Evaluation of Assam Project on Forest and Biodiversity Conservation (APFBC) followed by Drafting of Phase II of the Project

Evaluation Report

Submitted to:

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In association with

IDCG
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Acronyms

AFC	*Agricultural Financial Corporation*
AfD	*Agence Française de Développement*
ANR	*Assisted Natural Regeneration*
APFBC	*Assam Project on Forest and Biodiversity Conservation*
CAPI	*Computer Assisted Personal Interviewing*
CDM	*Clean Development Mechanism*
COMPELO	*Consortium for Micro Planning and Enhancing Livelihood Opportunities*
EDC	*Eco-Development Committee*
EPA	*Entry Point Activity*
FD	*Forest Department*
FGD	*Focus Group Discussion*
FRA	*Forest Rights Act*
IDI	*In-Depth Interview*
IGA	*Income Generating Activity*
PMU	*Project Management Unit*
FMIS	*Financial Management Information System*
HR	*Human Resources*
HRMIS	*Human Resources Management Information System*
IDCG	*Insight Development Consulting Group*
JFMC	*Joint Forest Management Committee*
MHW	*Mixed Hard Wood*
NGO	*Non-Government Organization*
NTFP	*Non-Timber Forest Product*
PA	*Protected Area*
RF	*Reserve Forest*
REDD+	*Reducing Emissions from Deforestation and Forest Degradation*
REWP	*Research, Education and Working Plan*
SF	*Social Forestry*
SPSS	*Statistical Package for the Social Sciences*
Terr	*Territorial*
WL	*Wildlife*

Executive Summary

The Assam Project on Forest and Biodiversity Conservation (APFBC) is co-funded by the French Development Agency – Agence Française de Développement (AfD) and the State Government of Assam was commenced in February 2012. Its phase 1 comes to an end in May 2019 and the phase 2 is expected to be implemented from June 2019. An evaluation of the project was commissioned in June 2018 and an AfD Appraisal Mission took place in the first week of October 2018.

The goal of the project is to restore forest ecosystems, in collaboration with the forest dependent communities, to enhance their livelihoods and ensure conservation and sustainable use of biodiversity. The final outcome of the initiatives in the long run is expected to improve wellbeing of forest dependent communities with access to basic and decent amenities for living, which would leave minimum ecological footprints. The project is largely based on the Feasibility Report, which was carried out in December 2010. This five-year project commenced into implementation on February 2012 and has been extended until the end of May 2019. The initial budget of the project was € 60 million including a 10% contribution from the state. However, due to a variety of reasons, including slow start, finalisation of procurement procedures and shift in the value of Rupee vis-à-vis Euro, the project until September 2018 expended a total amount of € 33.99 out of which € 29.54 (87%) was provided by AfD and the rest by Assam State budget (13%). The Forest Department of Assam provided leadership to implement the project in 32 territorial forest divisions, 7 wild life divisions, and 13 social forestry divisions as well as other Financial Investment Units (FIUs). It also contracted a consortium named Consortium for Microplanning & Enhanced Livelihood Opportunities (COMPELO) to anchor livelihood activities.

The project activities covered three major areas:

- capacity strengthening of the FD through trainings, exposure visits, major improvement of infrastructure and research to improve departmental effectiveness;
- implementing sustainable forest management by forest restoration and rehabilitations efforts via plantations and Joint Forest Management (JFM) of the forest areas by mobilizing the local communities, and
- supporting forest fringe villagers by providing a range of livelihood and income generation activities, equipment and micro-infrastructures. This was aimed to reduce their dependency of forests.

The objective of the evaluation was to assess whether project components delivered desired outcomes and outputs as per project design/logical framework and list of indicators that have been established by the AfD and the Assam Forest Department for the project. It also took into consideration, all the changes that were effected due to changing priorities and needs.

The evaluation was conducted by a multi-disciplinary team deployed by AFC India and IDCG Pvt Ltd over a period of 3 months. The evaluation used a mixed methods approach using both quantitative and qualitative techniques by primary data collection, review of secondary data and analysis of both to meet the DAC criteria i.e. relevance, efficiency, effectiveness, impact and sustainability. The primary and secondary data/information has been triangulated, analyzed and corroborated to assess the impact of phase 1 project. The findings have also formed the basis of inputs to design the phase 2 project. The evaluation covered 1,071 forest villagers and interacted with over 250 FD staff. A variety of structured and unstructured tools were used to collect data on all aspects of the project implementation and achievements.

In recent years, the financial contribution of the project helped the FD to bridge its financial gap especially in the areas of infrastructure, mobility, community engagement and forest and biodiversity conservation related interventions.

The project carried out two type of plantation activities one through forest department and another through JFMCs. The departmental plantation consists of 13,182 ha. of land for forest plantation and

rehabilitation, 2,090 ha. of assisted natural regeneration, 1,315 Ha of Sal regeneration, 4,697 ha of mixed hardwood and 700 ha of block plantations. Total 31 nurseries were established with a special focus on indigenous fruit-bearing tree species. Assuming an average of 2000 plants per ha, around 26,000,000 saplings had to be produced and planted. In plantation related work, a significant employment was generated estimated to be 374,000 (@ 30 person-days per ha.) person days. Similarly, the JFMCs/EDCs planted 8,473 ha of firewood saplings which consists of at least 17,000,000 saplings (@2000/ha). In addition, the plantation activities generated employment, which is around 2,54,000 person-days. In both plantations, female participation was found to be 40 – 60 percent and equity by gender was a positive outcome of the project.

Further, the project supported preparation of micro-plans for 151 villages with newly activated or formed JFMCs/EDCs. Under this component, community halls, toilets, ring-wells and forest roads were constructed in 136 villages as entry point activities. This has helped the FD to build and improve the rapport and relationship with communities. During the survey, 99% of the people believed that the project activities have increased the community trust toward the forest department. This has also contributed to increase awareness on forest conservation significantly and is providing real time intelligence to the forest department about illegal activities in the forests. Similarly, the livelihoods and skill enhancement trainings were provided for 6,084 forest villagers across 24 different trades. The focus was kept on the traditional and local Assamese skills to ensure inclusion of people and increased support to women.

The "Banashristy" brand was created to connect their newly made products with the market. It currently has 2 outlets, plans to expand are in progress. As the trainings have been provided recently in the last 18-24 months, the impact of training activities on the incomes and livelihoods of trainees and their households is expected to be more effectively realized during the course of the next phase of the project.

The project has also been able to gain the community support and trust to implement the programme and engage them into forest protection and bio-diversity conservation. The micro planning process, entry point activities and skill enhancement efforts helped to develop good rapport between forest authority and community and the forest plantation effort helped to generate a massive number of employment engaging both men and women mostly in the rural area. The project has also impacted on the socio-cultural landscape and daily needs through entry point activities.

The project has been able to strengthen institutional capacity of the FD by providing financial support to address its infrastructure and logistic needs at various levels for better service delivery. The capacities of the human resources were developed through exposure and training. Their working conditions were enhanced through better office spaces, equipment and mobility.

The project procured 265 motor-vehicles, 322 motor cycles and 700 bicycles, mainly for the use by the frontline staff and field officers. This hugely improved the mobility of the staff especially at Range and Beat level. The renovation of 475 km of roads has increased patrolling frequency and cut down time to reach critical locations by 50%. Staff who would patrol plantations and protected areas on foot, taking up to 2 - 3 hours could now reach in half an hour.

In the recent years, especially extension years, the project made significant progress and has had major achievements. One of the major accomplishments of the project is the establishment of Forest Headquarters in Guwahati ("Aranya Bhawan"), which brings 9 out of the 15 forest wings together under the FD. This has hugely increased the capacity of the FD to plan, coordinate and execute its duties effectively since most of the major officials and wings are under one roof. They were earlier functioning from different locations. Similarly, over 100 other offices and 300 residences were constructed or renovated, with an emphasis on renovating existing infrastructure to make it usable. Other improvements in Assam State Zoo, renovation and reopening of Hornbill Social Forestry Park, essential facilities for staff, renovation of heritage buildings etc. also remained noteworthy. This has not only improved the efficiency of the department, but also increased the pride and morale of staff.

The FD selected two districts i.e. Nagaon and Majuli to pilot jurisdictional REDD+ and conducted some REDD+ readiness activities. Some of the important documentation and reports were produced. However, the project missed undertaking most important preparatory activities required for the REDD+ readiness.

Similarly, the project has provided support for research for enhancing overall forest management. This has yielded research in better practices for nurseries, biodiversity conservation, database management, documentation to engage public, latest studies on certain sections of Assam biodiversity (a fish biodiversity study done for Brahmaputra funded by the project is the first updated document after 5 decades) amongst others.

However, certain project outcomes were limited due to shortages of staff at different levels in the department because of non-fulfilment of vacancies. Similarly, a large proportion of the present frontline staff lacked ability to use modern knowledge, tools and techniques. The inadequate infrastructure, dilapidated condition of basic facilities such as offices, residences, water and sanitation facilities, camp, etc. were the other factors which demotivated frontline staff to perform at their optimum capacity. This is especially hard for staff patrolling in remote and inaccessible regions due to lack of appropriate transportation to access the tough terrain, water and forest areas.

The project began on February 12, 2012 and adopted the logical framework proposed by feasibility study submitted in December 2010. No update was made on it. The project lacked baseline data to see the comparison of before and after situation. Some guidelines for day-to-day operation of the project was developed for project operationalization. Till 2015, the project was almost passive and appeared to be in a long inception phase. This was mainly due to the lack of progress on procurement processes. The direct approval of some activities by the AfD helped to accelerate project implementation. However due to extreme multiplicity of activities it was not possible to execute all of them. After the amendment of plan, through a process of consultations with AFD, and the Forest Department was able to operationalize major activities.

Though there were periodical reviews by the Executive Committee and Governing Body of the APFBC Society and reinforced by regular AFD Supervision missions, the monitoring and project reporting has been a weak element of this project. As the project implementation started late, the Mid-term evaluation could not be carried out.

At the start of this final evaluation, the team reviewed the logical framework to develop an evaluation framework using the project expenditure list to see the progress. It was found that under *Component 1: Forest Department Institutional Strengthening and Legal Reforms* out of 39 total planned activities, 11 activities were not implemented but new 13 broad activities were implemented with approval from AfD. Similarly, under *Component 2: Multi-level strategic planning*, the scope of activities was narrowed significantly to be in line with the limited time and capacity of the department. Out of 2 planned activities, a part of the first activity was taken up jointly under Component 1. Under *Component 3: Sustainable Forest Management* out of total 61 planned activities, 32 were dropped whereas 6 new activities were implemented. Likewise, under *Component 4: Adding value and opening markets/opportunities,* out of 16 activities, 4 were dropped. Though this was an outcome of large number of activities in the original project design and its late commencement, AFD facilitative approach allowed all important activities, including new ones to be implemented within the limitation of time and resources.

There are some issues which should be addressed during the next phase. The rapport between FD and local community has increased but it needs to be further enhanced. The cooperation, mutual trust and openness of forest fringe villagers needs to be enhanced in conservation activities. It is a major challenge for forest staff to monitor the entire forest area constantly. They have to rely on the local community to monitor activities of poachers, encroachers, illegal loggers, etc. for intelligence and information. The poor socio-economic conditions of the forest fringe communities result in them being very dependent on the forests, and thus engage in unsustainable extraction of resources. To address this major challenge

there needs to be alternative income generation activities that can sustain the families and reduce their dependence on forest resources. Additionally, there is a need to enhance technology-based monitoring to track the situation of forest, biodiversity, wildlife and available resources for the better management of forest and biodiversity. To recover the degraded forest and increase the cover of the forest, the FD still has to address challenges in terms of resources, information, technology, cooperation and human resources.

In conclusion, owing to the strong commitment of the FD, the project has been able to deliver on all its major objectives except multi-level strategic planning. Trust has been built between the department and the forest-dependent communities. The communities have been introduced to and have taken up alternative livelihood activities. It must also be noted that the forest cover in the state has shown an increase and the rhino poaching has been effectively curbed. This momentum needs to be maintained and interdepartmental collaboration needs to be up-scaled for sustaining these efforts in the years ahead.

1. Introduction

Assam Project on Forest and Biodiversity Conservation (APFBC) is co-funded by the French Development Agency – Agence Française de Développement (AfD) and the State Government of Assam. The overall goal of the APFBC is to restore forest ecosystems, in collaboration with the forest dependent communities, to enhance their livelihoods and ensure conservation and sustainable use of biodiversity. The project envisages integration of sustainable forest management interventions with special emphasis on income generation and livelihood security of forest dependent communities and covers the entire state of Assam state: 33 territorial divisions, 7 wildlife divisions and 13 social forestry divisions. The project commenced in the financial year 2012-13 and after extensions is expected to conclude in December 2018.

The project's vision is "*to enable sustainable forest management in Assam through multi-scale integrative planning involving participation of local population*". Its specific objective is "*in collaboration with the forest dependent communities, to restore forest ecosystems to enhance the forest dependent communities' livelihoods and ensure conservation and sustainable use of biodiversity*".

To achieve the intended vision and specific objective of the project, a multi-pronged approach was adopted through the following five components:

Figure 1: Components and sub-components of the project

During the past 6 years, the project was delivered through an adaptive management approach that enabled introduction of new activities based on emerging needs and dropping of some previously designed activities.

As APFBC is to come to a close in May 2019, both AfD and the Assam Forest Department seek an evaluation of the impact of the activities of Phase I to be conducted prior to designing the Phase II of the project which is expected to commence from mid-2019. Through an open tender process, it contracted an association of AFC India Ltd. (AFC) and Insight Development Consulting Group Pvt. Ltd. (IDCG) to conduct the evaluation as well as design the Phase II project.

1.1 The Assignment

The overarching objective of assignment was to assess whether project components delivered desired outcomes, and outputs and contributed to the general objectives.

The specific objectives of the assignment are:

- To assess the extent to which various activities envisaged in the project document and approved by the AfD from time to time, have been implemented.
- To quantify:
    - Extent of implementation of individual activity.
    - Impact of these activities.
- To list out activities which are partially implemented and need to be taken up for completion.
- To list out activities that, though completed, need replication/ augmentation.
- To identify the best practices of the project implementation.
- To identify major gaps in implementation of projected/approved activities.
- To draft Phase-II of the Project based on the final evaluation report of Phase-I

In view of the above, the scope of work for the assignment entails:

- Identify success indicators for each category of work to monitor the input, activities, outputs, outcomes, benefit results and impact of each of the project components on anticipated targeted spatial and forest department and forest dependent communities. under each component of the project;
- Define weightage for indicators to quantify the results;
- Evaluate effectiveness of outputs and outcomes against each activity with the help of predefined method;
- To formulate a methodology for assigning and qualifying the impact of the project on local communities with a special emphasis on gender analysis;
- Drafting of Phase-II document of the Project;
- To assess the importance of gaps identified through evaluation of Phase-I for incorporating the same in Phase-II,
- To replicate the best practices within the state as a part of Phase-II, and
- To draft in the project Report for phase-II of the Project.

The assignment is to be delivered by a multi-disciplinary team within a period of 28 weeks. As is clear from the scope of work, the project has two distinct modules- evaluation and drafting of Phase-II project.

