alternatively, 11.72 percent households in control and 17.66 percent households in intervention having annual expenditure less than the stipulated poverty benchmark price.

Table 124: Household Expenditure; AJY

Control / Intervention	Expenditure Rank-Odisha Poverty Line (HH %)		Expenditure Rank-India Poverty Line (HH %)	
	$>37,530$	$\leq 37,530$	$>44,064$	$\leq 44,064$
Control	92.41	7.59	88.28	11.72
Intervention	87.46	12.54	82.34	17.66
Total	88.42	11.58	83.49	16.51

Table 125: Annual Household Expenditure by Social Categories; AJY

Particulars	Average Annual Expenditure		
	Control	Intervention	Total
Social Category			
Scheduled Caste (SC)	77,036.96	1,06,179.33	97,474.47
Scheduled Tribe (ST)	80,327.83	77,933.01	78,408.87
Other Caste (OC)	1,50,520.67	92,108.87	1,00,698.84
Total	94,328.48	84,597.29	86,493.83
Economic Category			
Poor (Ration Card)	88,531.33	82,621.21	83,756.15
Non-Poor (No Ration Card)	1,72,590.00	1,20,804.19	1,33,434.88
Total	94,328.48	84,597.29	86,493.83
Land Holding Categories			
Landless	67,957.14	64,228.87	64,699.10
Marginal	85,101.87	80,784.96	81,580.46
Small	99,948.33	96,486.69	97,237.41
Semi-Medium	1,29,091.67	1,26,869.44	1,27,610.19
Medium	2,10,900.00	1,28,100.00	1,55,700.00
Total	94,328.48	84,597.29	86,493.83

4.18 Household Expenditure Difference:

4.18.1 Annual Household Expenditure by Social Category:

The average annual expenditure of households belonging to SC categories is comparatively higher than OC and ST, followed by households belonging to OC category. The average annual household expenditure difference between SC and ST ($p < 0.05$; sig.: .000) and between ST and OC ($p > 0.05$; sig.: .003) is significant, whereas, between SC and OC, the difference is insignificant ($p > 0.05$; sig.: .132). In control, expenditure difference is significant between SC and OC ($p < 0.05$, sig.: .000) and ST and OC ($p < 0.05$, sig.: .000) but insignificant between SC and ST ($p > 0.05$, sig.: .958).

4.18.2 Annual Household Expenditure by Economic Category:

The average annual expenditure of households having NFMS card is comparatively less than households not having NFMS card. The average annual household expenditure difference between card holders and non-card holders is significant ($p < 0.05$; sig.: .027) which confirms that families having NFMS card are incurring less expenditure in comparison to non-card holders. Similar situation is observed in case of control, where expenditure difference between the groups (card holder and non-card holder) is significant ($p < 0.05$, sig.: .006).

4.18.3 Annual Household Expenditure by House Type:

Expenditure difference between households having kutcha, pucca and mixed type is significant (between kutcha and pucca: $p < 0.05$, sig.: .000; between kutcha and mixed: $p > 0.05$, sig.: .541; between pucca and mixed: $p < 0.05$; sig.: .005). In case of control, though average expenditure of households having pucca house is comparatively higher than mixed and kutcha house, significant expenditure difference is not observed at the household level by house type (kutcha and pucca: $p > 0.05$, sig.: .309; kutcha and mixed: $p > 0.05$, sig.: .770; pucca and mixed: ($p > 0.05$, sig.: .723).

4.18.4 Annual Household Expenditure by Women Headed Households:

The average annual expenditure of male headed households is comparatively higher than female headed households. The difference in average annual household expenditure between male and female headed household is also significant ($p < 0.05$; sig.: .005) which confirms that households headed by male have better spending capacity in comparison to households headed by female. Similar condition found prevailing in control group ($p < 0.05$, sig.: .021).

4.18.5 Expenditure by Land Holding Categories:

Among different land holding categories, average annual expenditure of medium farmers is highest among all the land holding groups, followed by semi-medium, small and marginal farmer. Annual household expenditure difference is significant between marginal farmer and other holding categories (marginal and landless: $p < 0.05$, sig.: .014; marginal and small: $p < 0.05$, sig.: .008; marginal and semi-medium: $p < 0.05$, sig.: .000; small and semi-medium: $p < 0.05$, sig.: .004). Household expenditure different is not significant between semi-medium and medium farmer ($p > 0.05$; sig.: 1.000). In case of control, difference is observed between marginal and semi-medium farmer ($p < 0.05$, sig.: .022), marginal and medium farmer ($p < 0.05$, sig.: .014), and between small and medium farmer ($p < 0.05$, sig.: .046).

Looking by operational holding, it is evident that landless households who have been operating other land (share in, leased in, other land types), have similar expenditure to that of marginal farmers. The expenditure trend remains same in rest of the holding categories, i.e., medium farmers have better expenditure among others, followed by semi-medium and small farmers. Difference in amount of expenditure is significant between landless and semi-medium farmer ($p < 0.05$; sig.: .001), landless and medium farmer ($p < 0.05$, sig.: .031), marginal and small farmers ($p < 0.05$; sig.: .036); semi-medium and marginal farmers ($p < 0.05$; sig.: .000); medium and marginal farmers ($p < 0.05$; sig.: .021); and small and semi-medium land holding (farmer) categories ($p < 0.05$; sig.: .009). In control, significant difference in expenditure level observed in case of landless and medium farmer ($p < 0.05$, sig.: .002), marginal and medium farmer ($p < 0.05$, sig.: .001), between small and medium farmer ($p < 0.05$, sig.: .014) and between medium and semi-medium farmer ($p < 0.05$, sig.: .048). Hence it can be said that medium and semi-medium farmers are at a better expenditure level in comparison to other land holding categories. Though expenditure difference is not significant between landless and marginal farmer, average household expenditure of landless is less than any other land holding categories and highest expenditure is incurred by households falling into medium land holding category.

4.19 Indebtedness:

The households have been taking credit from different formal and semi-formal / informal sources to meet their financial requirements. A maximum of about 21.38 percent families in control and 22.77 percent families in intervention were found to have credit from single or multiple sources. Among different sources, credit taken by families from money lender/s observed comparatively less (control: 4.83 percent, intervention: 6.11 percent) than other emerging / established credit sources. Credit from banks / formal financial institutions is accessed by 11.72 percent families in control and 7.76 percent in intervention, whereas credit from cooperatives (agricultural cooperatives) is accessed by 21.38 percent households in control and 13.86 percent in intervention. Local SHGs have been the primary lender to majority of the households as most of the households have membership in the SHG. Around 18.62 percent households have taken credit from SHGs in control and 22.77 percent in intervention. Taking credit from relative / friends (control: 5.52 percent households; intervention: 6.60 percent households), credit from agricultural input shops (control: 5.52 percent households; intervention: 1.98 percent households) and from different local traders (control: 11.03 percent households, intervention: 3.63 percent households) is also observed. Cumulatively, taking all the sources together, 86.90 percent households in control and 70.96 percent in intervention are having credit outstanding.

Table 126: Average Credit Outstanding by Households; AJY

Credit Sources	Households (%)			Average Outstanding (Rs.)		
	Control	Intervention	Total	Control	Intervention	Total
Money Lender	4.83	6.11	5.86	15,428.57	26,033.27	24,346.16
Bank	11.72	7.76	8.52	34,483.12	50,273.40	46,079.11
Cooperative	21.38	13.86	15.31	47,458.06	36,952.38	39,784.35
SHG/Federations	18.62	22.77	21.97	12,026.41	13,244.58	13,045.24
Relatives/Friends	5.52	6.60	6.39	27,750.00	17,025.00	18,812.50
Ag. Input Shop	5.52	1.98	2.66	19,250.00	10,975.00	14,285.00
Local Traders	11.03	3.63	5.06	25,156.25	12,227.27	17,671.05
Shops	7.59	6.11	6.39	5,363.64	4,117.03	4,402.71
Others	0.69	2.15	1.86	35,000.00	28,010.00	28,509.29

Amount of credit taken from different sources varies depending upon the need and sanctioned by credit providing entity. Average credit amount outstanding per household is observed to be highest among all the sources in case of agricultural cooperatives (control: Rs. 47,458.06, intervention: Rs.36,952.38) and banks (control: Rs. 34,483.12; intervention: Rs. 50,273.40) followed by relatives / friends (Rs. 24,129.77). Though SHGs have been one of the prime credits providing institutions at the local level, average credit outstanding per household who have taken credit from SHG has been low in comparison to some other credit sources.

Table 127: Credit Outstanding by Social Category; AJY

Credit Sources	Control (HH %)				Intervention (HH %)			
	SC	ST	OC	Total	SC	ST	OC	Total
Money Lender	13.04	2.17	6.67	4.83	12.50	4.28	7.95	6.11
Bank	8.70	8.70	23.33	11.72	5.36	6.42	11.36	7.76
Cooperative	17.39	17.39	36.67	21.38	7.14	9.63	25.00	13.86
SHG/Federations	30.43	16.30	16.67	18.62	30.36	18.72	28.98	22.77
Relatives/Friends	4.35	3.26	13.33	5.52	5.36	5.08	10.23	6.60
Ag. Input Shop	4.35	5.43	6.67	5.52	3.57	1.07	3.41	1.98
Local Traders	4.35	16.30	0.00	11.03	0.00	5.35	1.14	3.63
Shops	13.04	4.35	13.33	7.59	7.14	4.28	9.66	6.11
Others	4.35	0.00	0.00	0.69	3.57	2.14	1.70	2.15

Table 128: Average Amount of Credit Outstanding by Social Category; AJY

Credit Sources	Control (Rs.)				Intervention (Rs.)			
	SC	ST	OC	Total	SC	ST	OC	Total
Money Lender	14,333.3	22,500.0	10,000.0	15,428.6	12,075.9	29,293.8	29,285.7	26,033.3
Bank	33,560.0	31,386.6	38,285.7	34,483.1	25,700.0	60,195.8	42,052.5	50,273.4
Cooperative	31,500.0	41,012.5	62,636.4	47,458.1	33,000.0	35,319.4	38,647.7	36,952.4

Credit Sources	Control (Rs.)				Intervention (Rs.)			
	SC	ST	OC	Total	SC	ST	OC	Total
SHG/Federations	8,625.7	13,688.9	11,800.0	12,026.4	13,129.8	11,719.0	15,376.8	13,244.6
Relatives/Friends	5,000.0	4,000.0	51,250.0	27,750.0	26,333.3	7,578.9	25,444.4	17,025.0
Ag. Input Shop	20,000.0	12,800.0	35,000.0	19,250.0	3,600.0	16,750.0	9,583.3	10,975.0
Local Traders	4,000.0	26,566.7		25,156.3		12,800.0	6,500.0	12,227.3
Shops	4,333.3	5,500.0	6,000.0	5,363.6	3,500.0	3,550.0	4,795.9	4,117.0
Others	35,000.0			35,000.0	26,000.0	23,328.8	41,833.3	28,010.0

Looking at the credit accessibility and outstanding by social stratification, it is evident that families belonging to OC have better accessibility to banking system (23.33 percent) and cooperatives (36.67 percent) in comparison to SC (banking: 8.70 percent; cooperative: 17.39 percent) and ST (banking: 8.70 percent; cooperative: 17.39 percent) families in control. Similar situation is also observed in case of intervention areas. In control areas, credit support by relative / friends is also higher in case of OC (13.33 percent) in comparison to other social groups (SC: 4.35 percent; ST: 3.26 percent). But credit accessibility in case of SHG is more or less same in case of OC (16.67 percent) and ST (16.30 percent) whereas percentage of SC families (30.43 percent) have better accessibility to SHG based credit. In intervention, credit outstanding with SHGs have been higher in case of SC and OC families in comparison to ST. Households (percentage of households) by social categories having credit outstanding by source and amount (Rs.) is presented in the matrix.

Table 129: Credit Outstanding by Economic Category; AJY

Credit Sources	Control (HH %)			Intervention (HH %)		
	Poor	Non-Poor	Total	Poor	Non-Poor	Total
Money Lender	5.19	0.00	4.83	5.92	9.38	6.11
Bank	9.63	40.00	11.72	7.67	9.38	7.76
Cooperative	22.22	10.00	21.38	13.59	18.75	13.86
SHG/Federation	18.52	20.00	18.62	23.69	6.25	22.77
Relatives/Friends	5.19	10.00	5.52	6.27	12.50	6.60
Ag. Input Shop	5.19	10.00	5.52	1.92	3.13	1.98
Local Traders	11.85	0.00	11.03	3.66	3.13	3.63
Shops	6.67	20.00	7.59	6.10	6.25	6.11
Others	0.74	0.00	0.69	2.26	0.00	2.15

Note: Poor refers to families having ration card and non-poor refers to families not having ration card

Further, in case of poor and non-poor households, bank credit outstanding is higher in case of non-poor in case of both control and intervention along with credit outstanding with cooperatives. But percentage of poor households having credit outstanding with SHG is more than non-poor in intervention and marginally less in case of control. Percentage of poor and non-poor households having credit outstanding, and amount of credit outstanding is presented in the matrix.

Table 130: Average Amount of Credit Outstanding by Economic Category; AJY

Credit Sources	Control (Rs.)			Intervention (Rs.)		
	Poor	Non-Poor	Total	Poor	Non-Poor	Total
Money Lender	15,428.57		15,428.57	25,683.26	30,000.00	26,033.27
Bank	26,401.00	60,750.00	34,483.12	49,814.77	57,000.00	50,273.40
Cooperative	48,040.00	30,000.00	47,458.06	36,705.13	40,166.67	36,952.38
SHG/Federation	10,508.52	31,000.00	12,026.41	13,226.12	14,500.00	13,244.58
Relatives/Friends	24,571.43	50,000.00	27,750.00	17,805.56	10,000.00	17,025.00
Ag. Input Shop	14,857.14	50,000.00	19,250.00	11,336.36	7,000.00	10,975.00
Local Traders	25,156.25	-	25,156.25	11,857.14	20,000.00	12,227.27
Shops	4,888.89	7,500.00	5,363.64	4,223.71	2,250.00	4,117.03
Others	35,000.00	-	35,000.00	28,010.00	-	28,010.00

Note: Poor refers to families having ration card and non-poor refers to families not having ration card

4.20 Migration:

Migration, in general, refers to movement of people from one's native place to other places with an intention to get a better scope of living along with other amenities of life. While "prospect-oriented"

migration is observed with people having specific market exchangeable skill sets, “distress migration” comprise of people who are forced to migrate due to situational compulsion. It is basically the landless families, wage labourers, seasonally unemployed labourers, agricultural labourers etc. who are compelled to migrate, and, in many cases, it is primarily people belonging to socially backward classes like scheduled caste and scheduled tribes who resort to migration. Based on the nature of migration, the migrants can be grouped in to three broad categories, i.e., enforced migrants, voluntary migrants and distress migrants. The migrants who migrate because of the external forces are enforced migrants.

The labourers who are forced to migrate and accept the work (any work assigned to them at the migrated place) are the migrants of the enforced category. The second category of migrants (voluntary migrants) include the people who choose migration as a better option with an intent of having better education, job and to settle themselves. These migrants are prospect- oriented migrants migrating with aspiration for improved quality of life. The third category of migrants (distress migrants) are caused due to deprivation and absence of livelihood in a particular region. Migrants under this category leave their native place due to poverty, absence of better alternatives, natural hazards like crop failure, flood, drought and other natural calamities.

Inter-State or intra-State migration, including rural-urban migration is not uncommon in Odisha. The KBK area, which also comprises scheduled area, is nationally known for distress migration. In the studied area, migration is not that rampant. It is observed that members from 11.72 percent households in control and 7.59 percent households in intervention migrate to different places in search of employment, leaving their original place of residence. Place of migration has been to States like Andhra Pradesh, Karnataka, Kerala, Gujarat, Tamil Nadu, Maharashtra etc. People also found migrating to different Districts within the State of Odisha.

Table 131: Households (%) with Migrating Member and Place of Migration; AJY

Place of Migration	HH (%) Having Migrating Person/s		
	Control	Intervention	Total
Andhra Pradesh	1.38	0.99	1.07
Chhattisgarh	0.00	0.17	0.13
Delhi	1.38	0.00	0.27
Goa	0.00	0.17	0.13
Gujarat	0.00	1.32	1.07
Inside Odisha	0.00	1.49	1.20
Karnataka	2.07	0.50	0.80
Kashmir	0.00	0.00	0.00
Kerala	0.69	0.99	0.93
Maharashtra	2.07	0.33	0.67
Other / Not Specific	1.38	0.50	0.67
Tamil Nadu	2.76	1.16	1.46
Total	11.72	7.59	8.39

In many villages, migration of both male and female is observed where exclusive migration of female is very minimal and, in most cases, it is with the male members. Number of households having male and female migrants is presented in the matrix. It is evident that some households have more than one migrant whereas some other households have only one migrant.

Table 132: Households (%) having Male & Female Migrants; AJY

Place of Migration	Households (%) Having Male and Female Migrants					
	Control		Intervention		Total	
	Male	Female	Male	Female	Male	Female
Andhra Pradesh	1.38	0.69	0.83	0.17	0.93	0.27
Chhattisgarh	0.00	0.00	0.17	0.00	0.13	0.00
Delhi	1.38	1.38	0.00	0.00	0.27	0.27
Goa	0.00	0.00	0.17	0.17	0.13	0.13
Gujarat	0.00	0.00	1.32	0.00	1.07	0.00
Inside Odisha	0.00	0.00	1.49	0.17	1.20	0.13
Karnataka	1.38	1.38	0.50	0.00	0.67	0.27

Place of Migration	Households (%) Having Male and Female Migrants					
	Control		Intervention		Total	
	Male	Female	Male	Female	Male	Female
Kashmir	0.00	0.00	0.00	0.00	0.00	0.00
Kerala	0.69	0.00	0.99	0.17	0.93	0.13
Maharashtra	2.07	0.00	0.33	0.00	0.67	0.00
Other	1.38	0.00	0.50	0.00	0.67	0.00
Tamil Nadu	2.76	0.00	0.99	0.17	1.33	0.13
Total	11.03	3.45	7.26	0.83	7.99	1.33

Average annual income of migrating people (last year) was around Rs. 1,52,090.91 in control and Rs.1,11,844.44 in the intervention. People, who migrate within the State for casual labour, receive advance for migrating to the destined place. Receiving advance is equal to signing the contract for migration and average amount of advance is about Rs. 3,000.00. Some migrating people also found receiving advance to migrate to Kerala, amounting to Rs. 75,000.00 on an average. The advance gets adjusted from their payoff in the migrating places.