2. Approach and methodology

AFC-IDCG are executing the assignment in three phases as provided below in the organogram:

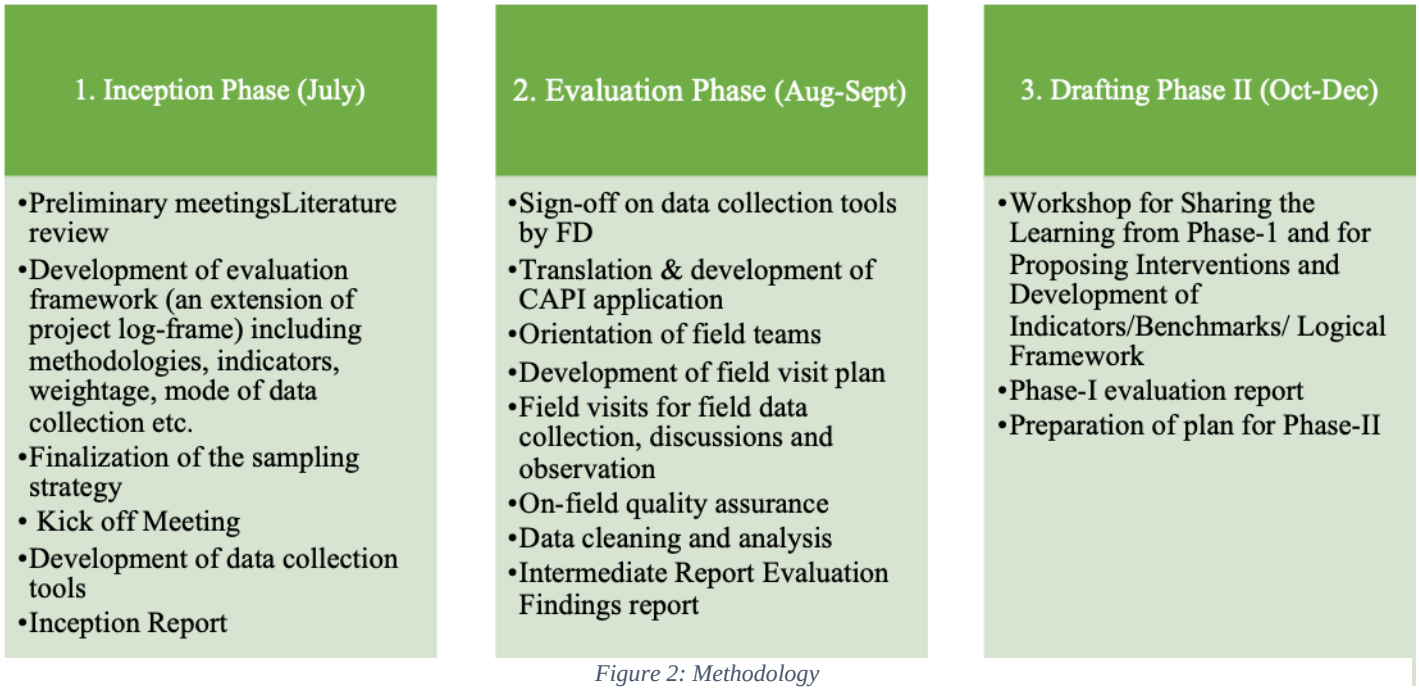

Figure 2: Methodology

In line with the assignment objectives, the evaluation of the impacts of APFBC has been conducted through a mixed methods approach using both quantitative and qualitative techniques by primary data collection, review of secondary data and analysis of both. This included:

- Structured interviews with the project officials and other stakeholders involved in planning and implementation,
- Collection, review and analysis of available secondary data, literature, information
- Structured interviews with the target communities/beneficiaries

2.1 Structuring the Evaluation Framework

To competently evaluate the project, analysing, corroborating and triangulating the primary and secondary data/information is essential. Towards this end, the evaluation team reviewed and mapped all project activities into an Evaluation Framework. While developing this framework, the feasibility report, the logical framework, revised cross tabs, activities and indicators, which have been established or approved by the AfD and the Assam Forest Department were considered. The framework also incorporated the learnings acquired through meetings with an array of stakeholders and a thorough review of project literature as well as the supplementary documents generated over the course of the project (budget sheets, utilization certificates, equipment distribution lists, mission reflections, training records, etc.).

The consultants considered the possibility of updating the existing logical framework which had not been revised by APFBC despite numerous changes in project activities. It was found that the logical framework in the feasibility report did not appropriately reference many activities discussed in the narrative of feasibility report itself. It was also determined that there were mismatch between the logical framework and the cross-tabs around which the project was eventually implemented including with new activities. As the logical framework needs to be owned & revised by the project itself, AFC-IDCG did

not revise the logical framework and structured an evaluation framework as mentioned above. This evaluation framework is presented in the Annexure 6.1 .

The evaluation framework determines various aspects that need to be probed for each project activity. Through this approach the precise link between inputs, processes, outputs and outcomes has been forged. The probes launched through the data collection instruments which are structured on the basis of the evaluation framework have enabled the following:

- Realization of outputs and outcome vis-à-vis inputs and processes
- Assessing the gaps/shortcomings in the inputs and processes; and
- In generating insights and recommendations.

The evaluation framework itself is underpinned by the 5 principles of evaluation as articulated by the Development Aid Committee (DAC) of the OECD as provided in the organogram below:

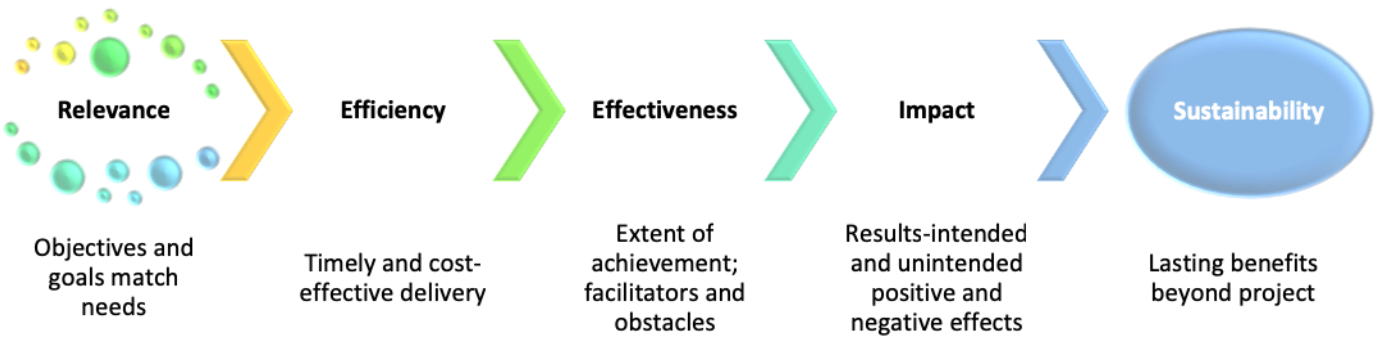

Figure 3: Principles of Evaluation

Specifically, inputs and processes will be assessed for relevance, efficiency and effectiveness while outputs will be assessed for impact and sustainability.

2.2 Data collection instruments

Based on the evaluation framework, 5 data collection instruments were structured. The administration of these instruments included the entire set of beneficiaries and stakeholders of the project.

- Household survey questionnaire (to be administered as computer assisted personal interview)
- JFMC/EDC focus group discussion checklist
- Observation schedule
- Range level group discussion checklist
- Officers In-depth interview checklist

The instruments are presented in Annexures 6.2 to 6.6.

2.3 Sampling

The field work for evaluation has been executed in a sample of divisions. The sample was based on multi-criteria including:

- Representation of three field divisions- territorial, wildlife and social forestry
- Representation of geographical areas- north, east, west, central and south, and
- Weightages for expenditures and activities.

Based on this, a sample of15 divisions (25% of the 56 field divisions territorial, wildlife and social forestry) was selected for the evaluation activities. Under the project 13 different activities across

various components were executed (see Table 1); though the number of activities executed in each division varies. Thus, to develop criteria, a set of most impactful activities were selected to assign weightages to select divisions for the evaluation. These include:

- Expenditures as a % of total project budget,
- Total number of activities implemented in the division,
- Number of JFMCs/EDCs in a division,
- Number of community mobilization and empowerment activities, and
- Number of participants trained.

Table 1 Component wise activities done under the project

Component 1	
1.	Buildings-new
2.	Buildings-renovated
3.	Heritage
4.	Roads - new
5.	Roads - repaired
6.	Vehicles & boats
Component 3	
7.	Plantations by Forest Department
8.	Establishment of JFMCs/EDCs
9.	Entry point activities
10.	Establishment of nurseries
11.	Plantations by JFMCs
12.	Establishment of social forestry parks
Component 4	
13.	Livelihood Trainings, Equipment &market linkages to members of JFMCs/EDCs

These expenditures and activities were provided weightages as high, medium or low as per the following distribution.

Table 2: Ranking

Weightage	**Total Spends**	**Activities**	**Training Participants**	**JFMCs and EDCs**
	% of total	**Numbers**	**Numbers**	**Numbers**
High	> 3.5%	7 & above	500 & above	10 & above
Medium	1% to 3.5%	4 to 6	200 to 499	5 - 9
Low	< 1%	< 3	< 200	< 4

The picture below provides a screen-shot of the ranking sheet, mapping each division's activities and categorizing them as high (blue), medium (dark brown) and low (light brown). The complete sheet is presented in the Annexure 6.7

Wing	Division	Total Activities Done	Total Budget Spread%	Total Training participants			No. of JFMCs and EDCs	Community Activities Budget Spread (Plantation	Roads Repaired and constructed
				Male	Female	Total			
		Nos	%					%	Km
WL	Eastern Assam WL	6.00	7.67	90.00	643.00	733.00	22.00	2.76	0.00
Terr	Digboi	8.00	5.37	123.00	418.00	541.00	12.00	7.87	22.50
Terr	Doomdooma	7.00	4.88	187.00	392.00	579.00	10.00	7.14	40.00
Terr	Nagaon South	8.00	4.08	249.00	560.00	806.00	19.00	6.74	40.00
Terr	Parbatjhora	8.00	3.75	47.00	157.00	204.00	4.00	4.11	4.70
Terr	Hailakandi	7.00	3.67	165.00	337.00	502.00	17.00	5.96	5.90
Terr	Dima Hasao East	6.00	3.65	249.00	150.00	399.00	6.00	6.06	25.14
Terr	Dima Hasao West	8.00	3.44	78.00	101.00	179.00	3.00	4.01	21.00
SF	Kokrajhar SF	7.00	3.02	150.00	206.00	356.00	7.00	4.43	0.00
Terr	Cachar	8.00	2.88	45.00	145.00	190.00	2.00	4.12	7.00
WL	Tinsukia WL	7.00	2.83	105.00	100.00	205.00	5.00	1.28	35.50
Terr	Nagaon	9.00	2.70	135.00	403.00	538.00	10.00	3.35	8.40
WL	Mongoldoi WL	6.00	2.68	25.00	0.00	25.00	1.00	0.43	60.00
Terr	Kamrup West	8.00	2.67	64.00	72.00	136.00	3.00	2.81	40.00
Terr	Goalpara	8.00	2.64	25.00	71.00	96.00	3.00	3.05	2.53
Terr	Kamrup East	7.00	2.39	0.00	0.00	0.00	0.00	1.98	33.50
Terr	Northern Assam Afforestation	3.00	2.11	0.00	0.00	0.00	23.00	3.74	0.00
Other	Assam State Zoo	6.00	2.09	0.00	0.00	0.00	0.00	0.08	0.00
Terr	Karimganj	7.00	2.07	8.00	107.00	115.00	2.00	2.74	0.00
WL	Guwahati WL	7.00	2.01	96.00	421.00	517.00	4.00	0.78	1.30

Figure 4: Screen-shot of Ranking Sheet

Based on these above discussed criteria, 9 territorial divisions, 3 wildlife divisions and 3 social forestry divisions were selected as shown below.

During the evaluation, the respondent sample in these 15 divisions included:

Location	Wing	Division	Total Activities Done (out of 13)	Total Budget Spread	No. of JFMCs and EDCs	Training	Community Activities Budget Spread
	Type	Name	Nos	%	Nos	Nos	%
South	SF	Karimganj SF	5.00	0.68	0.00	0.00	0.28
East	SF	Kokrajhar SF	7.00	3.02	7.00	356.00	4.43
Central	SF	Nagaon SF	4.00	1.36	0.00	0.00	0.00
South	Terr	Hailakandi	7.00	3.67	17.00	502.00	5.96
North	Terr	Dhansiri	7.00	1.67	10.00	211.00	1.47
Central	Terr	Nagaon South	8.00	4.08	19.00	806.00	6.74
South	Terr	Dima Hasao West	8.00	3.44	3.00	179.00	4.01
North	Terr	Dhemaji	7.00	1.61	2.00	148.00	1.95
East	Terr	Digboi	8.00	5.37	12.00	541.00	7.87
North	Terr	Lakhimpur	7.00	1.99	4.00	142.00	2.53
West	Terr	Parbatjhora	8.00	3.75	4.00	204.00	4.11
East	Terr	Sibsagar	7.00	0.95	2.00	343.00	0.78
Central	WL	Eastern Assam WL	6.00	7.67	22.00	733.00	2.76
North	WL	Manas Tiger Project	6.00	1.62	8.00	280.00	0.70
East	WL	Tinsukia WL	7.00	2.83	5.00	205.00	1.28

Table 3: Selected sample divisions

- 50 JFMC/EDCs
  - 1,071 target community/beneficiary households through a structured questionnaire administered through Computer Assisted Personal Interview (CAPI) (with 21 respondents in each of the 50 villages)
  - 50 focus group discussions with JFMC/EDC management committees.
- 250 Forest Department staff
  - 15 range level group discussions with one team of Range Officer and Guards in each selected division.
  - 15 in-depth interviews with Divisional Forest Officers in each selected division.

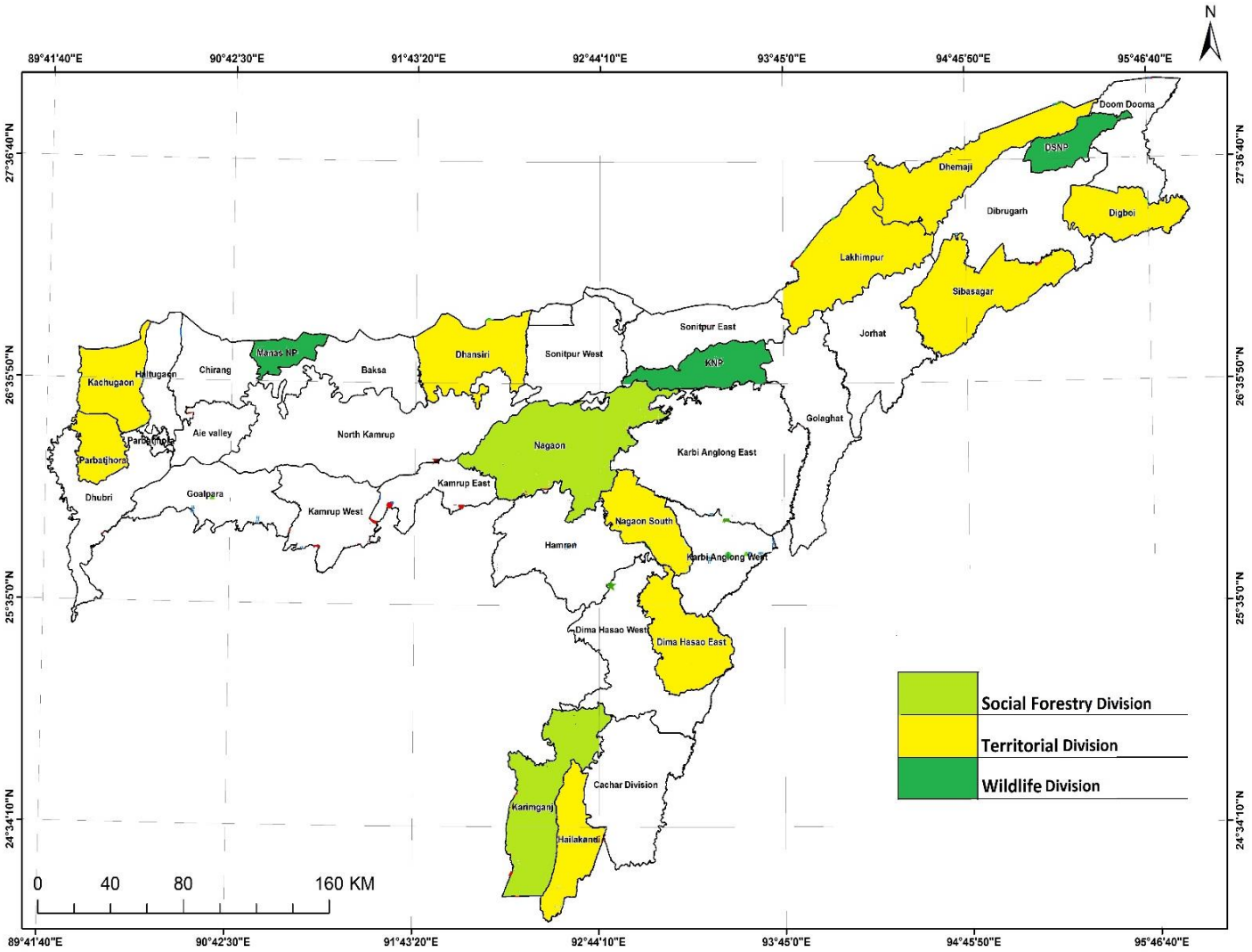

Figure 5 Divisions selected for the survey. Note: Tinsukia division covers DSNP and parts of Dibrugarh.

Apart from the above mentioned interactions, over 20 in-depth interviews have been conducted with the senior officers of the forest department, Project Director, Component Directors, heads of other Fund Investment Units (FIUs) and key officers of COMPELO. The questionnaires for the Forest Department interactions are presented in Annexure 6.4 and 6.5.

The structured household questionnaire was administered to collect data from target communities or beneficiaries who are members of the JFMC or EDC.