Table 133: Income (Rs.) of Migrants (Last Year); AJY

Place of Migration	Average Annual Income (Rs.)		
	Control	Intervention	Total
Andhra Pradesh	-	32,500.00	32,500.00
Chhattisgarh	-	15,000.00	15,000.00
Delhi	4,30,000.00	-	4,30,000.00
Goa	-	2,10,000.00	2,10,000.00
Gujarat	-	1,00,888.89	1,00,888.89
Inside Odisha	-	3,12,875.00	3,12,875.00
Karnataka	94,666.67	20,333.33	57,500.00
Kerala	1,50,000.00	79,666.67	89,714.29
Maharashtra	1,03,333.33	32,000.00	74,800.00
Other	-	1,05,000.00	1,05,000.00
Tamil Nadu	60,000.00	55,571.43	56,125.00
Total	1,52,090.91	1,11,844.44	1,19,750.00

4.21 Potentials for Livelihood Enhancement and Key Challenges:

More than 60% of rural people are dependent of agriculture-based livelihood although the contribution of agriculture output has been nearly 17% only. The non-agriculture livelihood could provide a greater share of profit and employment to such people. The root cause of problem for agricultural dependent income is the increasing number of small holder farmers and land degradation. This leads to reduction in mean plot size and therefore affecting the farm mechanization adversely. The rural non-farm employment includes manufacturing, food industries, automobile repair etc. For livelihood promotion, MGNREGA has been one of the opportunities for providing employment and source of income to people²⁷.

People / households have different livelihood related requirements, like availability of institutional credit facility is a priority of 16.81 percent households, flexible repayment of institutional credit (second ranked by 58.12 percent), on time credit availability as per the need (ranked second by 53.98 percent) etc. Ranking of livelihood support mechanism is presented in the table.

Table 134: Livelihood Related Requirements; AJY

Control	Intervention
1. Need MGNREGS work	1. Loan for Agriculture & Horticulture
2. Loan facilities for IAG on Poultry	2. Required agricultural market linkage
	3. Required Leaf Plate Machine for IGA Promotion
	4. Required skill base training and engagement
	5. Required electrical training

²⁷ Prabhu Pingali et. al.. Transforming Food Systems for a Rising India. 2019

Control	Intervention
3. Required Cattle shed provision for community people 4. Loan for Agriculture & Horticulture 5. Required Leaf Plate Machine for IGA Promotion 6. Required Small Scale Industry in our area for engagement 7. Required training for promotion of mushroom cultivation 8. Aggregation Centre 9. Exposure visits for livelihood promotion	6. Required tailoring training 7. Required electronics training 8. Required maize thresher machine 9. Required Cashew Processing Unit 10. Required loan for IGA 11. Required loan for Goat rearing 12. Required Agricultural Value Addition Processing Unit 13. Required NTFP Collection centre in local area 14. Required more NREGS work 15. Aggregation Centre 16. Loan facilities for IAG – Poultry 17. Loan for Agriculture & Horticulture

Table 135: Ranking of Livelihood Related Requirements; AJY

SN	Livelihood Related Requirements	Rank 1	Rank 2	Rank 3
1	Institutional Credit (From Bank / Financial Institutions)	16.81	38.66	44.54
2	Flexible Repayment of Credit	10.26	58.12	31.62
3	Availability of Credit during Requirement (Timely)	4.42	53.98	41.59
4	Amount of Credit as per the Need	14.78	33.04	52.17
5	Generation of Business Ideas	33.72	33.72	32.56
6	Skill Based Training (Market Driven / Employable Skill)	29.35	18.48	52.17
7	Storage Structure for Harvested Produces	51.14	36.36	12.50
8	Linkage with Remunerative Market	39.08	20.69	40.23
9	Processing Unit for Commodities	49.33	33.33	17.33
10	Scope for Direct Selling in Different Other Markets	25.00	25.00	50.00
11	Transportation Facility to Market	22.50	29.17	48.33
12	Cold Storage for Fruits / Vegetables	41.25	41.25	17.50
13	Support for Market Driven Production System	36.00	49.33	14.67
14	NTFP Storage Unit	60.00	31.43	8.57
15	NTFP Processing / Value Addition Unit	49.30	43.66	7.04
16	Product Specific Cluster Development	41.67	29.17	29.17
17	Input Support in Subsidized Rate	31.58	28.42	40.00
18	Livelihood Diversifications (IGA Support Mechanism)	68.42	30.26	1.32
19	Training on Business Promotion and Management	55.41	33.78	10.81
	Average Score	35.79	35.15	29.06

Note: Rank 1 refers to priority 1; Rank 2 refers to priority 2; and Rank 3 refers to priority 3

To understand key livelihood related issues and its relation to different seasons of a year, different livelihood related aspects were mapped by month. Responses of households (percentage of households) by different issues and its seasonal / monthly occurrence is presented in the matrix.

Table 136: Seasonality of Livelihood Issues; AJY

Key Aspects		Agricultural Wage	Daily Wage	Crop Pest / Disease	Crop Loss due to Wild Animals	Abundant Agricultural Wage	Abundant Daily Wage	High Market Price of Agricultural Crops	High Market Price of Horticultural Crops	High NTFP Production / Collection	High Market Price of NTFPs	Consumption Credit Requirement	Production Credit Requirement
Baisakha (Apr-May)	C	13.3	46.7	0.0	3.3	3.3	30.0	13.3	26.7	53.3	43.3	6.7	0.0
	I	7.6	71.4	0.0	5.9	2.5	33.6	8.4	27.7	51.3	33.6	9.2	10.1
	T	8.7	66.4	0.0	5.4	2.7	32.9	9.4	27.5	51.7	35.6	8.7	8.1
Jaistha (May-Jun)	C	16.7	43.3	0.0	3.3	6.7	20.0	13.3	30.0	46.7	43.3	13.3	13.3
	I	6.7	65.5	0.8	4.2	4.2	33.6	9.2	26.9	47.9	34.5	14.3	23.5
	T	8.7	61.1	0.7	4.0	4.7	30.9	10.1	27.5	47.7	36.2	14.1	21.5
Ashara (Jun-Jul)	C	86.7	53.3	13.3	6.7	53.3	3.3	3.3	20.0	30.0	26.7	10.0	60.0
	I	85.7	56.3	15.1	7.6	58.8	17.6	14.3	16.0	14.3	30.3	16.8	57.1
	T	85.9	55.7	14.8	7.4	57.7	14.8	12.1	16.8	17.4	29.5	15.4	57.7
Shrabana (Jul-Aug)	C	83.3	43.3	33.3	6.7	73.3	33.3	10.0	16.7	6.7	13.3	6.7	56.7
	I	85.7	50.4	33.6	10.9	73.9	19.3	19.3	17.6	10.1	32.8	14.3	44.5
	T	85.2	49.0	33.6	10.1	73.8	22.1	17.4	17.4	9.4	28.9	12.8	47.0
Bhadrab (Aug-Sep.)	C	60.0	43.3	56.7	16.7	40.0	30.0	10.0	23.3	20.0	13.3	26.7	36.7
	I	50.4	50.4	72.3	20.2	35.3	17.6	20.2	18.5	16.0	33.6	27.7	25.2
	T	52.3	49.0	69.1	19.5	36.2	20.1	18.1	19.5	16.8	29.5	27.5	27.5
Ashwina (Sep.-Oct.)	C	53.3	43.3	46.7	56.7	46.7	26.7	10.0	23.3	23.3	13.3	40.0	33.3
	I	43.7	49.6	59.7	58.0	26.9	18.5	19.3	16.8	19.3	27.7	33.6	16.8
	T	45.6	48.3	57.0	57.7	30.9	20.1	17.4	18.1	20.1	24.8	34.9	20.1
Kartika (Oct.-Nov.)	C	60.0	23.3	33.3	60.0	46.7	20.0	10.0	10.0	13.3	10.0	13.3	10.0
	I	59.7	46.2	34.5	58.0	45.4	20.2	13.4	18.5	12.6	21.8	16.8	5.9
	T	59.7	41.6	34.2	58.4	45.6	20.1	12.8	16.8	12.8	19.5	16.1	6.7
Margasira (Nov.-Dec.)	C	56.7	23.3	10.0	43.3	26.7	13.3	10.0	3.3	6.7	6.7	6.7	3.3
	I	72.3	52.9	6.7	57.1	45.4	21.8	15.1	9.2	14.3	8.4	9.2	9.2
	T	69.1	47.0	7.4	54.4	41.6	20.1	14.1	8.1	12.8	8.1	8.7	8.1
Pousa (Dec.-Jan)	C	26.7	50.0	6.7	36.7	6.7	16.7	36.7	3.3	3.3	3.3	20.0	10.0
	I	26.1	65.5	1.7	24.4	12.6	32.8	31.1	6.7	12.6	10.1	21.0	8.4
	T	26.2	62.4	2.7	26.8	11.4	29.5	32.2	6.0	10.7	8.7	20.8	8.7
Magha (Jan-Feb)	C	13.3	56.7	3.3	16.7	3.3	20.0	43.3	3.3	6.7	13.3	33.3	6.7
	I	10.9	73.9	1.7	14.3	4.2	38.7	36.1	5.0	17.6	19.3	28.6	22.7
	T	11.4	70.5	2.0	14.8	4.0	34.9	37.6	4.7	15.4	18.1	29.5	19.5
Phalgun (Feb-Mar)	C	13.3	60.0	3.3	6.7	3.3	23.3	33.3	16.7	23.3	20.0	33.3	0.0
	I	10.9	75.6	1.7	10.1	4.2	37.0	22.7	14.3	37.8	31.9	26.9	8.4
	T	11.4	72.5	2.0	9.4	4.0	34.2	24.8	14.8	34.9	29.5	28.2	6.7
Chaitra (Mar-Apr)	C	10.0	53.3	0.0	0.0	3.3	26.7	13.3	16.7	23.3	20.0	30.0	0.0
	I	5.0	68.9	2.5	6.7	1.7	33.6	3.4	14.3	45.4	35.3	21.8	3.4
	T	6.0	65.8	2.0	5.4	2.0	32.2	5.4	14.8	40.9	32.2	23.5	2.7

Note: C: Control, I: Intervention, T: Total

Table 137: Required Support for Livelihood Promotion; AJY

SN	Parameter	Control	Intervention
1	Training for promotion of mushroom cultivation	Ö	
2	Provide loan and Training on Tailoring		Ö
3	Required NTFP Collection centre in local area		Ö
4	More Wage days under MGNREGS	Ö	Ö
5	Establishing Aggregation Centre	Ö	Ö
6	Loan for IGA Promotion		Ö
7	Market linkage of Agricultural Product		Ö
8	Exposure visits for livelihood promotion		Ö
9	NTFP Processing Unit		Ö
10	Poultry Farming (IGA Promotion)	Ö	Ö
11	Goat Rearing (IGA Promotion)		Ö
12	Leaf Plate Making (IGA Promotion)	Ö	Ö
13	Skill base training and Engagement		Ö
14	Training on Electrical		Ö
15	Training on Electronics		Ö
16	Maize thresher machine		Ö
17	Cashew Processing Unit		Ö
18	Agricultural Value Addition Processing Unit		Ö
19	Cattle shed provision for community	Ö	
20	Loan for Agriculture & Horticulture cultivation	Ö	Ö
21	Small Scale Industry in our area for engagement	Ö	

4.22 Conclusion:

To improve the livelihood condition of people, challenges of productivity, fragmented land, unskilled labour and technological gap should be addressed. The persisting challenges may be taken up in such a manner that the duration of livelihood insecure period is reduced with improved employment and income. The livelihood solutions would be more sustainable when supplementary source of income is promoted along with the current sector of engagement. As discussed, the participation of women in labour force is high but their level of income (direct cash income) has been low which can be improved through their engagement in profitable sectors with required skill base. In addition to this, the NTFP market is strong but yet not harnessed to the potential and even if that happens the sustainability will be the major concern and therefore multi fold solutions are required in the form of organizational support for resolving problems of poor livelihood and income sources.



Section V Conclusion and Way Forward

Section V: Conclusion and Way Forward:

1. Degradation of forest resource is attributed to several factors but at the same time, measures have been undertaken to reduce such degradation and to improve the green cover. ANR measures have been taken along with Block Plantation. Looking objectively, these measures are intended not only for maintaining green cover, but also provide livelihood support to the forest fringe dwellers. Contextually, farm forestry models have also been promoted through VSS. But adoption rate has been poor due to various reasons. It is important that the apprehensions of people in this regard should be addressed amicably through exposure, business model development, educating people on long-term and short-term economic benefits and overall environmental benefits of farm forestry.
2. Human and animal conflict observed persisting in many villages for which farmers of certain category are compelled to keep their land barren. As marginal and small holding is high, enhanced cropping intensity by keeping the wild animals away from agriculture could be helpful to enhance people's livelihood by improving farm production and productivity. As crop loss due to wild animals is a common phenomenon, this could also be an input for adoption of farm forestry model with careful selection of species that get less impacted due to wild animals. Secondly, low crop intensity will also have an impact on the proposed development of production clusters, taking agricultural and horticultural produces, as volume of production for cluster development is important. Hence, careful planning is required in cluster development where emphasis can be given more on aggregation and value addition of forest and farm produces along with creating skill-based employment. However, it is also important to take concrete measures that reduces human animal conflict.
3. The biodiversity index reflects upon the practice of mono species plantation or poor plant diversity, even in plantation sites. Certain sites taken up under silvicultural operations also reflect low index value. So, it is pertinent that areas with poor plant diversity will be emphasised in coming years. To improve the biodiversity index, area / VSS specific focus is essential, and the project may examine the current level of biodiversity and an achievable plan can be prepared as a part of the micro plan to improve biodiversity.
4. The VSS and SHG, as community organisations, are found having poor functional linkage due to limited scope of working together and benefitting from each other. Objectively, both have been promoted and strengthened to serve specific purposes. While forest management has been the prime objective of VSS, thrift and credit are the core functions of SHGs. Functional domains of both the community organisations are different and hence points of association, as community organisations is expected to be in specific areas. The functional linkage could be through operational convergence like income generation, value addition and processing of NTFP, participation in cluster development measures, product marketing etc. It is expected that with increased project support, degree of association of these organisations will improve.
5. Involvement of SHGs or its members in different IGAs is observed to be limited to certain groups or members within the group. Secondly, credit investment by the members in majority cases is in agricultural activity. It indicates that agricultural investment requirement remains high for which accessed credit is mostly used for agricultural purposes. It also indicates that availability of credit for agricultural purposes is either inadequate or it is not available to majority of the families. In general, IGA is expected to be a supplementing livelihood activity that provide additional income to the family and support in managing and mitigating the distress situation. Looking at the prevailing situation, promotion of off-farm or non-farm based IGA

may require a separate strategy where association of private bodies may be encouraged. The private bodies may be encouraged to invest in potential sectors; engage the community organisations, including VSS; provide the technical and managerial support; and at the time of need also buy back the produces.

6. Cluster development has been one of the focused interventions under AJY for strengthening additional income generation opportunities of people. Looking at the current level of production and even taking in to account the production enhancement potentials in agriculture and horticulture, it appears that village specific production cluster development would not be feasible. Even considering a group of nearby villages for developing a cluster around agricultural and horticultural produce will also be less beneficial. The reason being low volume of production, poor infrastructural facility for storage, no emphasis on market driven production system and poor commodity management practices. In cluster development approach, it may be helpful if focus of production system would be on high value crops that can cater to the need of specific market segment, and it is produced in volume to maintain the supply chain. Market driven post-harvest management practices would further add value to the overall approach.
7. In some of the villages, NTFP based cluster development potential is found to be emerging and expected to be beneficial for the people. Contextually, such initiative may be converged with Ban Dhan Vikas Kendras (BDVK) scheme of Govt. of India to leverage funds for establishing processing and value addition units. Infusion of advance technology in processing, value addition and preparation of market driven products would fetch a good return to the SHGs / VSS on their investment.
8. Employment opportunities can be created through skill development measures, focusing upon specific skill sets that have high market exchangeable potential. Along with skill development, it is equally important to facilitate forward linkages like development of bankable business plan, credit provisioning, rendering hand holding support, periodic inputs for skill enhancement etc. The proposed cluster development initiatives can also be developing skill-based clusters that provide service support to the nearby township and villages along with development of product clusters.
9. Different livelihood related issues / challenges are found prevailing in different seasons and it may be addressed, based on most feasible solutions to reduce distress and minimise livelihood related insecurity. For example, when availability of wage is less, especially for wage earners, different wage-based employment can be provided under MGNREGA or by engaging them in different forest-based activities.