- In each selected division 1-10 JFMCs/EDCs were purposively selected for household survey.
- In each selected JFMC/EDC, at least 21 households were surveyed. This sample of 21 was a mix of men, women, trainees, non-trainees, executive members and general body members.
- In each selected JFMC/EDC, a focus discussion was conducted with Executive Committee members.
- In each selected JFMC/EDC, an observation of the community livelihood workplace, where available, was be made. This was typically the newly constructed community center.

It must be noted here that almost 75% of the respondents of household survey were women.

At each JFMC, plantation sites were visited and an ocular observation of the status of plantations was made.

2.4 The evaluation

One of the key elements of the evaluation was the household survey. Three survey teams were constituted, each comprising of 2-4 members accompanied by 1 supervisor.

To ensure reliability and quality in data collection, the supervisor was responsible for on- field data quality checks through accompanied questionnaire and sample spot checks. This was supported by sample tele-checks during scrutiny of completed questionnaires.

The structured household survey was conducted using CAPI devices, the collected data was uploaded into AFC-IDCG server every second day. Thereafter, data was cleaned to ensure verifiable and reliable data for analysis. The data was analyzed through SPSS package.

Simultaneously to the household survey, the field team supervisor conducted a focus group discussion with executive committee members of the selected JFMC/EDC. The supervisor conducted the group discussion using a checklist. The findings of the household survey were triangulated with component 3 & 4 directors and COMPELO.

Another key element of the evaluation was the interactions with Forest Department staff from Divisional Forest Officer to sample field force members (frontline staff).

In each of the selected divisions, the Ranges were chosen based on where maximum or varied activities were done. Parallel to the survey with project beneficiaries, interactions were held with Forest Department staff. A group discussion with Range Officer, Foresters and the Guards was conducted. Sample verifications were done to check for activities within the Range (such as construction of offices, road improvement etc.)

Based on the inputs of the focus group discussions with JFMC/EDC executive committee members as well as the focus group discussions at the range level, triangulations were held with the Division Forest Officers in the form an In-Depth Interview (which also covered all other aspects of the project).

3. Assam: An overview

Assam is the state in north eastern India covering and area of 78,438 km^2 which is 2.39% of the geographical area of the country. The state consists of mainly three physiographic domains viz. Brahmaputra valley, Central Assam Hills and Barak Hills. The area experienced subtropical climate with average annual rainfall varies from about 1,500 mm to 3,750 mm and average temperature ranges from 5^{o}C to 32 ^{O}C.

Assam is a part of Biodiversity Hotspot exhibiting rich floral and faunal diversity. Apart from an elaborate network of Protected Areas (PA) i.e. National Parks and Sanctuaries, the State also has two World Heritage Sites, a Ramsar Site, two Biosphere Reserves and most importantly, the only thriving population of Asiatic one-horned Rhino in the world.

3.1 Status of forest cover

The total forest cover[1] of the state is 28,105 km^2 which is 35.83% of state's geographical area. According to Champion and Seth Classification, the state has 18 forest types belonging to five forest type groups *viz*

- Tropical Wet Evergreen
- Tropical Semi Evergreen
- Tropical Moist Deciduous
- Tropical Dry Deciduous
- Sub-Tropical Pine Forests

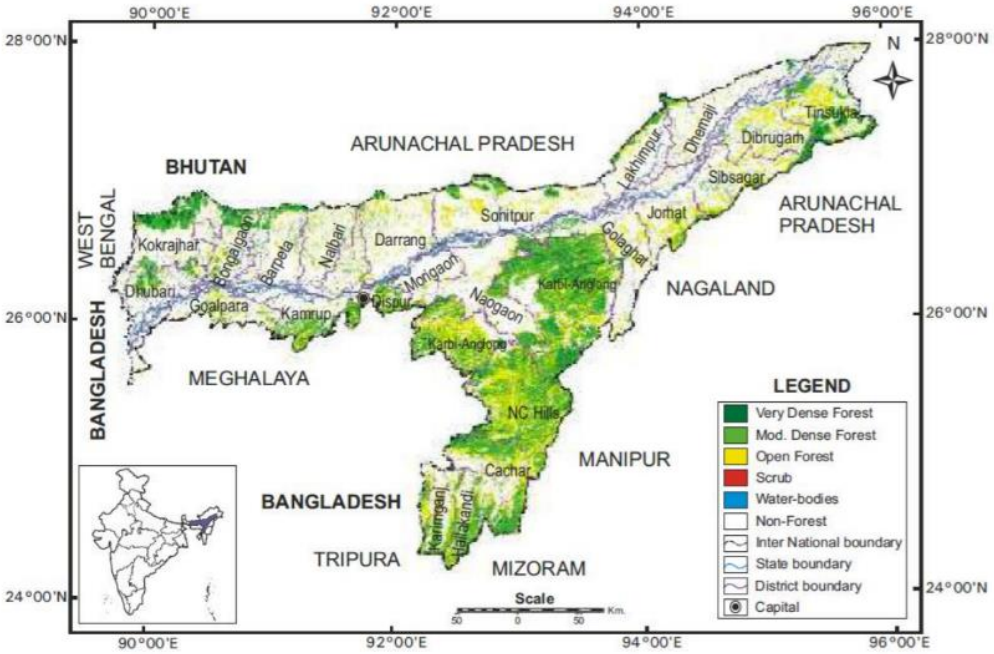

Figure 6: Green cover in Assam

[1]includes all area more than 1 ha and having canopy density of 10% and above irrespective of ownership, legal status and land use.

In terms of forest canopy density[2], the state has 2,797 km^2 of very dense forest[3], 10,192 km^2 of moderately dense forest[4] and 15,116 km^2 of open forest[5].

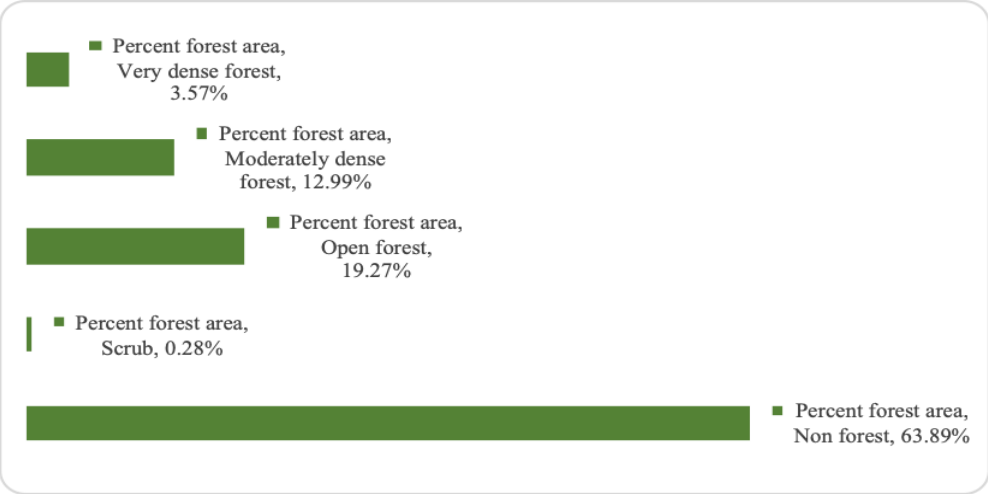

Figure 7: Forest Cover of Assam (ISFR, 2017)

Total forest area[6] of the state is 26,832 km^2 which is 34.21% of its geographical area with 66.58% reserved forest[7] and 33.42% of unclassed forest area[8]. Forest cover within green wash is 20,014 km^2 and outside green wash[9] is 8,091 km^2.

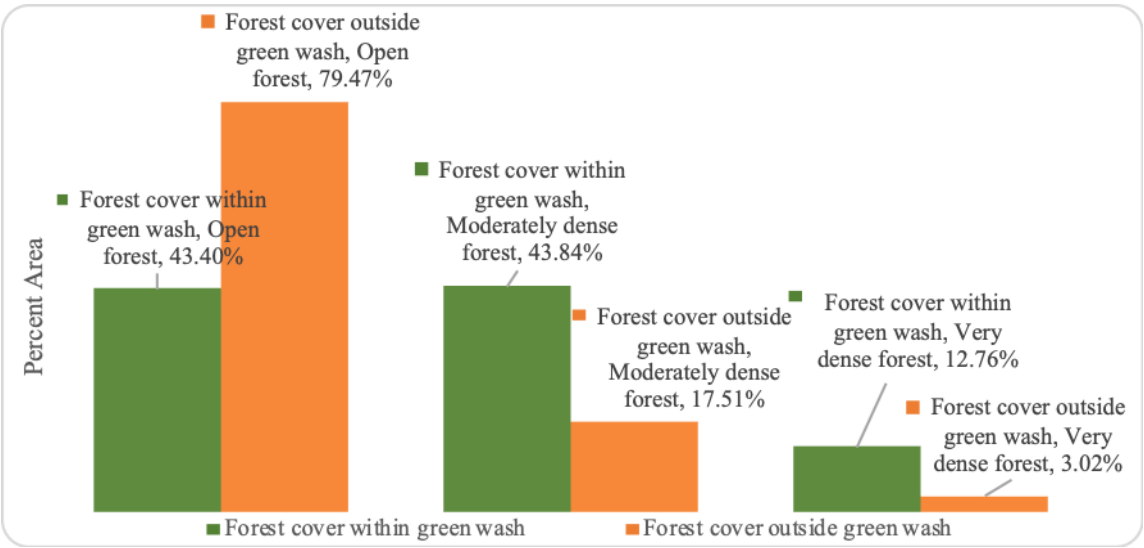

Figure 8: Percent forest cover within green wash and outside green wash in Assam

[2]is the percent area of land covered by the canopy of trees. It is expressed as a decimal coefficient, taking closed canopy as unity

[3] land with forest cover having a canopy density of 70 % or above

[4] land with forest cover having canopy density 40% or more but less than 70%

[5] land with forest cover having a canopy density of 10% or more and less than 40%.

[6] refers to all the geographic areas recorded as forest in government records(also called recorded forest area)

[7] an area so constituted under the provision of the Indian Forest Act or other State Forest Acts, having full degree of protection. In these forests all activities are prohibited unless permitted.

[8] an area recorded as forest but not included in reserved or protected forest category.

[9] refers to the portions of Survey of India topographic sheets representing the forest at the time of survey carried out to prepare such topographic sheets. This green wash by and large corresponds to recorded forest area of the country. It is generally shown in light green colour on the Survey of India toposheets.

The total carbon stock of forests in the State is 176,852 million tonnes which is 2.50% of total forest carbon of the country.

An increase in total green cover (forest cover and tree cover[10]) has been recorded from 2011 to 2017 (Table 1).

Table 3: Change in Forest and tree cover

	Forest cover	Tree cover	Green cover
2011	27673	1,564	**29,237**
2013	27,671	1,582	**29,253**
2015	27623	1,613	**29,236**
2017	28105	1,496	**29,601**

According to the State of the Forest Report 2017, a net increase of 567 km^2 in forest cover has been observed mainly due to plantations mostly outside forest areas. The decrease in forest cover in some of the districts has also been observed due to rotational felling in tea gardens, shifting cultivation and developmental activities. The forest area is suffering from habitat degradation, encroachments, fuel wood extraction etc. Plantation raised in degraded areas, especially in the Jhum areas, face immense biotic pressures. Cattle grazing and removal of saplings as fodder and fuel pose serious threat to natural as well as assisted regeneration in the forest areas.

3.2 Status of wildlife

The Eastern Himalaya and the Assam plains have been identified as an Endemic Bird Area by the Royal Society for Protection of Birds, (Bibby et al.1992). The dense forest as well as extensive network of river systems, swamps, marshes and wetlands provides ideal conditions for sustenance of wide variety of fauna in Assam. Total protected area is 3,925 km^2 covering about 5 % of the State's geographical area. There are 5 National Parks, 18 Wildlife sanctuaries (including 1 proposed Wildlife Sanctuaries), 4 Tiger Reserves, 5 Elephant Reserves, 2 Biosphere Reserves and 2 World Natural Heritage Sites[11].

Mammalian diversity: A total of 193 species of mammals are found in Assam *viz.* Great Indian One-Horned Rhinoceros, Tiger, Bears, Squirrel, Wild Asiatic Water Buffalo, Eastern Swamp Deer, Elephants, Gaur, Sambar, Indian Muntjac, Wild Boar, Hog Deer, Jungle Cat, Leopard Cat, Hispid Hare (rare), Indian Grey Mongoose, Small Indian Mongooses, Large Indian Civet, Small Indian Civets, Bengal Fox, Golden Jackal, Sloth Bear, Indian Pangolins, Chinese Pangolin, Hog Badger, Chinese Ferret Badgers, Parti-coloured Flying Squirrel, Gangetic Dolphin, Wild Pig, Pigmy Hog, Barking Deer, Himalayan Black Bear, Porcupine, Burmese Ferret Badger, Sloth Bear, Wild Dog (Dhole), Leopard, Clouded Leopard, Binturong, Golden Cat, Himalayan Palm Civet, Common Palm Civet, Fishing Cat, Feral Horses, Marbled cat, Golden cat, Spotted linsang, Binturong, Crab eating mongoose, Ferret badger, Hog badger, Hoary bamboo rat, Bay bamboo rat, Clawless otter, Stone marlin.

Primate diversity: A total of 9 primate species out of 15 are found in Assam. *Hoolock gibbon* is the only ape found in India. The other primate species are golden langur, capped monkey, rhesus macaque, pigtail macaque, stump tailed macaque, Assamese macaque, and slow Lorries.

Avian Diversity: Assam is home for about 950 bird species. Out of which 17 species of birds are endemic to Assam and include Manipur Bush Quail, Marsh Babbler, Snowy throated Babbler, Tawny breasted Wren Babbler, Blyth's Tragopan, Beautiful Sibia, Grey Sibia, Black Breasted Parrotbill,

[10]is an estimated area comprising of tree patches, which are less than one h hectare and isolated trees outside the recorded forest.
[11]http://asbb.gov.in/protected.html.

Chestrunt Breasted Partridge, Rusty Breasted Shortwig etc. A total of 45 species of birds are listed in Indian Red Data Book.

Reptilian Diversity: A total of 116 reptile species are found in Assam viz. Gangetic gharial, 19 species of tortoises and 77 species of snakes and lizards are found in the State.

Amphibian Diversity: Assam and other parts of the N.E. region reported 70 species of Amphibians out of which *Gangenophisfulleri* and *Ichthyphisgaroensis* are endemic to Assam.

Fish Diversity: A total of 185 species of fishes are reported from Assam out of which 25 species are identified as threatened.

Molluscan Diversity: So far 39 species of freshwater snails have been reported from Assam of which 10 species are used as food.

Butterfly and Moths Diversity: Around 1,500 species of butterflies are reported from India of which nearly half are reported from Assam and north east India. The Swallowtail butterflies occupy an important place and the IUCN has identified the entire N.E. Region as Swallowtail rich zone. About 387 species of moths are found in Assam.[12]

Assam is famous for its megafauna including the rhino (*Rhinoceros unicornis*) golden langur (*Trachypithecusgeei*), hoolock gibbon (*Hoolock hoolock*) and other highly endangered species like the pygmy hog (*Porculasalvania*), hispid hare (*Caprolagushispidus*) and the recently rediscovered white winged wood duck (*Cairinascutulata*). The table below presents the change in population of few of the mammals and primates of Assam.

Table 4: ***Population of Critical Wildlife Species***

Name of Animals	Year of Census	Number of Animals
Elephant	2009	5,620
	2017	5,719[13]
Tiger	2010	143
	2014	167
Rhino	2012	2,505
	2013	2,329
	2015	2,431
Leopard	1993	239
	2000	248
Others-Primate	2009	127,502

(Source: Statistical Handbook of Assam, 2017)

3.3 Status of the Economy

Assam's economy has been steadily growing in the last few years, enough to place it amongst some of the fastest growing states in the country. As of the Economic Survey 2014-15, Assam's growth rate of net state domestic product (NSDP) and per capita income exceeded the national rate for the first time in its history. While the national average for growth in NSDP was 9.6% and per capita income was 11.1%, Assam's NSDP growth was 15.9% and per capita income growth was 14.5%.

[12]http://asmenvis.nic.in/database/animal_diversity_844.aspx.
[13] Synchronised elephant population estimation India 2017

Assam has traditionally been an agricultural state. While agriculture and its allied industries still remains one of the largest sector within the state, the trend is on a decline. In 2010-11, the agriculture sector contributed nearly 25% to the state domestic product (SDP)[14]. However, the contribution dropped to 19% in 2016-17. At the same time, the service sector has been flourishing in the last few years. It increased from 47% in 2004-05 to 58% in 2013-14. This may be attributed to rapid diversification in the communication sector, transport sector, trade and business services, banking services, hotel and catering services and introduction of various ancillary services[15].

The overall development of the state is on an upward trend. According to the Economic Survey of 2016, the employment rate of Assam increased by a massive 33% from 2015 to 2016. The number of telephones per 100 people (tele-density) has increased from 35% in 2010 to 63.25% in 2016. This is however still behind the national average of 87.85%.

The political atmosphere of Assam seems to be growing increasingly conducive for growth. As Assam is posed to be the strongest emerging economy in north-eastern India, a number of state policies have been developed to ensure this goal. Some examples of major policy additions are the IT policy formulated in 2009 to boost growth of the IT sector, Industrial and Investment Policy in 2014 which aimed to improve the economy of the state by increasing industrialization with a focus on manufacturing and the service sector, etc. The results of these policies are materializing as can be seen by the changing map of sector contributions to the SDP. Considering the current political and business scenario, Assam looks set to make major strides in its infrastructure, economy and overall growth.

3.4 Role of Forest Department

The Assam Forest Department has been at the vanguard of the forestry and biodiversity activities. Despite decreasing manpower and inadequate budget allocations, it has been able to maintain the forest cover as well as standardize the population of critical wildlife species.

The project period has been co-terminus with a period of success for the Forest Department. Contributions both from state budget and project funds has resulted in a reduction in incidents of poaching and an increase in biodiversity. This can be attributed to the mounting efforts of the department to curb poaching activity. This focus was reflected in inclusion of new activities aimed specifically to protect wildlife, such as construction and renovation of Anti-Poaching Camps, floating camps and boats for patrolling through the river, and the increased procurement of vehicles.

The Forest Department's resolve to tackle the problem of poaching is evident in the stark rise in arrests made after 2012, the planned commencement of APFBC. Between 2006 and 2011, 94 poachers were arrested in Kaziranga, a hotspot for illegal forest activities owing to its ultra-rich biodiversity. From 2012 until October 2018, the number rose to 497, a jump of over 500%. They were also able to recover 85 weapons over this period along with ammunition and weapon equipment, and a number of poached animal extracts (rhino horns, tiger skin, etc). In Manas Tiger Reserve, the number of cases caught quadrupled between 2013 and 2017. The rising number of arrests indicates an increasingly vigilant and effective Forest Department. Interaction with staff in anti-poaching camps and those on patrol duty indicated that the efforts of the APFBC were well in tune with the department's focus and were a meaningful support for the same. The newly constructed anti-poaching camps and toilets for staff patrolling in remote, inaccessible areas have brought tremendous relief, and along with it increased effectiveness of the patrolling efforts. The number of Rhinos being poached has been steadily decreasing every year since the last few years. In 2014, 27 Rhinos were poached. This number fell to 18 by 2016. It further fell to 6 and then 5 in 2017 and 2018 respectively. Though a direct attribution is

[14] https://des.assam.gov.in/sites/default/files/swf_utility_folder/departments/ecostat_medhassu_in_oid_3/portlet/level_1/files/economic_survey2011-12-min.pdf

[15] Economic Survey, Assam, 2013-14

difficult to make, this also reflects the increasingly positive relationship of the department with the local communities. Local intelligence is crucial in the success of poaching activities, and a better relationship between the department and villagers means fewer opportunities for poachers to leverage forest villagers for such tasks.

Numbers from the Tinsukia Wildlife Division also indicate a positive trend in animal populations. The number of leopards and foxes have tripled between 2013 and 2018, and nearly all other animals show a trend of growth. Populations of wild elephants, capped langur, feral horses, hog deer and even the Gangetic dolphin have improved notably (more than twice in case of capped langur and hog deer).

Overall, the increased vigilance and commitment of the Forest Department towards conservation activities has resulted in improvement of forests and biodiversity of Assam. The interventions under APFBC further consolidated the efforts of the forest department in conservation of forests and bio-diversity.

4. Findings of the Evaluation

This chapter presents the findings of the evaluation conducted by AFC-IDCG. The findings have been presented for each component and then for cross-cutting aspects as project management.

4.1 Component 1 - Forest Department Institutional strengthening and legal reforms

Activities under the following two sub-components were executed under component 1 during the course of the project.

- Rehabilitation and enhancement of existing infrastructure and equipment
- Capacity building of staff

Research activities were also taken up under the component. These are discussed below.

4.1.1 Rehabilitation and Enhancement of Existing Infrastructure and Equipment

The overall status of infrastructure and equipment of the forest department was considerably inadequate before commencement of APFBC. Most division, range and beat offices were not in a good condition, even residential infrastructure at several locations was either completely absent, or in an unliveable state. Basic facilities such as toilets and drinking water was missing in field offices, camps and residential quarters. Many forest roads in all territorial and wildlife divisions were not accessible. More than 70% of the ranges had no vehicle or had unserviceable vehicles. Lack of vehicles and roads stemmed foot patrolling which was slow and often ineffective. The situation was especially dire for the frontline staff who work at remote locations with very little access to essential facilities.

The project interventions followed a threefold approach to address the above mentioned constraints faced by the forest department.

- Improvement of surface communication: Construction of new roads and repair of existing roads.
- Enhancing office and residential infrastructure for the forest department: Construction of new building and renovation of existing buildings including heritage buildings.
- Procurement of equipment & vehicles to enhance the ability of forest department staff to work at field level:
    - Procurement vehicles like cars, jeeps, motorbikes, cycles and boats for all levels within the forest department.
    - Procurement of computers and computing equipment, printers, scanners, software and satellite imagery required to implement GIS network at State and field levels
    - Procurement of specialized and technical equipment such as specific rugged field devices, as well as specific forester's equipment (GPS, compass, dendrometers, etc.)

No planned activities were dropped from this sub-component. Whereas, in the course of project implementation few other activities listed below were added with approval from AFD. Purchase of computers and computing equipment, printers, scanners, software and satellite imagery were moved from component 1 to component 2 of the project.

- Construction and renovation of Anti-Poaching Camps (APC)
- Construction and renovation of toilets
- Construction and renovation of tubewells
- Construction and renovation of ringwells
- Construction and renovation of water supply system
- Construction of watch towers
- Repair of Animal Enclosures in Assam State Zoo

- Installation of solar panels and lights in Social Forestry Parks and other locations
- Procurement of tractor, excavators, dumpers, campers, ATVs, battery operated vehicles and busses

Following sections present detailed assessment of different set of activities planned and implemented under the project from June 2012 to August 2018.

4.1.1.1 Enhance the office and residential infrastructure for the Forest Department

Relevance

Inadequacy of office and residential infrastructure in forest department was a major capacity gap identified during the feasibility study of APFBC which resulted in:

- Low morale of frontline and middle level staff
- Low confidence among frontline staff for the forest department
- Inability to live with family – which is a major reason for stress and distress among frontline staff
- Unhygienic living conditions due to unavailability of toilet and portable drinking water
- Difficulty in filling vacant positions – at the time middle level staff do not prefer posting at locations where the likelihood of getting a decent government quarter is low or nil.
- Limited field visits by senior and middle level officers for planning and monitoring – as some locations did not have any accommodation facility for visiting staff.

In terms of relevance, enhancing office and residential infrastructure for the forest department is aligned with one of the specific objectives of the project "enhance the capacity of the Assam forest department" focusing on ensuring "Equipment and infrastructures are adequate in target areas from headquarters to forester and guard level".

Efficiency and Effectiveness

Planned works under this sub-component included, construction and renovation of office building and residential building at division level and below. The following table presents the physical progress made against the planned targets.

Table 5: Physical Achievement: Planned vs Actual

	Planned Target		Actual Achievement	
	New	Restoration	New	Restoration
Field Office Building	20	20	19	114
Residential Building				
Senior level staff	20		1	20
Middle level staff	30	80	74	238
Lower level staff	50			
Heritage Building	0	30	0	22

The cell highlighted in green in the above table are either achieved or overachieved with respect to the planned target, while the ones highlighted in orange are underachieved against the planned target. The primary reason for variance in planned target and actual achievement is inappropriate need assessment at division level and below during the project feasibility/ planning phase. Inappropriate need assessment can be attributed to inability of field offices to ascertain their requirement in a timely manner.

Overall the implemented expenditure of the office and residential buildings amounted to Euro 5,760,120, which is 26% higher that the planned budget of Euro 4,237,820. This increase reflects the

focus on ensuring that existing infrastructure gets improved; a few cases of which were for renovating infrastructure that had been rendered unusable by dilapidation.

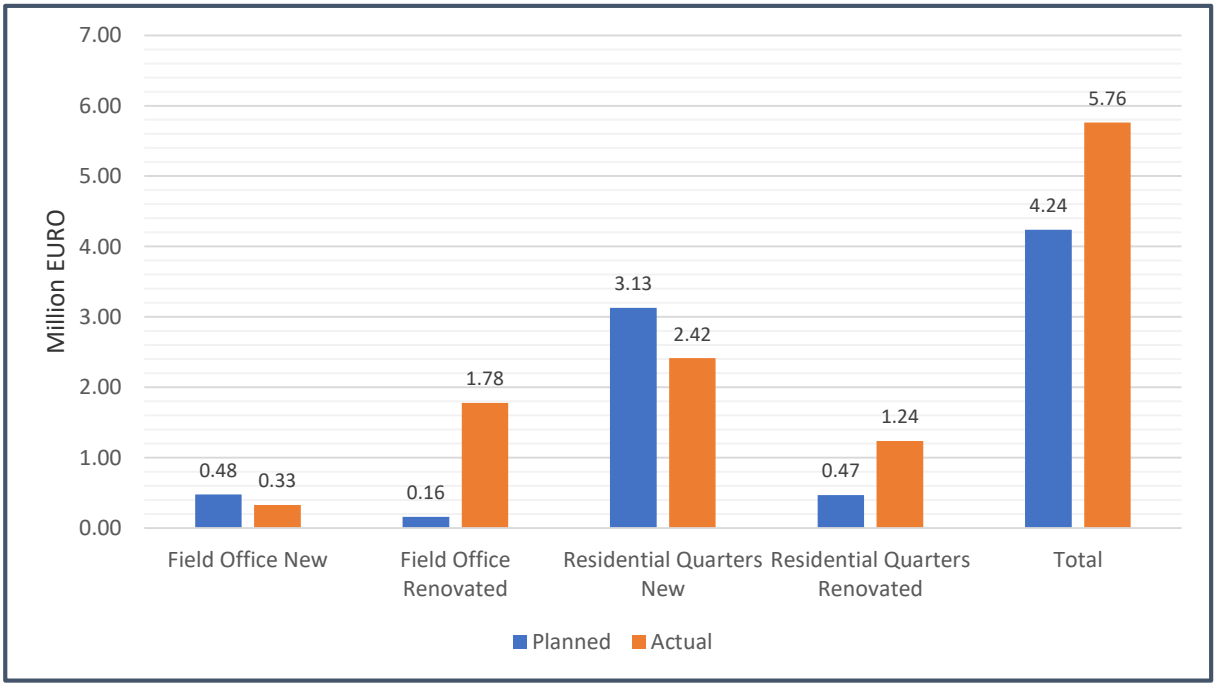

Figure 9: Planned vs Actual Expenditure on Buildings (in million Euro)

During in the course of project implementation few other activities listed below were added with approval from AFD. These are as under

Table 6: Unplanned or new activities

Sl. No.	Type of Activity	Number/Unit
1.	Construction and renovation of Anti-Poaching Camps (APC)	86
2.	Construction and renovation of toilets	80
3.	Construction and renovation of tubewells	122
4.	Construction and renovation of ringwells	5
5.	Construction and renovation of water supply system	13
6.	Construction of watch towers	4
7.	Repair of Animal Enclosures in Assam State Zoo	19
8.	Installation of solar panels and lights in Social Forestry Parks and other locations	41
9.	Forest Headquarters	1

Except for animal enclosures and provision solar panels, all other activities are majorly targeted on improving office and residential infrastructure for middle and frontline forest department staff.

Impact

Improvement of infrastructure has significantly enhanced the working and living condition of middle level and frontline forest staff. Each and every (100%) member of the staff interviewed for the evaluation has reported benefiting from the infrastructure development activities undertaken in the project. With new & renovated offices over 750 forest department staff from state to beat level been provided access to better working condition. While another 350 middle and frontline staff have been

provided with better residential facility. A notable proportion of staff who have benefited from residential building (constriction/ renovation) were either living in dilapidated houses or had no access to government quarter.

Frontline staff's increased confidence in their department is a notable intangible positive impact of infrastructure improvement. Further all forest department staff interviewed for the evaluation reported increased effectiveness at both office & field due to new/renovated office buildings.

"Aranya Bhawan" the forest department headquarters constructed at Guwahati has brought significant value; bringing together many forest offices (9 out of 15) under one roof which were previously operating in different locations across the city. This has resulted in easy access of senior officers to each other, increasing in their ability to coordinate with each other easily, thus streamlining and executing various activities more efficiently.

One DFO remarked, "Earlier the terrible condition of the office used to cast a bad first impression on anyone who came to meet us. Now after renovation the perception of the office has completely changed, anyone who walks in has a very positive reaction as compared to earlier. This really improves how the Forest Department is perceived"

Construction of Anti-poaching camps and offices/residences in remote locations has helped in increased comfort, improved safety and reduction of stress for forest staff who are working in difficult conditions in the remote areas. In Kaziranga National Park, provision of toilets at higher levels on stilted camps have reduced the danger of guards being attacked by stampeding rhinos at night, Further, quicker response time in the event of an emergency has been a major benefit of camps in remote locations – reported by over 80% frontline staff.

Sustainability

Office and residential infrastructure development works have improved the condition on ground for the forest department staff, however it was not adequate to bridge the entire gap. Thus, similar activities can be taken up in the second phase of the project or from state government budgets.

In order to ensure better utility and durability of the asset created under the project, the forest department should ensure adequate provision for periodic maintenance budgets of these assets.

4.1.1.2 Construction and repair of roads and procurement of vehicles to enhance the ability of forest department staff

Relevance

In 2012-13, total length of forest road in Assam was 11,31,316 kms. State government' fund allocation is usually not sufficient for proper upkeep of the forest roads, which are more prone to damage as they are largely earthen (without black topping). Proper maintenance of forest road is essential for carrying out protection and conservation activities effectively. Reaching some of the plantations and villages with poor road connectivity took up to 2 hours (or more) as they could only be accessed by foot.

In addition to the road, limited or non-availability of serviceable vehicles for the forest department staff at the range level and below was a major capacity gap identified during the feasibility study of APFBC. Following are some of the most common challenges arising out of lack of road infrastructure and vehicles for mobility:

- Limited patrolling in terms of area covered in a day
- Limited frequency of patrolling
- Limited ability to respond quickly in case of emergency especially related to wildlife protection and rescue
- Limited ability to effectively and efficiently control illegal activities in the forest, especially illegal tree felling/logging, mining etc.
- Inappropriate work life balance – as more time is spent on patrolling and commute for other official works
- Difficulty in transportation of forest products, material for plantation, construction and maintenance of infrastructure including fencing for plantation etc.
- High maintenance cost of vehicles – bad roads leads to damage of vehicles, thus increases the maintenance cost

Thus, the staff had no choice but to move on foot or procure emergency transport when needed. As a result of this constraint, the forest department staff at the range and beat level were performing their duties at a sub-optimal level, thus impacting the protection and conservation efforts in the state. To some extent increase in illegal activities in forest such as, logging/felling, mining, poaching, unsustainable extraction of NTFP etc. could be attributed to limited mobility of frontline staff.

Further, unavailability of vehicles such as tractor, excavators, dumpers, campers, all-terrain vehicles (ATVs) etc., adversely impacted the efficiency and effectiveness of service delivery by forest department staff including rescue operations.

In term of relevance, mobility interventions to bridge the capacity gap in forest department fits well with the general objective "Sustainable Forest Management in Assam" and specific objective "To enhance the capacity of the Assam Forest Department" of the project.

Efficiency & effectiveness

Planned works under this sub-component included, construction and renovation of roads at division level and below and procurement of vehicles. The following table presents the physical progress made against the planned targets.

[16] As per Statistical Year Book India 2017, published by Ministry of Statistics & Programme Implementation, GoI

Table 7: Physical Achievement: Planned vs Actual (Works)

	Planned Target*	Actual
New Road	160 km	86.96
Road Repair	1320 km [17]	474.5

Table 8: Physical Achievement: Planned vs Actual (Vehicles)

	Planned Target[18]				Actual			
	Cars	Motor Bike	Cycle	Boat	Cars	Motor Bike	Cycle	Boat
Head Office	20	0	0	0	7	0	0	0
Field Office (Division and Range level)	90	0	0	50	202	0	0	32
Beat Office	0	300	2,400	0	0	322	700	0
Rapid Response Team	0	0	0	0	20	0	0	0

The cell highlighted in green in the above table are either achieved or overachieved with respect to the planned target, while the ones highlighted in orange represent underachievement against the planned target. As stated in the previous section, primary reason for variance in planned target and actual achievement is inappropriate need assessment at division level and below during the project feasibility/planning phase.