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Annexure 1: List of Observed Plants

SN	Plants Observed		SN	Plants Observed	
	Local Name	Scientific Name		Local Name	Scientific Name
1	Acacia	<i>Acacia mangium</i>	21	Khaira	<i>Senegalia catechu</i>
2	Ainla	<i>Phyllanthus emblica</i>	22	Kumbhi	<i>Careya arborea</i>
3	Ambada	<i>Spondias dulcis</i>	23	Kusuma	<i>Schleichera oleosa</i>
4	Arjuna	<i>Terminalia arjuna</i>	24	Limba	<i>Azadirachta indica</i>
5	Asana	<i>Terminalia tomentosa</i>	25	Mahalimba	<i>Melia azedarach</i>
6	Bada Chakunda	<i>Cassia siamea</i>	26	Mahula	<i>Madhuca indica</i>
7	Bahada	<i>Terminalia belleirica</i>	27	Mango	<i>Mangifera indica</i>
8	Bamboo	<i>Dendrocalamus strictus</i>	28	Ou	<i>Dillenia indica</i>
9	Barakoli	<i>Ziziphus mauritiana</i>	29	Phasi	<i>Anogeissus acuminata</i>
10	Bobul	<i>Vachellia nilotica</i>	30	Piasala	<i>Pterocarpus indicus</i>
11	Kaju (Cashew)	<i>Anacardium occidentale</i>	31	Sala	<i>Shorea robusta</i>
12	Chakunda	<i>Cassia occidentalis</i>	32	San Chakunda	<i>Cassia occidentalis</i>
13	Dhala Sirisha	<i>Albizia procera</i>	33	Simaruba	<i>Simarua glauca</i>
14	Gambhari	<i>Gmelina arborea</i>	34	Sirisa	<i>Albizia lebbeck</i>
15	Jackfruit	<i>Artocarpus heterophyllus</i>	35	Sisu	<i>Dalbergia sissoo</i>
16	Jamu	<i>Syzygium cumini</i>	36	Subabul	<i>Leucaena leucocephala</i>
17	Kaintha	<i>Limonia acidissima</i>	37	Sunari	<i>Cassia fistula</i>
18	Kala Sirisha	<i>Albizia lebbeck</i>	38	Tamarind	<i>Tamarindus indica</i>
19	Kanchana	<i>Bauhinia variegata</i>	39	Teak	<i>Tectona grandis</i>
20	Karanja	<i>Millettia pinnata</i>			
Note: Plants observed in different Study Areas / Forest Ranges					



Study Instruments

Household Schedule

A. Background Information									
1 District:					2. Forest Circle:				
3. Block					4: Forest Division				
5. GP					6. Forest Range				
7 Village/Hamlet:					8 HOH Name:				
9. Social Category:		SC	ST	OC	10. Economic Category		1.BPL	2.APL	3.Other
11. Member in VSS		Yes	No	Don't Know	12.Member in SHG		Yes	No	Don't Know
B. Demographic Composition									
Name	Age	Sex (M / F)	Relation with HOH	Education	Skill Base (Y/N)	Primary Occ.	Secondary Occ.	Tertiary Occupation	
1									
2.									
3.									
4.									
5.									
6.									
7.									
8.									
Education: 1-Illiterate, 2-Literate, 3- Primary, 4-UP, 5-High School, 6-College, 7-Technical Education, 8-Other (Specify)									
Note: If any member of the household is having any skill set, please specify the skill set									
C. Household Assets and Amenities									
1. House Ownership		1.Own	2.Rented	3.Other	2. House Type		1.Kutchha	2.Pucca	3.Mixed
3. No. of Rooms		4. Having Toilet		Yes	No	5. Household Electrified		1.Yes	2.No
6. Hours of Power Supply Per Day (if supplied)				7. Power Quality		1.Poor/Fluctuation		2. Normal	
8. Drinking Water		1.Tube/Bore Well		2.Pond/Nala		3.Open Well		4.River/Stream	
9. Fuel Used for Cooking		1.Cow Dung		2.Gas		3.Woods		4.Electricity	
10. Housing constructed by:		Self	Govt.	11. Drinking Water:		1.Own Source		2.Community Source	
12. Ag. Land Holding (Ac.)				13. Homestead Land (Ac.)				14.Total Land (Ac.)	
15. Irrigated Ag. Land (Ac.)		Ac.		16. Un-irrigated Ag. Land (Ac.)					
D. Agriculture and Agroforestry (Area in Acre, Production in Quintal)									
Total Land Holding				Own Land:				Other Land:	
Total Holding of Ag. Land (Ac.)		Total:		High:		Medium:		Low:	
Total Cultivable Land:		Total Uncultivable Land		Total Cultivated Land:		Cultivable Waste Land:			
Area Irrigated (Ac.)		1.Kharif		2.Rabi		3.Summer			
Means of Irrigation		1.Kharif		2.Rabi		3.Summer			
Do you practice agroforestry		Yes		No		If Yes, area under agroforestry		Ac.	
Type of trees / shrubs planted		1.		2.		3.		4.	
Key benefits of agroforestry		1.		2.		3.			
Reasons, if not doing agroforestry		1.		2.		3.			
Current use of uncultivable land		1.		2.		3.			
Current use of cultivable waste		1.		2.		3.			
Agricultural		Kharif:		Rabi:		Summer:		Total	
Field Crops & Plantation Crops		Area	Production	Area	Production	Area	Production	Area	Production
1.									
2.									
3.									
4.									
5.									
Total									

Produce Consumption and Selling Out									
Particulars	Kharif (Name the Crop)			Rabi (Name the Crop)			Summer (Name the Crop)		
	C.1	C.2	C.3	C.1	C.2	C.3	C.1	C.2	C.3
Total Production (Qt.)									
Own Consumption (Qt.)									
Immediate sell out volume (Qt.)									
Place of sell out									
Average price per KG									
Late sell out volume (Qt.)									
Place of sell out									
Average price per KG									
Total Income (Rs.)									
E. Land Under FRA									
Have you got land under FRA?	Yes	No	If Yes, Year of Getting Land Allotment						
Year of Getting ROR			Year of Getting Land Possession						
Total Land Given under FRA (in Acre)			Distance of Land from Home (in Km.)						
Agriculture Land Area (in Ac):			Homestead Land Area (in Decimal):						
Current Use of Homestead Land	1. Constructed House		2. Clutivating / Farming		3. Given to Other		4. Mortgaged		
	5. Yet to be Utilized		6. Sold Out		7. Other (Specify)		8. Other (Specify)		
Current Use of Agricultural Land	1. Constructed House		2. Clutivating / Farming		3. Given to Other		4. Mortgaged		
	5. Yet to be Utilized		6. Sold Out		7. Other (Specify)		8. Other (Specify)		
Suitability of Homestead Land for House Construction			1. Suitable		2. Not Suitable				
Suitability of Agricultural Land for Farming			1. Suitable		2. Not Suitable				
Type of Crops Grown on Agricultural Land under FRA (If Land is under Cultivation)									
Kharif			Rabi			Summer			
Crop Type	Area (Ac.)	Production (Qt.)	Crop Type	Area (Ac.)	Production (Qt.)	Crop Type	Area (Ac.)	Production (Qt.)	
1.			1.			1.			
2.			2.			2.			
3.			3.			3.			
4.			4.			4.			
5.			5.			5.			
Annual Income from Agricultural Land Under FRA (Rs.)			1. Kharif	Rs.	2. Rabi	Rs.	3. Summer	Rs.	
Do you / your family members involve in any artisan work			Yes	No	If Yes, Specify Type				
Years of Association in artisan work			Annual income from artisan work (Rs.)			Rs.			
F. HH Assets									
Durable Asset Type	Yes / No	Livestock Asset Type		Yes / No	Farm Implements		Yes / No		
1. Mobile Phone		1. Cow/ Buffalo			1. Power Tiller				
2. Television		2. Bullock			2. Tractor				
3. Refrigerator		3. Goat/Sheep			3. Harvester				
4. Bike/Two-Wheeler		4. Poultry/Chicken			4. Pump Set				
5. Four-Wheeler		5. Pig			5. Thresher				
6. Three-Wheeler		6. Other			6. Spray Machine				
7. Cycle					7. Other				
8. Air Condition									
9. Fan									
10. Water Filter									
11. Computer/Laptop									
12. Other									
G. Government Benefit Accessibility									
Scheme / Program Provisions		Benefited (Yes/No)	Scheme / Program Provisions			Benefited (Yes/No)			
1			4.						
2.			5.						

3.				6.			
H. Skill Based Training							
Have you received any training?				If Yes, Specify Trade			
When did you get Training (Year of Training)				Period of Training (in Months)			
Did you get Employment after Training		Yes	No	If Yes, Place of Employment			
Reasons, if not get Employment after Training							
Monthly Remuneration from Skill Based Employment				Rs.			
Monthly Remuneration from Skill Based Self Employment				Rs.			
I. IGA Business Economics (If Involved in IGA)							
Name of IGA you are Involved in				Year of Inception of IGA			
Type of IGA	1.Individual	2.Group		No. of Persons Engaged in IGA			
Who Manages the IGA	1.Male Member of the HH		2.Female Member of the HH		3.Both Male & Female		
IGA is Seasonal or Annual	Seasonal	Annual		Monthly Income from IGA (Rs.)			
Days of Engagement in IGA	Per Week		Per Month				
Any family member is in SHG?	1.Yes	2.No		If Yes, Year of Joining SHG			
Who is the Owner of IGA		1.Male		2.Female		3.Both	
Cash Inflow							
Monthly	Quarterly	Total Annual Sell		Cash Out flow (Annual)		Cost (Rs.)	
Units of Sell (No):				House Rent			
Total Value of Sell (Rs.):				Electricity			
Gross Income (Rs.):				Labour Cost			
Net Income (Rs.):				IGA Input Procurement			
Total Inflow				Repair & Maintenance of Machinery/Equipment			
				Other (specify)			
				Total outflow			
				Net Profit:			
J. Household Expenditure							
Heads of Expenditure	Monthly (Rs.)	Annually (Rs.)		Monthly (Rs.)	Annually (Rs.)		
1. Food				8.Credit Repayment			
2.Clothing				9. Mobility (For Job Etc.)			
3.Health				10. Social (Life Cycle) / Religious			
4. Education				11. HH Assets			
5. Entertainment				12. Utility Payment (Bills)			
6.House Construction/ Maintenance				13. Others 2			
7. Ag. / Business Investment				14. Others 1			
K. Annual Household Income (Rs.)							
Source of Income	Annual Income (Rs.)		Source of Income	Annual Income (Rs.)			
1. Agriculture			7. Permanent Job				
2. Livestock			8. Wage (Agricultural / Daily)				
3. Fishery			9. Traditional Works				
4. NTFP			10. Remittance				
5. Trading / Business			11. Mushroom etc.				
6. Temporary Job			12. Other (Specify)				
L. Indebtedness							
Source	Year	Purpose	Item Mortgaged	Cr. Amount (Rs.)	Outstanding (Rs.)	Annual Rate of Interest	
1. Money Lender							
2. Bank							
3. Cooperative							
4.SHG							
5. FPC / PO							
6. Relatives/Friends							
7. Ag. Input Shop							