In addition to the above listed vehicles and boats, few other types of vehicles such as tractor, excavators, dumpers, campers, ATVs, battery operated vehicles were procured under the project. Procurement of such vehicles was not part of the initial plan, but it was latter on added to the list of project activities and approved by AFD. The following table presents a list of such vehicles and total number of such vehicles procured under the project:

Table 9 Names and quantity of vehicles procured

Sl. No.	Name of Vehicle	No of Vehicles Procured
1	Force Traveller	1
2	Mahindra Bolero Camper	41
3	Polaris Ranger Crew 800	2
4	Polaris Ranger Crew 900	2
5	Ranger EV (Battery)	5
6	Ranger XP-1000	1
7	Tractor with Hoe	2

[17] 40 km per division for sites selected by Work Plans; however many plans are still under process of approval
[18] As per the approved cost table dated 23 July 2012

Sl. No.	Name of Vehicle	No of Vehicles Procured
8	Dumper	2
9	Battery Operated vehicle	2
10	Excavator	3
11	Bus 40 seater	2

Except for the bus, traveller and battery-operated vehicles all other vehicles listed above have been allotted to division and range offices across the state. One bus each has been allotted to Assam Forest School and Assam Forest Guard School; while the battery-operated vehicles &traveller has been allotted to Assam State Zoo and APFBC -PMU respectively.

The figure 9 presents financial planned and actual expenditure. A total of Euro 2.99 million was spent on procurement of vehicle in the last 6 years, which was 41% more than the planned allocation of Euro 2.12 million.

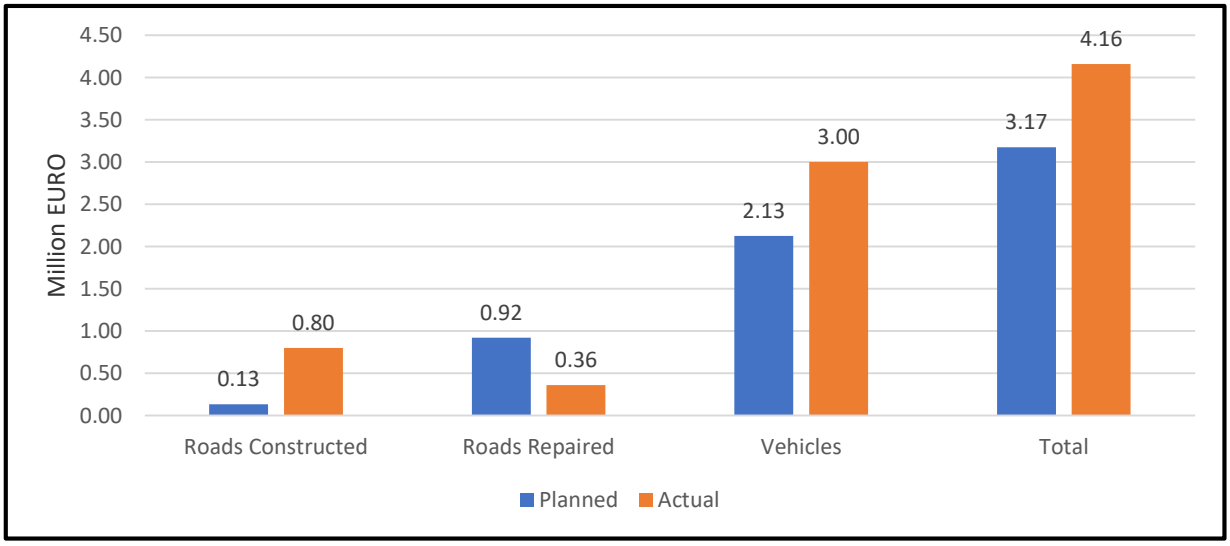

Figure 10 Planned vs Actual expenditure on mobility interventions

Some vehicles were procured in 2012-2013 for which direct payment to the vendor was made by AFD. The process of procurement of vehicles by the PMU was delayed until 2015-16 largely due to the lack of understating of AFD procurement procedures at the PMU.

Impact

The road construction/repair and procurement of vehicles has tremendously improved the mobility of forest department staff at division level and below. Based on the interactions, it was found that over 70% ranges offices and below did not have vehicles or had un-serviceable vehicles before the project (in 2011-2012). The mobility intervention has several tangible and intangible impacts such as:

- Reduction in travel time in the field for patrolling and other activities –primary interactions suggests that vehicles & improved roads have been able to cut down the daily travel time of forest staff for patrolling and other activities by 50% or more.
- Field force is better equipped to respond timely in case of emergency.
- Field force is better equipped to control illegal activities in protected areas and reserve forest – primary interactions suggests increase in detection and action against illegal activities (vehicles seized, cases registered etc.).

- Time saved from patrolling and commute for other activities is now being used for monitoring of community level works (including JFMC plantation), more frequent patrolling in sensitive areas and better work life balance.
- Transportation of material from and to forest/ villages has improved, benefiting both forest department and communities in the fringe area.

In addition to the above listed tangible benefits, the vehicles have been instrumental in confidence building of frontline staff. These vehicles have been referred to as their "lifeline" on the field by both frontline and middle level staff.

One beat guard mentioned, *"what used to take us 2-3 hours earlier on foot, we can now reach in half hour on the bike".*

Another guard said, "Beat guards have much more mobility due to bikes and now with dedicated real time inputs from JFMC/EDC members about illegal activities, forest protection is much more efficient than before".

Purpose and benefits of special vehicles other than cars, jeeps, motorbikes, cycles and boats are presented below:

Sl. No.	Name of Vehicle	Purpose and Benefits
1	**Force Traveller**	**Purpose:** Required for people and material transport **Notable Benefits:** Have been instrumental in transporting material for plantation; has reduced dependence of hired vehicle for material transport. Due to the dual purpose utility, camper has been termed as the most useful vehicle of all the vehicles provided under the project.
2	**Mahindra Bolero Camper**	
3	**Polaris Ranger Crew 800**	**Purpose:** Required for patrolling and other activities in areas inaccessible by other vehicles, especially in sandy areas. **Notable Benefits:** Provides easy access to sandy areas especially along river Brahmaputra. **However,** the battery operated Polaris has limited utility compared to its petrol variant due to its limited seating capacity and range. Thus, it may be procured in the next phase only after its adequacy has been ascertained.
4	**Polaris Ranger Crew 900**	
5	**Polaris Ranger EV (Battery)**	
6	**Polaris Ranger XP-1000**	
7	**Dumper**	**Purpose:** Required for transportation of material **Notable Benefits:** Has been instrumental in road repairs in Kaziranga and Manas National Park where roads repair is carried out at least once every year.
8	**Battery Operated Vehicle**	**Purpose:** Required for emission and noise free transportation inside the zoo. **Notable Benefits:** Has been instrumental in providing emission and noise free transportation inside the zoo.
9	**Excavator**	**Purpose:** Required for road repair, desilting and other similar works

Sl. No.	Name of Vehicle	Purpose and Benefits
		Notable Benefits: Has been instrumental in road repairs in Kaziranga and Manas National Park where roads repair is carried out at least once every year. Excavators were also used for desilting of water bodies and creation of highlands in Kaziranga.
10	**Bus 40 seater**	**Purpose:** Replace over 15 year old bus in Assam Forest School and Assam Forest Guard School **Notable Benefits:** These busses have been instrumental in organising study tours within and outside Assam. Trainees from Assam Forest Guard School are now being taken outside Assam for a study tours after a gap of almost 10 years due to unavailability of bus. These study tours are an integral part of the capacity building of frontline forest department staff.

Almost all forest staff interviewed for the evaluation, acknowledge that the mobility interventions under the project have played a pivotal role in increasing the operational efficiency and efficacy of forest department staff in carrying out their roles and responsibilities.

Construction of roads and procurement of vehicles has bridged the mobility capacity gap to a significant extent, however the requirement is not fully met. Mobility interventions can be taken up in the second phase of the project following a rigorous need assessment.

Sustainability

In order to sustain the gains from the mobility interventions of the project, the forest department should

- Provide adequate budget for fuel and maintenance of vehicles to ensure that they are optimally utilized to meet the objectives of the forest department
- Reach into annual maintenance contracts for vehicles and boats so that frequent and timely maintenance is conducted on an ongoing basis. In the current phase only few vehicles were bought with such contracts. In the next phase, all vehicles should be procured with annual maintenance contracts.

4.1.2 Capacity Building of Staff

Relevance

Since 1980, the forest legal framework of India have undergone a complete shift in its approach from forest as a source of revenue to forest for conservation. These changes were brought about by the Forest (Conservation) Act 1980, the Environmental Protection Act, 1986 and many other major and minor regulations and policies thereafter.

As these changes were being introduced, Assam Forest Department saw a freeze on recruitment which was lifted only in 2009. At the time of preparation of feasibility report in 2010, there was a 10% vacancy in the sanctioned strengthen of the department.

The lack of focus on human resources also resulted in lack of focus on its development. A significant proportion of the existing frontline staff is aging and unaccustomed to modern techniques & tools. They have had little exposure to practices and context outside of their division. There are two training centers in the state, but their financial and infrastructure constraints did not allow them to take up large scale training needs assessments (TNA) and capacity building to meet the emerging needs of the forest department. Thus, the capacity building sub-component was aimed at addressing gap as well as providing easy access to technical knowledge to enable better execution of responsibilities by Forest Department staff.

In term of relevance, capacity building activities finds fitment with the specific objective of the project "To enhance the capacity of the Assam Forest Department".

Efficiency and Effectiveness

The following activities were planned under the capacity building subcomponent:

- Development of web based Human Resource Management Information System (HRMIS) – including modules on TNA and Annual Individual Assessment (AIA)
- Design In-service training program – including national and international training and exposure visit
- Design and deliver refresher courses/ programme including skills – on topics such as eco-restoration techniques, agro forestry, forest and biodiversity survey and monitoring, legal knowledge, GIS and soft support infrastructure management – including national exposure visits
- New skills and tools training program

Out of the four major activities listed above, the only the national and international training and exposure visit were organized while others were dropped. A new activity, development and implementation of Forest Management Information System was taken up during the project. It must be noted here that the development of in-service training program was taken up under the JICA project and hence was dropped from APFBC.

These activities are discussed below.

A. Forest Management Information System

The feasibility report identified a lack of consolidated data about staff as one of the challenges when it comes to human resource management including planning and implementation of capacity building intervention. To that end, a web based Human Resource Management Information System (HARMIS) was planned with data about staff (such as performance, needs assessment, posts and vacancies, individual details, etc.). As the project started it was realized that this lack of information is a problem that extends across many sectors of the department. Thus, instead of HARMIS, a Forest Management Information System (FMIS) was developed. The FMIS is aimed at being more holistic in terms putting

a lot of pertinent forest department information in one place, not just limiting itself to the human resource aspect. The portal contains the following 18 modules:

Figure 11: Modules in FMIS

The data collection process for the above listed modules is in progress in a decentralized manner, however the progress is not uniform across modules and divisions. Divisions in the autonomous councils are lagging behind in terms of data upload. The database of human resources has comprehensive details of over 8,000 staff.

The introduction of FMIS is expected to bring considerable efficiency and efficiency in forest department's documentation and reporting system. Once fully operational, it is expected to replace the traditional system where data would be collected through physical documents and transmitted through emails or post, which is then collated at a central node (circle/ state level). This was not only a slow process of collection, but also meant an extremely slow feedback loop when corrections were needed.

Since the FMIS is not fully operational and not being used by all divisions within the forest department, it would be worthwhile to focus on further strengthening the existing FMIS and training people for regular use of FMIS. Computers procured under component 2 will further provide an impetus of localized data uploading in the FMIS. Finally, in order to make the investment sustainable, forest department should make a conscious effort to institutionalize FMIS in forest department through appropriate policies and procedures (gradually move away from the traditional data collection and collation mode to use of FMIS).

B. National and International Training cum Exposure Visits

The component of national and international training cum exposure visit was implemented under the project in a phased manner. Originally two sets of capacity building activities were planned, one set under component 1 as exposure visits and one set under Component 3 to learn about agroforestry practices from national and international initiatives. However, since the focus on agroforestry was dropped, the budget from both components were combined and a single set of visits were organized – national and international – as an exposure visit for capacity building. An expenditure of Euro 1,37,408 was incurred against the budget of Euro 345,919, which is only 40% of the allotted amount.

Under the international program, 60 senior & middle level officers from the forest department underwent a training program in ONF International, France and University of British Columbia, Canada. They were organized in 4 batches of 15 members each with 30 officers visiting France and the balance 30 visiting Canada. The focus of the international program was under:

ONF International, France.	University of British Columbia, Canada.
- Diverse mapping tools for assessing and quantifying ecosystem services including Remote Sensing, etc. - REDD+ and the concept of Carbon Financing. - Recreational Forestry & Eco Tourism. - Elements and requirements of sustainable Forest Management Plan. - Biodiversity Management & Population inventory. - Participatory Forests Resource Management. - Visit to various sites like nature park, 'Forest of exception' etc.	- Urban Forests & Wildlife Management - Red Trail Ecology, Forest Management & Social issues - Watershed Management - Carbon Sequestration - Seed Orchards & Nursery

Figure 12: Coverage under International Exposure Visit

Under the national training cum exposure visits, 300 forest and other line department personnel and 21 JFMC members participated. These programs covered a range of topics such as: eco-tourism, wildlife management, orchid propagation, medicinal plants nursery, carbon factor, participatory forest management, greenbelt management, watershed management, plantation management, bamboo conservation and management, meadow management and grazing control etc.

The 321 participants of the national exposure visits were organized as under:

- 10 batches of 25 frontline field staff each (250 in total) and 1-2 forest rangers (19 in total) visited 10 Indian states - each batch was sent to a different state
- 1 batch of 15 officers visited Forest Department in Kerala
- 1 batch of 11 officers from forest and 5 other government departments (Agriculture/Soil Conservation/Irrigation/Water resources) visited Forest Department in Himachal Pradesh
- 1 batch of 21 JFMC members and 5 member secretaries from divisions visited Forest Department in Tripura

An external consultant was hired for planning and organizing the training cum exposure visits. All training participants interviewed for the evaluation reported that their visits were well organized and the selection of topics was relevant. This was also in line with the needs since frontline staff gets

transferred between wings. For instance, a forester could be working in a protected area in a wildlife wing but then get transferred to a territorial wing where he may be responsible for different set of activities related to JFMC plantation. Thus, they would be able to draw from the knowledge and experience gained through the visits in both scenarios. Each visit lasted for 7-20 days depending on the topics and geography covered.

Inclusion of JFMC members in these visits was not a part of the original project design, however, this resulted in increased motivation amongst community members for joint forest management.

Impact

Exposure visits

The national exposure visits were appropriate to improve softer aspects such as motivation and engagement of the frontline staff. These visits have contributed to expanding their understanding about the range of activities that could be implemented during the course of their work. About 60% staff reported that one of the key takeaways of the visits was that they saw the actual implementation of many practices; some of these practices were known, but they were limited to theory. Observing their application was insightful and has encouraged the participants to apply their learnings as opportunities arise.

The participating JFMC members came back with a renewed sense of optimism for their villages. These members are mostly the JFMC presidents, and their motivated leadership has been critical in making JFMC operations effective.

The officers who underwent the international program reported that it helped them with enhanced understanding of processes for forest management as well as develop a global context for some of the conservation efforts they are engaged in. Over the years due financial constraints and lack of exposure, the department had begun focusing on a smaller set of activities (primarily plantations and nurseries). The program has been effective in starting intra-departmental conversations about how it can evolve beyond that and how it can approach forest conservation with a modern and holistic approach. The involvement of JFMC in the management of Hornbill Park was a result of the learnings of the international exposure visit. (see case-study)

It has been suggested that for phase 2,refresher courses must be conducted preceded by a needs assessment. It was also suggested by the participants that more JFMC/EDC members be sent for exposure visits after selecting them through a well-defined criterion.

Forest Management Information System

Once fully functional, the FMIS would be the first of its kind, a comprehensive and accessible database on most of the department's operational needs. It is expected to impact a number of functions of the department:

- Enable significantly stronger human resource management as it contains a wide range of details on the staff, posts and vacancies and highlighting need gaps. Considering the shortage of staff, this would allow a more strategic distribution of human resources across the state.
- Strongly aid more effective planning and informed, evidence based decision making since the portal allows easy access to a range of operational aspects transforming into a central repository of data and information across wings
- The FMIS will become one-stop shop for all data needs of the department, eliminating the need for internal paperwork to seek information on various aspects – major or minor.
- The FMIS has maps, supportive literature and data on topics relevant to the needs of the frontline staff, their division/location, current progress of their work, etc. This is expected to increase their personal effectiveness.
- The FMIS will serve as a monitoring, management and controlling tool to track the extent and quality of implementation of activities being executed by the department.