M. Migration						
1.Migrating Adult Member	Male:	Female:	2.No. of Children Migrating:			
3.Place of Migration	State:	District:	4.Duration of Migration (Days)			
5.Season of Migration			6.Advance Received for Migration (Rs.)			
7.Income from Migration (Rs.)			8.Registered as Migrant Labour	1.Yes	2.No	
N. Type of Benefits Received from Different Sources / Departments						
Institution / Agency	Benefit 1		Benefit 2		Benefit 3	
Forest Department						
ITDA / Tribal Welfare						
Agriculture Directorate						
Horticulture Directorate						
Fishery Directorate						
Animal Husbandry Directorate						
Irrigation Dept.						
Odisha Lift Irrigation Corporation						
Panchayati Raj Dept.						
Education Department						
Health & FW Department						
Women & Child Dev. Dept.						
Bank / Financial Institutions						
Ag. / Other Cooperative						
Rural Development Dept.						
Social Welfare						
NGOs						
Other I						
Other II						
Other III						
Other IV						
Other V						
O. Livelihood Related Requirements of the Households						
1.			2.			
3.			4.			
P. Forest Protection, Management & VSS						
Are you a member of VSS	Yes	No	Are you in Executive Committee	Yes	No	
If Yes, Mention Position			Year of Formation of VSS			
Are you actively involved in VSS	Yes	No	Do you Participate in Meetings	Yes	No	
Key Activities Taken Up						
Activities Taken Up (Put Tick)	VSS	Self / HH	Activities Taken Up (Put Tick)	VSS	Self/HH	
Forest Protection			Plantation of Indigenous NTFP Species			
Wild Life Protection			Plantation of Medicinal Plants			
Biodiversity Protection			Prevention of Encroachment			
Protection of Catchment Area			Product Market Linkage (Volume)			
Protection of Water Resources			Coordination with Other Dept.			
Protecting other Eco-Sensitive Area			Issuing Transit Pass			
Micro Plan Preparation			Dealing with Human-Animal Conflict			
Mitigating / Preventing Forest Fire			Any Other Activity (Specify)			
Benefits Derived from Forest	1. Leave, Fodder, Grass Etc.		2. NTFPs (as stipulated)		3. Pool, Fire wood Etc.	
	4. Timbers/Woods		5. Kendu Leaf		6. Other (Specify)	
Have you received training on Forest Conservation / Management			Yes		No	
If Yes, Training Topics	1.		2.		3.	
Have you received other training	Yes	No	If Yes, Specify			
Are you interested in training	Yes	No	If Yes, Specify Training Themes			
What do you do in Following Situations						
1.Forest Fire	1.		2.		3.	
2.Wild Animal Attack	1.		2.		3.	

3.Theft of Timber / Woods	1.	2.	3.
4.Plantation	1.	2.	3.
5.Forest area encroachment	1.	2.	3.
6.Excess exploitation of forest	1.	2.	3.
Q. Suggestion / Opinion of the Family			
Area	Suggestion 1	Suggestion 2	Suggestion 3
Forest Protection			
Wild Life Protection			
Biodiversity Protection			
Protection of Catchment Area			
Protection of Water Resources			
Protecting Eco-Sensitive Area			
Micro Plan Preparation			
Plantation of Indigenous Species			
Plantation of Medicinal Plants			
Prevention of Encroachment			
Product Market Linkage (Volume)			
R. Membership in Organizations / Institutions			
Are you a member of any Organization	Yes	No	If Yes, Specify the Organization:
What are the Key Functions of the Organization			1. 2.
Membership in any other Organization			
Organization	Yes	No	Position
PRI			Water & Sanitation Committee
Farmer Cooperative			APMC
Farmer Producer Organization			Village Dev. Committee
Women SHG			Other (Specify)
VSS			
S. Overall Opinion, if any			
1.	2.		
3.	4.		

Occupation Code:

Code	Occupation Type	Code	Occupation Type
1	Agriculture	9	Petty Business / Shop/ Repairing / Service Centre/ Self-Employed
2	Horticulture	10	Manufacturing/ Trading/ Processing Unit
3	Goat Rearing	11	Permanent/ Temporary Job/Salaried
4	Poultry	12	Artisan / Art & Craft/ Traditional (Black smith/Gold Smith etc.)
5	Dairy	13	Remittance/Migration
6	Fishery	14	Pension (Old age, widow, disable)
7	Daily Wage/Ag. Wage	16	Vegetable Cultivation
8	NTFP Collection & Selling	15	Other (Specify)

List and Code of Govt. Schemes / Programmes of Govt.

1. PAY / Mo Kudia/ Biju Pucca Ghar	17.Free Cooking Gas Connection?
2.Widowhood Pension	18.Books/Reading Materials
3.NOAP / SOAP (Old Age Pension)	19.Input Subsidy (Agri. / Horticulture)
4.Disable Pension	20.Crop Insurance
5.HARISCHANDRA Yojana	21. AAM ADMI BIMA YOJANA
6. Ration Card	22. Rastriya Swastya Bima Yojana
7.Job Card	23.Biju Krushka Kalyana Yojana
8.Electrification (RGGVY/BGJY)	24. Biju Swastya Bima Yojana
9.Skill Development Training (DDUGKY)	25.PM JAN DHAN YOJANA
10.Odisha Girls Incentive Programme (OGIP)	26.FRA Land (in Ac.)
11.Nutrition (SNP): Child	27.Homestead Land (BASUNDHARA)
12.Nutrition (SNP): Pg. Women	28.BANABANDHU KALYAN YOJANA
13.Nutrition (SNP): Nursing Mother	29. IGA
14.Financial Incentive Under MAMATA	30. Irrigation Benefit
15.Immunisation to Children	31.Other (Specify)
16.Pre-School Education (ICDS)	

Signature:

Tool for VSS

Particulars			Particulars		
A. Background Information					
Name of the VSS			No. of Villages Constituting the VSS		
Total No. of Members in the VSS			Total Female Members in the VSS		
Total No. of EC Members			No. of Females in the EC		
Name of the Chairperson			Name of the Vice-Chairperson		
Name of the Secretary			Name of the Treasurer		
VSS Registration No.			Forest Area under VSS Jurisdiction		Ha:
B. Governance Aspects					
No. of Meetings of GB Per Year			No. of Meetings of EC Per Year		
No. of Special Meetings of GB Last Year			Av. Participation of Women in GB		
Key Areas of Discussion in the GB			1.		
			2.		
			3.		
C. Key Activities Taken up by the VSS					
Activities	Y/N	Area	Activities	Y/N	Area
Forest Protection			Plantation of Indigenous NTFP Species		
Wild Life Protection			Plantation of Medicinal Plants		
Biodiversity Protection			Prevention of Encroachment		
Protection of Catchment Area			Product Market Linkage (Volume)		
Protection of Water Resources			Coordination with Other Dept.		
Protecting other Eco-Sensitive Area			Issuing Transit Pass		
Micro Plan Preparation			Any Other Activity (Specify)		
Note: Please Collect Relevant Documents / Facts and Figures from the Concerned VSS					
D. Linkage with Other Institutions					
Functional Linkage of SHG & VSS			Functional Linkage of VSS and GP		
1.			1.		
2.			2.		
3.			3.		
Functional Support from Forest Dept.			Functional Support from Other Dept.		
1.			1.		
2.			2.		
3.			3.		
Note: Support from Forest Dept. Includes Support from SDLC and DLSC					
E. Benefits Derived from Forest					
Benefits	No. of HH	Benefits	No. of HH		
Leave, Fodder, Grass Etc.		NTFPs (as stipulated)			
Intermediate Yields (Pool, Fire wood)		Major Harvests (Timbers/Woods)			
Kendu Leaf		Other (Specify)			
F. VSS Capacity Building					
No. of VSS GB Members Trained		No. of EC Members Trained			
Areas of Training		1.			
		2.			
		3.			
No. of GB Members Got Exposure		No. of EC Members Got Exposure			
G. VSS Financials (Rs.)					
VSS Bank A/c No.		Name of the Bank / Branch			
Signatories of the A/c		1. 2.			
VSS Fund Receipt & Expenditure		2018-19	2017-18		
Funds Received from Govt.					
Funds Received from Other Sources					

Total Receipt				
Total Expenditure				
Balance Fund Available				
Note: Please examine the Financial Documents of the VSS with their Consent / Permission				
H. Record Keeping / Maintenance				
1.		4.		
2.		5.		
3.		6.		
I. Opinion Suggestion for Improving VSS Functionality				
1.		4.		
2.		5.		
3.		6.		