While the FMIS holds high potential in terms impact it can have on operational effectiveness of the forest department, it must be noted that while it has been commissioned, it is far from being fully functional. The amount and range of data collection of the FMIS is ambitious and further work is needed to streamline it. Thus, *strengthening the FMIS can be one of the key areas of focus for Phase 2 under the capacity building sub-component.*

Case Study: Hornbill Social Forestry Park

The Hornbill Social Forestry park had fallen into disrepair in the last few years; it was dilapidated and had no visitors. There was no consistent flow of funds for its regular maintenance, and the financial constraints of the Forest Department did not allow for any renovation.

A major overhaul of the park was undertaken under APFBC. This has completely transformed the park, which is evident from it's completely new look as well as the steadily increasing influx of visitors.

The renovations include the Forest Inspection Bungalow, gardens, pavement and a parking zone. Inclusive toilets have been made for males and females, both usable by handicapped visitors. The park includes a cafeteria and a Banashristy outlet. Learning from the community involvement practices during the exposure visit to Canada, the officials have involved the women from local JFMC in managing the cafeteria and the outlet.

The women managing the cafeteria were trained under the livelihood component of the project on hospitality services. They prepare food items including traditional dishes in a modern kitchen and serve them in a clean, hygienic dining area. The cafeteria provides for steady income to the participating women. Almost all visitors to the park confirmed making a purchase.

The Banasrishty outlet sells products made by women member of neighbouring JFMCs. These women producers too have been trained under the livelihood component of the project.

The area behind the park was frequented by elephants who would often come into the compound and destroy property/plantations. Now with the construction of the boundary wall around the entire perimeter, this has stopped completely.

4.1.3 Research

Research efforts under the project were originally planned under various requirements spanning across component 1, 2 and 3. Component 1 focussed largely on identifying knowledge partners and conducting a priority setting exercise to identify the most urgent areas from within a list of potential topics. Component 2 was the most expansive in its scope, being largely research driven, aiming to set up a central knowledge repository to facilitate stronger decision making and planning. Component 3 focussed on biodiversity conservation and management. The feasibility study recognized an urgent need to gather a relevant and updated knowledge base to facilitate the general operations of the Forest Department as well as facilitate project activities. However, activities of component 2 were dropped owing to a shortage of time and resources. Conservation and management of biodiversity was identified as a cross cutting issue between Component 1 and 3. To facilitate implementation, all research activities were conducted under Component 1. This included 3 major activities:

- Identifying and working with external knowledge partners to facilitate research activities
- Setting up and supporting research infrastructure within the department in the form of the Silviculture and Genetic Cell
- Supporting the Assam State Biodiversity Board in its efforts to fund biodiversity studies, strengthen and set up its block level implementation agencies and aid public outreach efforts.

Identifying and working with knowledge partners

A research advisory committee was established, though it was not able to meet frequently. However, linkages were established with an educational institution and three NGOs to conduct research activities to aid biodiversity conservation efforts. The general approach involved identifying biodiversity hotspots such as the Brahmaputra river and some of the protected areas with a high concentration and variety of species, collecting data from the field and analysing that data to determine conservation needs. The details of the linkages and resulting research are mentioned below within the Assam State Biodiversity Board case study.

Setting up and supporting research infrastructure within the department

A. The Silviculture Cell mostly received an infrastructure upgrade. Research under this cell included:
   a. Collection of indigenous orchid species and research on improvement of its cultivation methods.
   b. Identifying research plots to collect data on important species

B. The Genetic Cell works on conservation of rare and hard-to-grow species and identifying best practices for their cultivation. Under the project, a hi-tech nursery was made to study and revise growth techniques. Unlike in a regular nursery, this nursery created a more controlled environment where the effects of various factors could be studied in isolation to determine optimum conditions for growth of critical species. This research proved valuable as the hi-tech nursery is now being used as a training tool to demonstrate best practices on how to grow high quality seedlings.

A amount of Euro 614,903 budgeted for research activities across the three components; however, only Euro 191,174 was spent on research activities.

Case Study: Assam State Biodiversity Board

The Research sub-component of the project was aimed at addressing the need for new knowledge in the Forest Department to guide its implementation as well as enable it to meet its larger set of duties. Research activities were performed by establishing links with key knowledge partners.

Due to implementations conditions that arose during the project, major research activities were taken up through the Assam State Biodiversity Board (ASBB). The ASBB functions to implement the Biodiversity Act 2002 which provides for biodiversity conservation, sustainable use of its components and fair and equitable sharing of the local natural resources.

The ASBB established linkages with educational institutions and NGOs to conduct the following research:

- NGO Dolphin Foundation: Study on Fish Diversity in Brahmaputra River inside Assam to identify the threatened species, evaluate and determine their current conservation status and needs
- NGO Aaranyak: Enhancing conservation efforts in Hollongapar Gibbon Wildlife Sanctuary
- NGO The Orchid Society of Eastern Himalayas (Assam): Documentation of Wild Orchids of Assam
- University of Science Technology and Management (USTM): Inventory and Documentation of Insect Fauna of Assam from existing entomological resources
- French Institute of Pondicherry (FIP): Assam Biodiversity Portal developed to benefit students, researchers, academicians regarding biodiversity in Assam.

Due to the remoteness and inaccessibility of the north eastern region of the country, there aren't enough studies that capture its rich variety of flora and fauna. With that context these studies are especially relevant. Of note is the inventory of insect fauna and the study on fish diversity in the Brahmaputra river. *The fish diversity study stands as the first systematic effort to map the fish species in the Brahmaputra river (within Assam) in the more than half a century (the last such study was done in 1962).* The results indicate that 67% of the fish species could be at very high risk, though more time is needed to confirm the precise percentage. Databases like these will be crucial in informing biodiversity conservation efforts in the state.

Under the Act, the Biodiversity Management Committees (BMC) have been set up at block level. These comprise of heads of the local villages. Under the project, awareness and capacity building exercises have been undertaken at 49 BMCs.

The project also supported awareness creation; a total of 8 documentaries have been made to spread awareness about biodiversity conservation amongst the general public. Digital Database for People's Biodiversity Registers (PBR) have been prepared, which aid the BMCs in keeping track of natural resources being used in the areas.

The project thus, made available documents and knowledge which were not available in the past.

4.2 Component 2: Multilevel Strategic Planning

Two major sub-components were proposed under this component:

- State level forest strategic planning
- Design of integrated/master plan approach

Component 2 was made with the ambitious goal to create an overall strategic planning document for the state which would be supplemented by an accessible digital knowledge repository. However, due to limited capacity of both resources as well as time, the component was adapted to achieve what was within capacity at the time. To that end, two activities were taken up:

1. Development of the Forest Management Information System (FMIS): as per the goal of component 2 to make the shift towards collecting and digitising knowledge, the scope of the Human Resource Management Information System (HARMIS) from Component 1 was expanded to incorporate this need. Instead of addressing only the human resource management aspect, the FMIS was made as a portal that would encompass the HR needs as well as serve as a holistic digital database of forest related information. Thus, this activity was jointly taken up across components 1 and 2.
2. Procurement of hardware to support the digital infrastructure and its access. Under this, computers and related technology were procured to be assigned to each division.

A sum of Euro 326,021 was spent against a budget of Euro 1,441,017.

4.3 Component 3: Sustainable forest management

Three major sub-component under this component include:

- Sustainable forest management by forest department including plantations and habitat management
- Participatory forest management through JFMCs
- Biodiversity conservation and management

4.3.1 Sustainable forest management by forest department

Two major activities were carried out under this sub-component. These include:

a. Plantations in reserve forest areas
b. Identification and Rehabilitation of Degraded Critical Habitats

4.3.1.1 Plantation in reserve forest areas

Six types of plantations were made in the reserve forests under the project. These plantations covered an area of 13,182 ha. These plantations were made over 4 years in 31 divisions across 9 circles. Different types of plantations include the following:

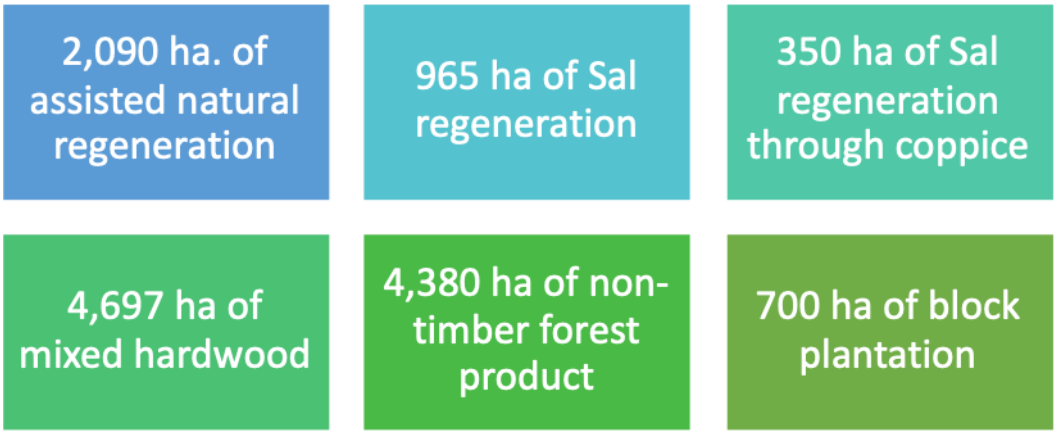

Figure 13:Types of Plantations

Additionally, 31 nurseries were established with a special focus on indigenous fruit-bearing tree species - the fruits of these trees are preferred food for elephants. The objective of these nurseries is to propagate indigenous species and to ensure adequate food availability for elephants and other animals in and around forest area.

Relevance

The rural economy of Assam is dependent on natural resources which is adversely impacted by climate change. The continued warming of the atmosphere and subsequent changes in precipitation pattern is impacting the state's water resources, agriculture, forest and its unique biodiversity. The emerging pattern of enhanced intensity of rainfall and drought periods are further aggravating the impacts. According to the study conducted by the India Meteorological Department there is increase in mean temperature by +0.01ºC/year and decrease in annual rainfall by -2.96 mm/years.20

The FSI21 reported decrease in forest cover in few districts due to high dependency on fuelwood, mining, logging, urbanisation, encroachment, higher frequency Jhum cultivation etc. that leads to degradation of forests. Further, due to change in climate, the intensity of floods and droughts results in further reduction in forest cover impacting the agriculture, water resources and the composition of the remaining forestland.

Thus, in line with State Climate Change Action Plan22 and Green India Mission, it is necessary to protect, restore and enhance depleting forest resources by increasing forest/tree cover through plantation activities that will result in increasing the carbon sequestration in addition to increase forest-based livelihood.

Efficiency and effectiveness

The success of plantation depends on the starting conditions. This means the degree of coverage by the former forest and soil and microclimatic conditions. As one of the project objectives is to increase biodiversity it makes sense to maintain a certain coverage of the old trees. This creates a heterogeneous structure with living conditions for a variety of animal and plant species and naturally restricts the development of excessive ground vegetation. Considering the time of planting (two to three years ago) all sites visited under the evaluation showed good development. A variety of species have been planted including indigenous fruit bearing trees and medicinal plants such as Triphala. Triphala is an Ayurvedic herbal mixture consisting of equal parts of three myrobalans, taken without seed: Amalaki (Emblica officinalis), Bibhitaki (Terminalia bellirica), and Haritaki (Terminalia chebula). These are developing well and favours biodiversity, however the success depends on good care especially during the initial years (minimum three weedings per year) and on keeping cattle out of the plantation area.

Plantations were successful where pressure by cattle was low and timely weeding was undertaken. Plantation with limited access by cattle and proper weeding showed survival rates of up to 80%-90%. While in other sites the survival rate is comparatively low and planted areas are not well accessible.

Block plantations have fared well in comparison to all other type of plantation undertaken in the project irrespective of the location. Better outcome can be attributed to provision of fencing which is instrumental in protecting the planted area from anthropogenic pressure.

[20] Rathore L S, A D Attri and A K Jaswal, 2013. State Level Climate Change Trends in India. Meteorological Monograph No. ESSO/IMD/EMRC/02/2013. India Meteorological Department. Ministry of Earth Sciences. GoI

[21] FSI. 2017. State of the Forest Report 2017, Forest Survey of India, Ministry of Environment and Forests, Government of India

[22]http://www.moef.gov.in/sites/default/files/Final%20draft%20ASAPCC%20document.pdf. Viewed on 18.10.2018

On an average 2,500 – 1,750 saplings per ha are planted depending on the type of plantation. Thus, assuming an average of 2,000 plants per ha, around 26,000,000 saplings have been produced and planted under the project.

The total cost incurred for plantation was Euro 4,579,979.88 against a target of Euro 7,306,035.

Impact

During the field survey, ocular observations were made by the team at a sample of plantations sites. The plantations were found to be surviving and of appropriate growth. In most locations, plantation sites seemed to be a natural extension of the forest especially as no weeding efforts had been made in the past year due to non-compliance of divisions with the process for procuring funds for year three weeding.

In some locations, birds and antelopes could be observed. Frontline forest staff informed the survey team that larger mammals like elephants have started to visit plantation sites.

The planation activities engaged the forest villagers, generating a significant employment estimated to be 374,000 person days (@ 30 person-days per ha).

Plantations are one of the major achievements of the project and it is expected to contribute towards increasing forest/tree cover which will result in enhancing the carbon sequestration in addition to increase forest-based livelihood. However, it would take another 5-7 years for achieving tangible impacts from plantation activities.

Sustainability

Plantations need to be maintained as per the standard procedures. According to the State of the Forest Report 2017, seven districts in the state have seen a decrease in the forest cover. Plantation activities in the next phase should specifically focus on these districts apart from densification where required.

Fund flow for weeding activities should be streamlined to ensure timely weeding. Untimely or no weeding can adversely impact survival rate and plant health. Better community engagement for restricting grazing in plantation area is another important action for ensuring better survival rate.

4.3.1.2 Identification and Rehabilitation of Degraded Critical Habitats

The feasibility study proposed to introduce the Adapted Management Concept for implementation of management measures proposed in the plans. The idea was to analyse gaps, opportunities and impacts of such measures. Specifically, the planned activities which were taken up were creation of artificial waterholes, grassland management and wetland management. Additionally, new activities like invasive weed management and establishment of highlands was taken up. An inventory of wetlands in reserved forests was also made.

Table 10: Critical Habitat Management Activities

Activities	Planned	Implemented
Artificial waterholes	30 holes	14 holes
Grassland management	1,000 ha	360 ha
Wetland management	25 measures	4 measures
Invasive weed management	0	190 ha
Wetland restoration through *Ipomeacarnea* eradication	0	20 ha
Wetland inventory in Reserved Forests	0	7,313 Nos.
Highlands	0	31

Relevance

Habitat management activities were undertaken in national parks and wildlife sanctuaries. As management plans were not prepared, the habitat management measures were implemented on an ad-hoc basis and on very small area. This can be exemplified by the case of Kaziranga National Park. The park is one of the major intervention areas covers 430 km². However, grassland management on 10 km² or weed management on 1.9 km² will not impact the ecology of the park in any meaningful manner.

Highlands were established in Kaziranga National Park in response to the floods of 2017 when the waters reached one of the highest recorded levels ever. The budget for them was secured from component 1 but their utility is essentially for habitat management. As there were no floods in 2018, the utility and relevance of the highlands could not be ascertained.

Efficiency and effectiveness

The percentage of activity implementation can be seen in the following list:

- Artificial waterholes: 47%
- Grassland management: 36%
- Wetland management: 16%

The measures were implemented professionally, and thus efficiently. The highlands become green and, in some years, in addition to grass they will show shrubby and tree vegetation. In some cases, two birds were killed with one stone by establishing the highlands, as the water bodies were desilted, and the mud was used to establish the highlands. The effect of desilting in Kaziranga will however, be limited as with the next flooding mud and silt will be back again.

Removal of Bombax ceiba was effective (unrooting so that they cannot re-sprout) and will show effects for some years.

As growth of trees is part of the natural succession these measures will have to be repeated with a certain frequency.

Impact

There will be no impact on the ecology of national parks and wildlife sanctuaries as the measures only were implemented on comparably small areas. The measures along the touristic infrastructure (in combination with creation of infrastructure like observation towers) which increase visibility of animals may have an impact on the number of visitors.

Impact of highlands is yet to be ascertained.

Sustainability

The measures will not be sustainable from ecological point of view as these measures will be corrected by the activity of the river and by natural succession. The impacts on touristic attraction may be sustainable if the income will be re-invested in such measures.

Habitat management should have taken place based on improved management plans. The activity to prepare such plans was dropped.

Management activities in national parks are controversial. Usually these areas should develop without human interference. But there may be reasons to influence the natural development, for example to make animals visible for the tourists. This is the case for example when management activities along the touristic infrastructure (roads, paths, observation towers) or protection like highlands are created or grassland is kept free from trees like Bombax ceiba. Another reason can be invasive species which may degrade certain habitats, like Ipomea carnea which impacts water flow. Invasive species often are indicators for degradation.

Management measures outside of protected areas are important. Most of the protected areas are too small for many species. So, corridors or step stones are needed for several species to facilitate genetic exchange. Nature protection cannot take place only in the protected areas. Certain basic principles about habitat management should be respected outside (for example to maintain wetlands) to avoid further degradation and defragmentation of habitats. The wetland inventory is a useful start as a basis for their protection and management. Their management should be planned in the working plans.

4.3.2 Participatory forestry management

Four major activities were conducted under this sub-component, viz.,

- Activation of Joint Forest Management Committees (JFMCs) and Ecodevelopment Committees (EDCs)
- Participatory microplanning
- Entry point activities
- Community fuelwood plantation

4.3.2.1 Activation, microplanning & entry point activities

The population of forest fringe villages covered under the project is economically and socially backward. The survey found that over two thirds of the families were below poverty line; while half had been educated up to primary level. Agriculture and unskilled labour were the primary sources of household income.

With limited livelihood opportunities, low household income, high rates of illiteracy and poor accessibility, these communities are heavily dependent on the forest for their daily requirements as well as to supplement their income. Practices such as jhum cultivation where parts of forests are burnt to make room for agricultural land, illegal logging for personal as well as commercial use and use of other forest products without any consideration for sustainability were common and rampant.

The communities had practically no incentive to cooperate with the Forest Department as there was no benefit from it. The department wasn't in a position to allow any benefit sharing from the forests, and thus the relationship between the two stagnated. Further, the department curbed illegal extraction of forest resources which the locals often indulge in for their livelihood. These matters escalate to the next level for forest villages who are more dependent on forest compared to the ones who are outside the forest area. *This presents a major problem – it is not possible for the forest department to constantly monitor and protect the forest and biodiversity on their own*. The forest area is very large and hard to access, thus without the active participation of communities in protection and conservation efforts, curbing poaching, illegal logging and other forms of encroachment is not possible at scale.

Owing to distrust and scepticism in the relationship between the forest department and the communities, cooperation from the villagers was almost non-existent. On the contrary, poaching and illegal logging relied on locals to point the way. Thus the focus of APFBC on sustainable forest management through a participatory approach was very relevant and urgent. The Joint Forest Management Committee (JFMC) for villages near Reserve Forests and the Eco-Development Committee (EDC) for villages near Protected Areas was used as a vehicle to achieve this objective.

Efficiency and Effectiveness

Activation of JFMCs/EDCs

Under the project 216 JFMCs and EDCs have been either revived or newly formed. The JFMCs and EDCs were revived or formed with an objective to mobilise community and build their capacity for joint protection and conservation efforts.

The evaluation results indicate a very high level of awareness (90%) about the formation and existence of JFMC/EDC in their village. One male and one female member from every household in the village are by default members of the JFM/EDC in their village. While, 11-13 out of those are elected to form the Executive Committee which is the key decision making body.

The evaluation found that 79% respondents were aware of being member of JFMC/EDC. While this figure is encouraging, there is still a gap as this number should be 100%. Awareness level further reduces when it comes to membership status of their family members - only 26% were aware that their family members were also members of their committees. More than 80% JFMCs/EDCs conduct two or more general body meetings in an year. 81% respondents reported attending at least 2 general body meetings in the last one year.

The executive committees are required to ensure that a minimum of 30% members are women. This ratio was mostly maintained in all JFMC/EDC covered under the evaluation, while few villages had better representation of women - with 4-5 women in the executive committee. The executive committee met more frequently, however there is no systematic trend as the meeting are largely need based.

Attendance in executive meetings varied between 60% to 100%. However, active participation in decision making is limited to 4-6 members, beyond whom participation was limited. Of those who have stopped taking part in the meetings, 53% said they were not satisfied with the decision making process. In some cases about 3-4 senior members of the village make most of the decisions while the other members are often not fully aware of the topic of discussion or not confident enough to speak up. A part of it can also be attributed to poor literacy levels of the villagers.

Our focus group discussions indicated that over 90% of the Presidents of the JFMC/EDC were active and aware of the functions of a JFMC/EDC as well as their own roles & responsibilities. They were invested in the process and enthusiastic about this role. However, many executive committee members and the villagers were not able to articulate their role nor the purpose of the committees. Over 90% from the focus group discussion participants reported that they had not undergone any particular training or formal awareness session about the purpose, roles and responsibilities of a JFMC/EDC after its formation.

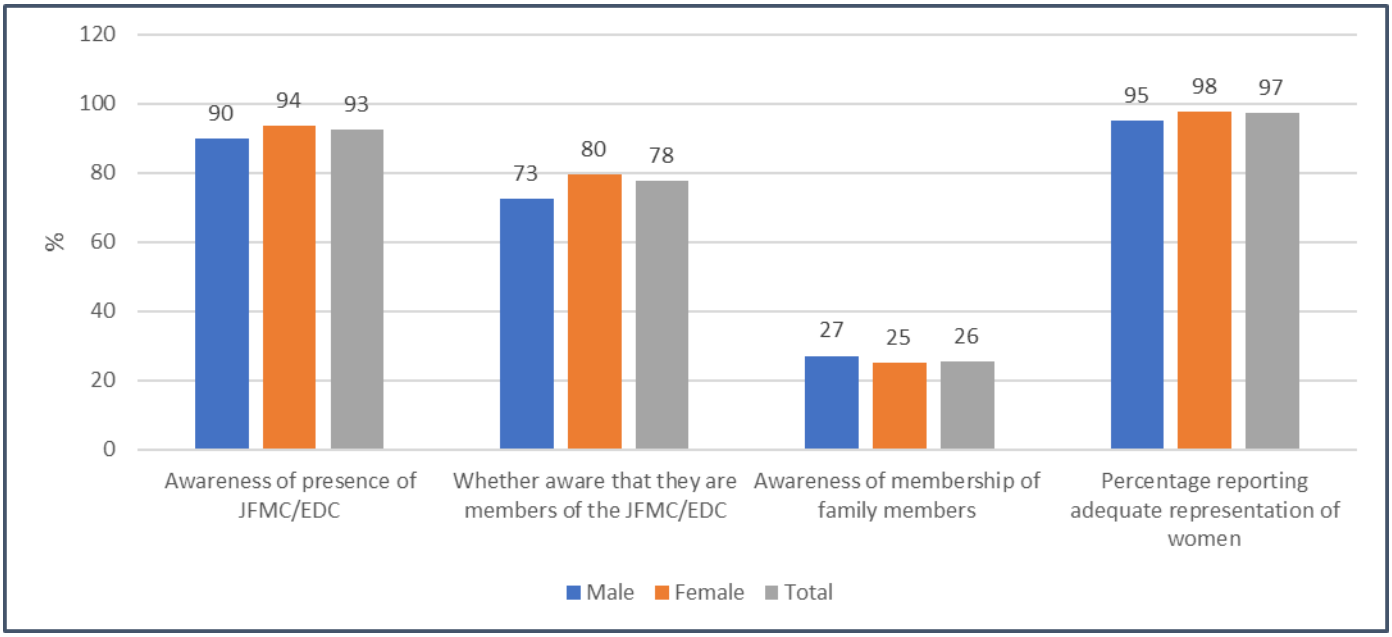

Figure 14: JFMC/EDC Awareness and Perception

At this stage, there are 2 interlinked challenges that limit the effectiveness of the JFMC/EDC:

a. There is a major lack of awareness about the comprehensive role and purpose of the JFMC/EDC. Low clarity of purpose is always a barrier to mobilisation. Nearly all villagers reported receiving no training or formal awareness sessions to explain why there is a JFMC or EDC in their village. Each village had a part of the answer – some said the purpose is plantation, some mentioned village development, others mentioned forest protection and cooperation with the forest department. Very few had a complete picture.
b. This is the first time most of these villagers are in a decision making role. At this stage, hand-holding is needed to ensure that the nature of the committees remains participatory. Confidence building to enable them to make effective decisions on their own and with greater participation has to be actively addressed.

One of the key enablers which will address point a. (and point b. partially) is ensuring that the villagers first understand why a JFMC or EDC is constituted in their village, how it is different from the already existing administrative structures and how the committee should ideally run. This needs to be done via formal awareness sessions. Having this clarity is bound to build a better sense of purpose and invite participation. This was showcased clearly by North and South Hatibanda JFMCs. The former had visitations from the DFO to explain the importance of JFMC and conservation efforts, and the president of the latter had gone for a training program where he was taught about how to run a JFMC effectively. Residents of both of these villages displayed keen interest in the developmental activities, there was a significantly higher amount of participation during the focus group discussion. South Hatibanda was one of the rare JFMCs where villagers had made a fencing for their plantations with their own money. *Building this level of ownership is a big step toward making these committees sustainable*. This indicates that even with a relatively small awareness intervention, there can be a significantly positive impact on the participation level of villagers. *We recommend that there be awareness building sessions to explain the purpose and function of the JFMC/EDC in each village. This can either be facilitated by the member secretary (who is the forest department link in the committee) or the COMPELO as a separate activity. Increased frequency of the DFO or RO visits is another element that tends to motivate and encourage villagers.*

Micro Planning

The very first activity done with a JFMC/EDC was formation of a microplan for each village. Micro-planning was done by a Participatory Rural Appraisal approach where all the villagers are called to collectively create a socio-economic profile of the village and needs assessment of the developmental requirements of the village. This included documenting the following:

- Village map with roads, forest distribution and important buildings
- Social map with locations of houses and distribution of communities
- Resource map outlining resource distribution across various regions of the village (water, plantations, natural forest cover, crop land, cattle, etc)
- Seasonal map recording crop growth and agricultural patterns
- Simple diagram mapping distances from nearby line departments and government institutions
- Priority ranking of activities to be taken up with respect to Entry Point Activities & Livelihood opportunities

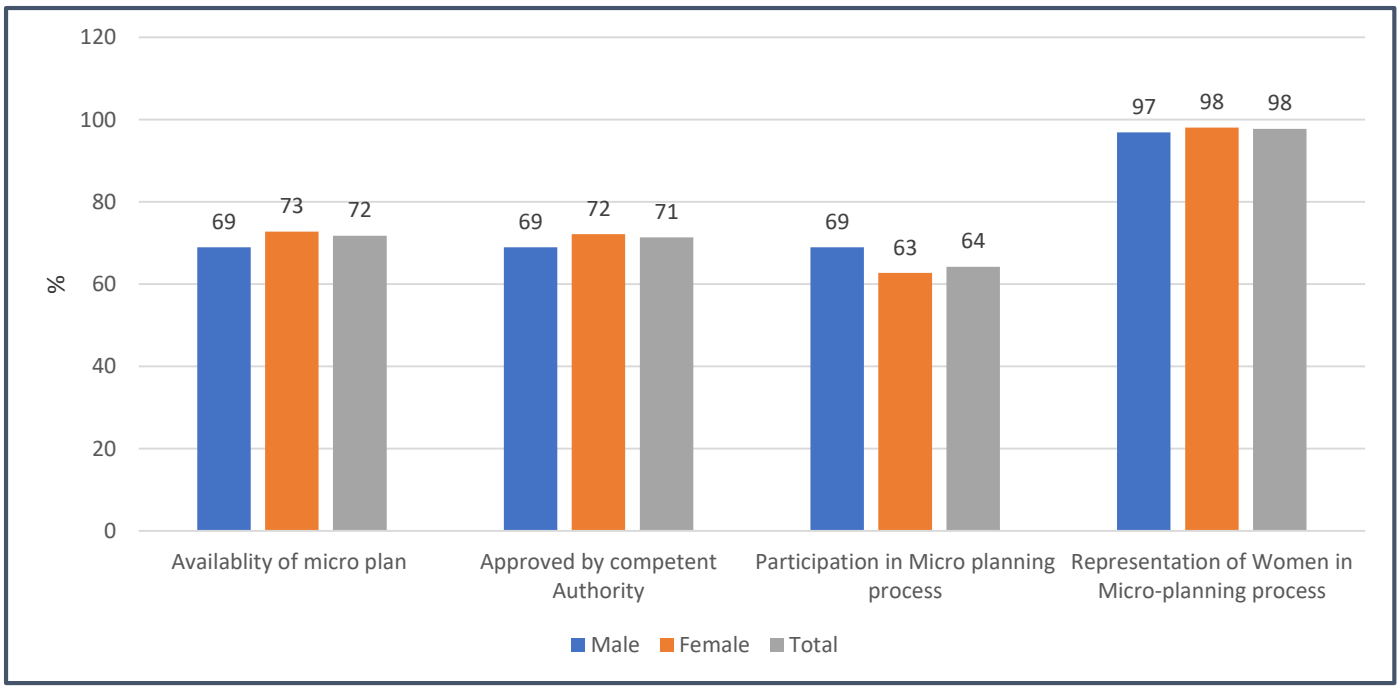

Figure 15: Status of Microplans

This process was undertaken by the COMPELO and microplans were made for 151 out of the 216 villages under the project. The expenditure on the microplanning process was Euro 157,365 which is 80% of the originally planned allotment of Euro 196,720.

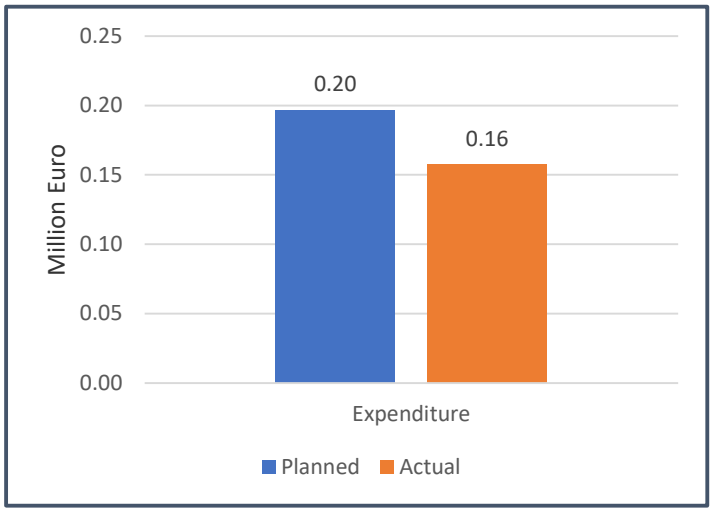

Figure 16: Planned vs Actual Expenditure on Microplanning (in million Euro)

All 50 of the surveyed villages had microplans. The Forest Department facilitated the communication and coordination of logistics and 99% acknowledged the participation of the department in the planning process.

Awareness of micro-plans was fairly high at 72%. A positive finding was that was no significant gender difference was found in participation. For those who didn't take part, 71% reported that the major reason for non-participation was lack of proper communication. *For phase 2, it is essential that strong communication and awareness is ensured in new villages where micro-planning will be undertaken.* The microplans have been translated into local languages for ease of accessibility for the villagers, though baring few villages no other villages surveyed had a copy of the plan in the village. Microplans were either kept at the range or division office.

The micro-planning process has been quite effective in engaging with a majority of the villagers in nearly every village. The level of participation ranged from 51% to 90% in the surveyed sample, with an average participation of 64%. Of those that participated, 84% reported that they were given an equal opportunity to participate to a great extent or to a very great extent.

As mentioned, micro plans have a priority list of the developmental requirements of the village. Some of these are supposed to be overseen by the forest department and the others are to be fulfilled by other line departments. Information about microplanning and the project was shared at the state level with the head of all concerned line departments. This however has not proven to be effective as 99% of the villages reported receiving no support whatsoever from other line departments, which has resulted in considerable dissatisfaction and needs gap. *It is recommended that information about the micro plan be shared with the respective departments at a district/division or block level. Involvement of the other line department can also be potentially enhanced by involving them at the microplanning stage to ensure a higher degree of investment.*

Entry Point Activities (EPA)

EPAs are the above mentioned activities that need to be implemented as identified by a micro-plan. These address the prioritized needs identified by the community and include construction of community halls, toilets, ringwells, forest roads, market sheds etc. Of the 151 JFMC/EDC, 136 have received funds for the EPAs. The remaining 15 did not receive funds since they did not provide the requisite documents. EPA funds had been released to all 50 surveyed JFMC/EDC. For EPAs in JFMCs Euro 1,652,012 were spent against a planned allotment of Euro 2,987,426 (44.7% less than planned). For EDCs, the expenditure was Euro 947,541 against an allotment of Euro 634,088 (49.4% higher than planned). The overall expenditure on EPAs was Euro 2,599,553 against an allotment of Euro 3,621,514 (28.2% less than planned). This overall decrease is reflected in the fact that not all of the EPAs identified in the microplan were completed, and since a few of the JFMCs and EDCs did not receive funds for EPAs as they didn't send the necessary documents (estimates and plans).