Note: Please refer documents available with VSS

Signature:

Tool for WSHG

A. Background Information							
Name of the District				Name of the Circle			
Name of the Block				Name of the Division			
Gram Panchayat				Name of the Range			
Name of the Village				Name of the Hamlet			
Total HH in the Village				No. of SHGs in the Village			
Name of the Respondent				Sex of the Respondent		1.Male	2.Female
Cell No. of Respondent		+91		Position of the Respondent			
Name of the Cluster Federation of the SHG							
Name of the GP Level Federation of the SHG							
Name of the President				Name of the Secretary			
Whether the SHG is having office				1.Yes		2.No	
If Having Office		1.Own	2.Rented				
SHG having Bank A/c		1.Yes	2.No	If Yes, Details		Bank:	Branch:
						A/C No.	
B. SHG Profile							
Name of the SHG				Year of formation of SHG			
No. of Total Member				No. of BPL/Poor Members of Total Member			
Savings Norm (Weekly/Monthly)				Per Member Savings Per Week/Month		Rs.	
Total Savings		Rs.		Av. Per Member Savings		Rs.	
Total Credit Outstanding (member)		Rs.		Av. Credit Outstanding per Member		Rs.	
No. of times SHG took Bank Loan				Cumulative Credit from Bank		Rs.	
Bank Loan by Year (Rs.)				2018-19:	2017-18:	2016-17	
Bank Loan Outstanding with SHG		Rs.		Annual Rate of Interest Charged by Bank			
Annual Rate of Interest Charged by SHG to Members							
C. Fund Sources and Amount							
Sources				2018-19	2017-18	2016-17	Total (Since Inception)
Cluster Federations							
GP Level Federation (GPLF)							
SHG Members							
IGA/Activities							
Mission SHAKTI							
OLM / NLM							
Govt. Schemes / Programs							
CSR Activities / NGOs / Pvt. Institutions							
Banks (Credit Fund)							
MFI / SHPI / NBFC (Credit Fund)							
Grant from Different Sources							
Donations (Individual / Institutions)							
Other Sources (Specify)							
Total							
D. Assets and Liabilities							
Assets		2018-19		2017-18		2016-17	
Cash in Hand (Rs.)							
Cash in Bank (Rs.)							
Loan Outstanding (Rs.)							
Fixed Deposit (Rs.)							
Fixed Asset (Rs.)							
Liability							
Voluntary Savings (Rs.)							
External Loan Outstanding (Rs.)							
Equity (Other Sources) (Rs.)							
Compulsory Savings (Rs.)							
Other (Specify) (Rs.)							

E. Income and Expenditure						
Income	2017-18		2016-17	2015-16		
Interest from Bank						
Interest from FD						
Interest from Credit						
Income from Business (Net)						
Income from Services						
Donations						
Other Income (if any)						
Total Income (Rs.)						
Expenditure						
SHG Meeting/s						
Federation Meeting/s						
Books / Records / Stationary						
Office / House Rental						
Monitoring / Supervision						
Transportation (meeting etc.)						
Refreshments						
Salary / Honorarium						
Communication (Tel./Fax.)						
Repair & Maintenance-Assets						
Electricity / Other Utilities						
Bank Charges						
Interest paid-off-Outside Loan						
Audit Expenses						
Bad Debt, If any						
Total Expenditure (Rs.)						
Income Minus Expenditure						
F. Income Generation Activities						
Whether SHG is involved in IGA	1. Yes	2. No	If "Yes"	1.Group	2.Sub-Group	3.Individual
Type of IGA (Specify)	No. of Members		Average Loan Amount	Annual Rate of Interest	Period of Repayment	Average Loan Outstanding
1.						
2.						
3.						
4.						
5.						
G. Leadership Responsibilities of the SHG			Yes	No	Details Highlighting Examples	
Providing guidance to members on IGA activities						
Assisting in information sharing among members						
Helping define problems and identify solutions						
Facilitating appraisal of member performance						
Encouraging members to offer ideas and opinions						
Resolving conflicts / Disputes among members						
Conducting meetings and facilitating group decisions						
Organizing implementing and coordinating group plans						
Facilitating financial transactions during group meetings						
Maintaining and keeping records of accounts						
Maintaining a bank account						
Representing the group's interests to outside bodies.						
Negotiations and doing business with others						
Rendering truthful and correct accounts to members						
Selecting leaders on consensual basis						
Developing functional systems and procedures						
Mechanism for rotation of leadership						
Changing leadership in case of requirement						
Training / Capacity Building of Members						

H. Type of Books Maintained by the SHG					
Minutes Book	1.Yes	2.No	Savings Register	1.Yes	2.No
Loan Register	1.Yes	2.No	Loan Repayment Register	1.Yes	2.No
Ledger Book	1.Yes	2.No	Bank Reconciliation Statement	1.Yes	2.No
Member List	1.Yes	2.No	Petty Cash Book	1.Yes	2.No
Asset Register	1.Yes	2.No	Cash Book	1.Yes	2.No
Petty Cash Book	1.Yes	2.No	Other Records (Specify)	1.Yes	2.No
I. Key Social Activities Taken up by the SHG			1.		
			2.		
			3.		
			4.		
			5.		
J. Key Financial Activities Taken up by the SHG			1.		
			2.		
			3.		
			4.		
			5.		
K. What has been the Impact of SHGs on Members			1.		
			2.		
			3.		
			4.		
			5.		
L. Key Suggestions of the SHG / Members					
1.			2.		
3.			4.		

SN	Indicators	Score
1	Membership	
a	Vulnerable and Forest Dependents (>80% are Tribal)	1.0
a.1	Vulnerable and Forest Dependents (<80% are Tribal)	0.5
b	Vulnerable and Forest Dependents (>80% are Forest Dependents)	1.0
b.1	Vulnerable and Forest Dependents (<80% are Forest Dependents)	0.5
c	Vulnerable and Forest Dependents (>80% are from Below Poverty Line households)	1.0
c.1	Vulnerable and Forest Dependents (<80% are from Below Poverty Line households)	0.5
d	Vulnerable and Forest Dependents (>80% belong to same Neighborhood)	1.0
d.1	Vulnerable and Forest Dependents (<80% belong to same Neighborhood)	0.5
e	Vulnerable and Forest Dependents (>80% are Landless)	1.0
e.1	Vulnerable and Forest Dependents (<80% are Landless)	0.5
	Sub-Total	5.0
2	Awareness and Governance	
A	Awareness about SHG Principles	
	>75% Members are aware	1.0
	<75% Members are aware	0.5
C	Awareness on rules and regulations of SHG	
	> 75% Members	1.0
	< 75% Members	0.5
D	Awareness of loan and savings status of group & Individual	
	>75% Members	1.0
	< 75% Members	0.5
E	Members have attended training programs on SHG/enterprise etc.	
	>75% Members	1.0
	< 75% Members	0.5
F	Awareness on roles and responsibility of the SHG leader/office bearers	
	>75% Members	1.0
	< 75% Members	0.5
B	Awareness about Forest & Wildlife Protection	
	>75% Members	1.0
	< 75% Members	0.5

G	Awareness on Principles of Eco-development	
	>75% Members	1.0
	< 75% Members	0.5
H	Awareness on Wild life regulations	
	>75% Members	1.0
	< 75% Members	0.5
1	Awareness about Livelihood Support by MGNREGA, OLM etc.	
	>75% Members	1.0
	< 75% Members	0.5
J	Awareness about Livelihood Opportunities (Members are aware about Ecctourism)	
	>75% Members	1.0
	< 75% Members	0.5
	Sub-Total	10.0
3	Meetings (last 6 months)	
A	Meeting (>90%) are held regularly (weekly/monthly) on a fixed date, time and place	10.0
B	Meeting (71 -90%) are held regularly (weekly/monthly) on a fixed date, time and place	8.0
C	Meetings (50-70%) are held regularly (weekly/monthly) on a fixed date, time and place	6.0
D	Meetings (<50%) are held regularly (weekly/monthly) on a fixed date, time and place	4.0
	Sub-Total	10.0
4	Attendance in Meetings (Average attendance in last 6 months)	
A	Above 90% in all group meetings	10.0
B	71 -90% in all group meetings	8.0
C	50-70% in all group meetings	6.0
D	<50% in all group meetings	4.0
	Sub-Total	10.0
5	Financial Transactions	
A	All financial decisions and transactions (fund collections and loan disbursements) are made during meetings only	10.0
B	All financial decisions and fund collections are made during meetings only but loan disbursements done outside	7.0
C	All financial decisions and loan disbursements are made during meetings only but fund collections done outside	5.0
D	All financial transactions (fund collections and loan disbursements) outside meetings	2.0
	Sub-Total	10.0
6	Regularity of Savings (in last 6 months)	
A	>95% on time payment of savings by all members	10.0
B	85-94% on time payment of savings by all members	9.0
C	60-84% on time payment of savings by all members	6.0
D	<60% on time payment of savings by all members	3.0
	Sub-Total	10.0
7	Internal Lending	
A	Loans for IGA / Productive Investment (Direct Financial Gain)	10.0
B	Loans for IGA and Consumptive Expenditure (No Direct Financial Gain)	9.0
C	Loans only for Consumptive Expenditure (No Direct Financial Gain)	7.0
D	No internal lending/ Lending to outsiders	3.0
	Sub-Total	10.0
8	Repayment	
A	Monthly Installment (Regular monthly repayment of principal and interest in full as decided)	10.0
B	Monthly Installments (Regular monthly repayment of only principal/interest/principal and interest in other ratio)	7.0
C	Quarterly repayment / Lump sum(one-time) repayment	5.0
D	Irregular repayment	2.0
E	No Repayment	0.0
	Sub-Total	10.0
9	Members Having Loan Overdue	
A	All members are repaying regularly and no one is having any overdue	10.0
B	50-75% Members Having Overdue	6.0
C	< 50% Members Having Overdue	2.0
	Sub-Total	10.0
10	Maintenance of Records	
A	All Documents Maintained on Weekly / Monthly Basis Before the Meeting	5.0
B	Few are maintained on Weekly / Monthly Basis Before the Meeting	3.0
C	All Documents are Maintained Irregularly	1.0
	Sub-Total	5.0
11	Social / Ecological Involvement	
A	> 50% members Involved in Social Activities (village cleaning, conflict resolution, Liquor Prohibition etc.)	10.0
B	< 50% members Involved in Social Activities (village cleaning, conflict resolution, Liquor Prohibition etc.)	5.0
C	> 50% members Involved in Forest Protection Activities	10.0

D	< 50% members Involved in Forest Protection Activities	5.0
	Sub-Total	10.0
	Total	100
1	MEMBERSHIP PROFILE	5.0
2	GOVERNANACE ISSUES	10.0
3	CONDUCTING MEETINGS (last 6 months)	10.0
4	ATTENDANCE IN MEETING (Average attendance in last 6 months)	10.0
5	FINANCIAL TRANSACTIONS IN THE GROUP	10.0
6	REGULARITY OF SAVINGS (in last 6 months)	10.0
7	PATTERN OF INTERNAL LENDING	10.0
8	REPAYMENT PATTERN	10.0
9	NUMBER OF MEMBERS HAVING LOAN OVERDUE AS ON DATE OF GRADING	10.0
10	MAINTENANCE OF RECORDS	5.0
11	SOCIAL/ECOLOGICAL INVOLVEMENT	10.0
	TOTAL	100.0

Note: Please put figures against each variable for calculation

Tool for Plant Density & Bio-Diversity Assessment

OFSDP II Area	Yes	No		Yes	No
Intervention Area	Yes	No	Control Area	Yes	No
Name of the District:			Name of the Circle		
Name of the Block			Name of the Division		
Name of the GP			Name of the Range		
Name of the Village			Name of the Section		
Name of the VSS			Name of the Bit		
Area under VSS (Ha.)			Geo-Coordinate of Plot	N	
Total Forest Area (Ha.) of VSS				E	
Intervention Area (Ha.)			Plot No.		

SN	Name of the Species	No. of Plants	Age	GBH	Height

Tool for Village Infrastructural Facilities and Services

A. Background																				
District						Forest Circle														
Forest Division						Forest Range														
Gram Panchayat (GP)						Revenue Village														
No. of Households			SC			ST			OC											
Population			SC		M:		F:		ST		M:		F:		OC		M:		F:	
Type of Houses in the Village			Kutchra (No.)						Pucca (No.)						Mixed (No.)					
Village is Electrified			Yes			No			Village having all Weather Road			Yes			No					
Village Connected to GP			Yes			No			Internal Concrete Road			Yes			No					
No. of Families having Ration Card			Total:						No. of ST Families having Card			ST HH:								
Note: Please Collect Demographic Profile, Ration Card Holding and SECC Data from GP / Block																				
B. Educational Infrastructure & Facilities																				
School Type	Available Yes-1; No-2	Functional Regularity Yes-1; No-2	No. of Students			No. of Teachers		No. of Class Rooms		Facilities Provided (Put Tick) 1: Books 2: Dress 3: MDM 4: Cycle 5: Other					Key Issues / Challenges					
			B	G	T	M	F			1	2	3	4	5						
Pre-School																				
Primary																				
Secondary																				
Sewashram																				
Ashram																				
Other (Specify)																				
C. Health Infrastructure & Facilities																				
Facilities	Distance	Functional Regularity Regular-1; Irregular-2	No. of Doctors			No. of Paramedics		No. of Beds		Facilities Available 1: Free Medicine 2. Test lab. 3. Ambulance 4. Referral					Key Issues / Challenges					
1.AWC																				
2.Sub-Centre																				
3.Clinic																				
4.PHC																				
5.CHC																				
6. MHU																				
7.Hospital																				
8.Ay. Dispensary																				
9.Ho. Dispensary																				
10.Quack / Healer																				
11.Other																				
Note: Put "0" in Distance Column if the facility is within the village																				
D. Drinking Water Source																				
Source	Number	Water Quality			Adequacy (Yes / No.)			Key Issues / Challenges												
		Good	So-So	Poor	Summer	Winter	Rainy													
1.Open Well																				
2.Bore Well																				
3.Pipe (Stand)																				
4.HH Supply																				
5.Pond																				
6.Stream																				
7.River/NALA																				

8. Other								
E. Sanitation Facilities								
1. No. of HH with Toilet Facility	1. Total		2. ST		3. SC		4. OC	
2. Community Toilet Facility	1. Yes	2. No	3. School with Toilet			1. Yes	2. No	
4. Community Hall with Toilet	1. Yes	2. No	5. Toilet in AWC			1. Yes	2. No	
6. Water Log Area	1. Yes	2. No	7. Water Drainage Facility			1. Yes	2. No	
8. Key Needs	1.		2.			3.		
F. Other Infrastructural Facilities / Services								
Facilities	Place	Distance	Key Services Accessed By			Key Issues and Challenges		
1. AI Centre / Veterinary								
2. Daily/Weekly Market								
3. Livestock Market								
4. Cold Storage								
5. Ware House/GODOWN								
6. Bank Branch								
7. Post /Sub-Post Office								
8. Agri. Cooperative Society								
9. TDCC Office								
10. NTFP Selling Centre								
11. Milling/Processing Unit								
12. Aggregation Centre								
13. Packaging Unit								
14. Transport Service								
15. Bus Stop								
16. Railway Station								
17. Block Office								
18. District Headquarters								
19. Police Station								
20. College								
21. Technical Institution								
22. Other (Specify)								
G. Community Organisations								
CBO Types	No.	Members	Key Activities		Supported By		Needs	
1. Farmer Group								
2. Women SHGs								
3. W&S Committee								
4. GKS (Health Committee)								
5. Watershed Committee								
6. Cultural Group								
7. Producer Group								
8. VSS / JFMC								
8. Other (Specify)								
H. Local Level Planning								
Is there any local level planning	Yes	No	If Yes, at which level			1. GP	2. Village	
How frequently is it organised			Quarterly	Half Yearly	Annually	Other		
Whether activities are taken up as per the plan			1. Yes			2. No		
Who executes forest development activities			1. GP	2. VSS / JFMC	3. Dept.	4. All	5. Other	
I. Overall Suggestion for Community Development								
I.1 Infrastructure, Facility and Services			I.2 Livelihoods / Entitlement					
1.			1.					
2.			2.					
3.			3.					
M. Suggestion for Sustainable Forest Management								
1.			2.					
3.			4.					
5.			6.					

Seasonal Calendar (Livelihood Specific)

Livelihood Trends / Shocks	Baisakha Apr-May	Jaistha May-Jun	Ashara Jun-Jul	Shrabana Jul-Aug	Bhadrab Aug-Sep.	Ashwina Sep.-Oct.	Kartika Oct.-Nov.	Margasira Nov.-Dec.	Pousa Dec.-Jan	Magha Jan-Feb	Phalguna Feb-Mar	Chaitra Mar-Apr
Drought												
Flood												
Cyclone												
Heavy Rain												
Crop Pest / Disease												
Crop Loss due to Wild Animals												
Abundant Agricultural Wage												
Scarce Agricultural Wage												
Abundant Daily Wage												
Scarce Daily Wage												
High Market Price: Agricultural Crops												
Low Market Price: Agricultural Crops												
High Market Price: Hort. Crops												
Low Market Price: Hort. Crops												
High NTFP Production/Collection												
Low NTFP Production / Collection												
High Market Price of NTFPs												
Low Market Price of NTFPs												
Consumption Credit Requirement												
Production Credit Requirement												

Mapping Production & Cluster Potential

District:	Forest Circle	
Block:	Forest Division	
GP:	Forest Range	
Village:		
Cluster Characteristics by Type	Current Production / Status	Potential
Agricultural Crops		
1.		
2.		
3.		
Horticultural Crops		
1.		
2.		
3.		
Livestock / Animal Husbandry		
1.		
2.		
3.		
Handloom		
1.		
2.		
3.		
Handicraft		
1.		
2.		
3.		
NTFP		
1.		
2.		
3.		
Skill Base		
1.		
2.		
3.		
Other (Specify)		
1.		
2.		
3.		