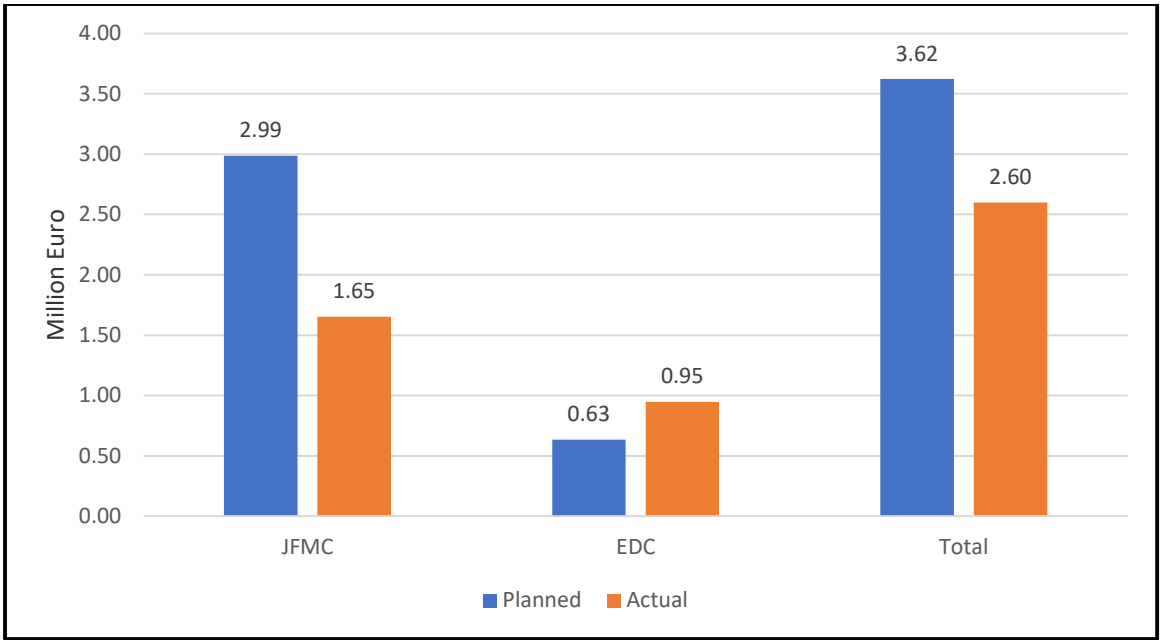

Figure 17: Planned vs Actual Expenditure on EPA (in million Euro)

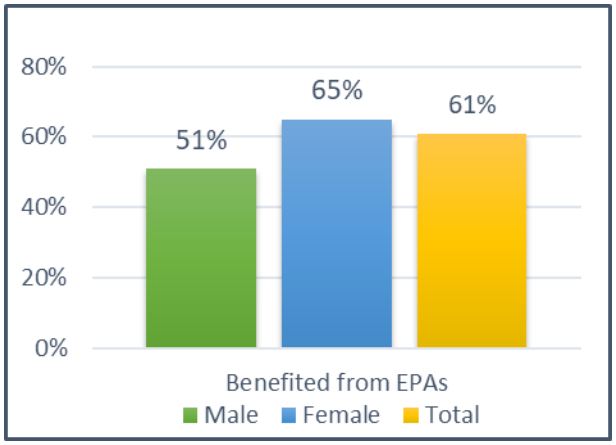

Figure 18 EPA Benefit

All villages and supervising frontline staff reported receiving sufficient funds for EPA in a timely manner. However, while the cost for sufficient for the construction itself, a common implementation challenge was transport of materials.

A number of villages are not well connected, and the bad condition of roads prevents entry of large transport vehicles. This forced hiring of multiple smaller transport and more frequent trips to transport the entire material. *The resulting inflation of costs pushes the actual expenditure beyond the provided estimate, and it is almost always the village labourers who don't get their entire wage. Estimates made during phase 2 must factor this during their planning.*

Over three-fifths (61%) of the respondents reported benefitting from the Entry Point Activities. A larger share of women (65%) have reported being benefitted from the EPAs. This may be attributed to the fact that some of the EPAs are more useful to women than men:

- The Community Halls are often used as a common production center where women weave and make their products (in comparison, men would be using it primarily during meetings which are infrequent).
- It is usually women who get water for home, and the presence of closer, newly constructed ringwells and tubewells reduces their drudgery and provides more time for economically productive works.
- Women are also typically more affected by a lack of proper toilets. Construction of new toilets has thus been especially useful to them.

Construction of community halls has been reported to be one of the most successful EPAs. They are being used as a place to conduct village level meetings (previously most of these meets were conducted in the village headman's house or in makeshift settings), used as a venue for social functions such as marriages and festivals and also as training and production centers for livelihood trainees.

Two-fifths (39%) of the respondents said they did not benefit from the EPAs. This is most likely since all of the EPAs have not been completed. As highlighted in the Microplanning section, many of the EPA needs identified in the microplan are supposed to be fulfilled by other line departments. None of the villages received any support from any other department. This is a major gap. Engaging other line departments is a major challenge as it involves coordination with a number of agencies. This process is riddled with red-tape and a lack of incentive for other departments in what they may perceive as "a forest department project".

Impact

The revival and formation of JFMCs and EDCs has had had one of the most significant impacts within the project: winning the trust of the community and mobilizing them for forest conservation efforts.

Almost all respondents reported that they trust the Forest Department. This outcome would have been unimaginable just 3 years ago. The villagers reported increased trust due to the department's active involvement and support for the new developmental activities (EPAs). Of those who reported increased participation in forest conservation efforts, 99% attribute it to the project activities. As the feasibility study suggested, most other line departments are reluctant to visit these villages due to their remoteness and inaccessibility. The forest officials were some of the few government representatives that frequented the village. *The Microplanning process and the EPAs have helped the Forest Department transition into a more 'developmental' role, a change that addresses the needs of the community as well as their relationship with the department.*

The functioning of the JFMC/EDCs put a larger number of people (especially the executive committee) in a decision making role. This is one of the aspects that can potentially improve the capacity of the villagers in taking ownership of their village's development. However, this has been limited owing to the lower participation levels in the executive committee meetings. The pattern of 3-4 key members being involved in the decision making process remains. *At the very least, the executive committee members need to go through a capacity building exercise to equip them with the confidence and tools to make effective decision in a participatory manner.*

Sustainability

In terms of sustainability, the current improvement in relationship has been a function of the level of engagement between the Forest Department and the communities. This has primarily been facilitated by inflow of funds for developmental activities. Once the funds stop, the engagement between the parties may drastically reduce. While the improvement of the relationship is expected to remain a lasting impact, it is still not completely cemented. As long as the Forest Department operates in a developmental capacity, this relationship can be expected to improve. Forest department also needs to find more ways to engage with local communities on a recurring basis on matters of mutual interest.

4.3.2.2 Community Firewood Plantation

Relevance

In line with the project's goal to reduce community dependence on forests and manage forests with a participatory approach, firewood plantations were made in 159 villages. These plantations aimed to address the age-old problem of illegal firewood extraction by the forest fringe communities. The problem arises since forest villages are either remote, not well connected with infrastructure or in most cases both. This leaves illegal extraction of firewood from the nearby forests (which are mostly reserve forests and protected areas) as the only major source of fuel. This leads to a variety of problems:

- Firewood extraction without following norms and keeping sustainability in mind is one of the major sources of deforestation.
- Villagers spend a lot of time and effort walking for many kilometres every day collecting firewood. They may have to carry up to 20 kgs in one time.

- For those who have no other source of income or their primary occupation doesn't let them earn sufficiently, selling illegal firewood becomes a means of supplementing income.
- Considering the rich wildlife of Assam, constantly venturing into the forests is a hotspot for man-animal conflict. This is especially true for areas close to elephant corridors. This has resulted in death, loss and trauma on both sides.

The problem was previously being addressed simply by trying to fine and punish the villagers. As the feasibility report mentions, this "guards and guns" approach is all but ineffective. It is impossible to monitor fuelwood extraction constantly, and also unfair to villagers since previously most had not been provided with any major alternatives. Biogas is an option, but it can rarely meet the total requirement.

In light of this pressing matter, fuelwood plantations are currently relevant. However, it is very likely that their relevance will reduce within a decade as national schemes for providing LPG reach these villages. This is something the project must remain cognizant of as it moves into Phase 2. Under this sub-component, the project has done 8,473 Ha of firewood plantation in 159 JFMCs, out of which the survey touched 31.

Efficiency and Effectiveness

JFMCs planted 8,473 ha of firewood saplings which consists of at least 17,000,000 saplings (@2000/ha). The JFMC plantation activities generated employment around 2,54,000 person-days. Participation of women in the plantation activities was found to be 40 – 60 percent (across the JFMC plantations as well as departmental). The survey found that uniform norms for plantations were mostly followed while creating the plantation. The plot area, type of species used and land preparation activities were largely consistent. On average, the survival rate of plantations seems to be 70%, though there is a lot of variation in this rate across divisions. This rate was mostly measured by "ocular estimation" by the department, which means estimating purely by observation.

It was found that the effectiveness of plantations depended on the following factors:

1. Regular weeding: owing to good soil fertility of Assam, weeds need to be removed regularly (3-4 times per year). Without removal, their growth is extremely fast and impedes growth of intended species. All surveyed divisions reported timely weeding for year 1 and 2, which has resulted in the currently high average rate of survival. However, practically none of the plantations we visited had weeding done in 2017-18. While all divisions received weeding funds for the first two years, fund release for the last year was subject to status and success report of the plantation from each divisions. This appraisal of the plantations was to be done by the Circle in-charge and the DFOs. However, a number of divisions failed to comply with this procedure resulting in lack of funds in the last year. This not only is a barrier to success for the plantations, it also makes accurate measurement of survival rate difficult, so the figure of 70% survival rate may be somewhat higher or lower.
2. Fencing: The lack of provision for fencing has been a concern reported in every single interaction with the forest staff. This has been the second major barrier to success. Fencing has been a major gap, since it is required to ward off cattle and basic biotic pressure. Cattle pressure is the larger issue. Most JFMCs are motivated enough such that most of their members don't let their cattle graze in the plantation areas. However, this accountability cannot be extended to the neighbouring villages who leave their cattle for grazing within the plantations. *The next phase needs to have a provision of fencing for all plantations on the entire boundary.*
3. Cooperation from JFMC members: this factor has been one of the key enablers for the success of the plantation. Most of the villagers have been mindful to not trespass into the plantations, and this has been especially facilitated by the JFMC presidents. The reason for this is 2 fold:
    a. Villagers are now aware of the effect of unchecked extraction of forest resources. After the activation of JFMC and the conversations arising from it, they have developed a

sense of consequence when it comes to taking from the forest. This was one of the findings from the focus group discussions.

b. The developmental activities done under EPAs have brought a lot of relief to the villagers. Community halls, water sources, forest roads etc. have been a welcome addition to the otherwise sparse village infrastructure. *This has resulted in a symbiotic relationship: the villagers feel supported by the department, and in turn help them to preserve the forests*. The plantation activity itself generated some income for them, thus adding to their feeling of being supported.

The evaluation found two unique cases that are worth noting:

- As highlighted before, a lack of fencing is a major barrier to plantation success. The villagers of South Hatibanda, Kokrajhar, collectively pooled in money and erected a proper fence made of logs and barbed wire by themselves. Their level of ownership is a result of the frequent visitations from the DFO who highlighted the importance of conservation and that they could play a key role in it. The villagers found this motivating and reported that this changed the mindset of many.
- In some of the plantations in Hailakandi, side nurseries were prepared right beside the plantations as a support structure. This resulted in very easy access to plants for vacancy filling, also proving to be useful when maintenance funds weren't received in 2017-18. This can be a significant enabler for plantations.

Impact

It must be noted that at this stage that the firewood plantations are too young to meet their primary objective: to be used as a source of fuelwood while minimising extraction from other forest areas. Most plantations are in year 3, it is estimated that they will mature between year 5-7. However, there are certain other outcomes and impacts achieved through the process of plantations.

- Engaging villagers in conservation activities: At least 1 member from 64% of the surveyed households took part in the plantation activity. This was a source of income for those engaged in the activity. This was also a conservation activity that engages a large number of households, thus is a vehicle for spreading awareness about forest conservation. A significant interest of the community has been generated about conservation and protection of their forests. While it is difficult to draw a direct link between the two, the plantation efforts have certainly played a part in this newfound interest.
- About 60% reported that once the plantations mature, their dependence will reduce "to some extent" or more. In our focus group discussion most reported that the amount of firewood they collect from the forest would reduce by 30% to 60%. However, there are 2 important exceptions to this:
    - In a few villages, the plantation was extremely far (such as 10 km in case of Baruncherra JFMC, Hailakandi). In these cases, the plantations are all but redundant. Villagers would much rather use the forest next to the community rather than walk 10kms to the plantations.
    - In villages where LPG gas has begun being distributed, most houses would be provided LPG by the time the plantations mature.
- While not a consequence of the firewood plantations, the distribution of subsidized LPG serves the overarching purpose: usage of firewood as a primary fuel has reduced from 96% to 73% of the households because of introduction of LPG through Ujjwala Scheme. Some amount of underreporting may account for the low figure of 73%, though the trend of firewood reduction is definitive.
- Nurseries raised under the project have been a key enabler in plantation activity and have also promoted indigenous species.
- Overall, following are the expected benefits to the villagers as reported:

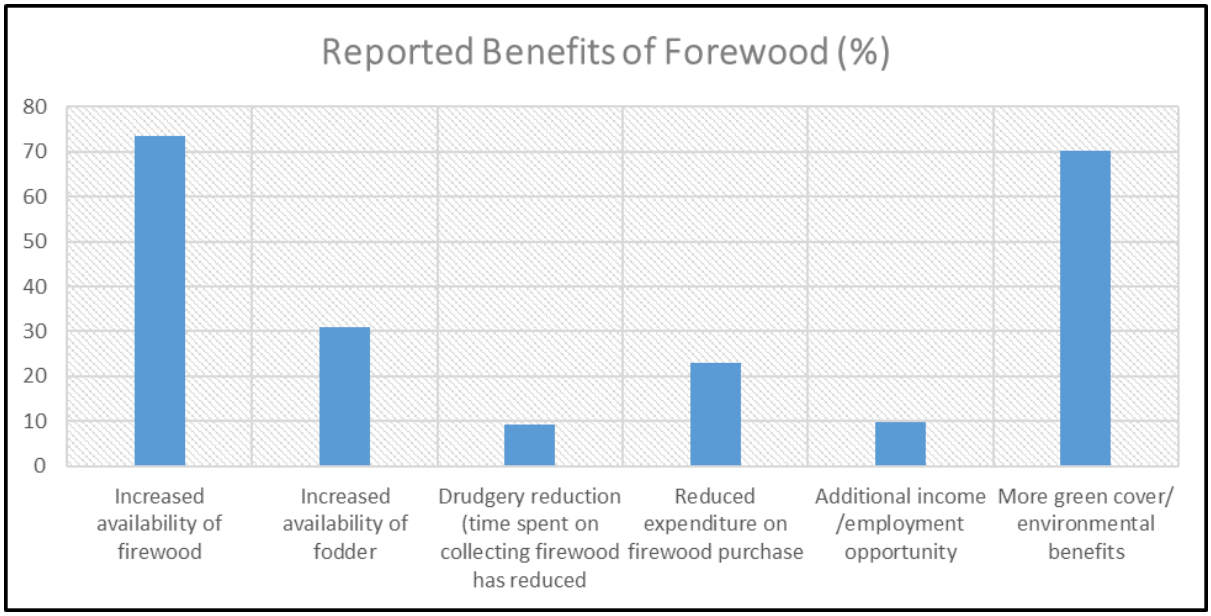

Figure 19: Expected Benefits of Firewood

The following table shows a cost benefit analysis for a 50 Ha firewood plantation in Christian Basti JFMC, in Lumding forest range under Nagaon South Division.

Table 11: General Conditions for Cost Benefit Analysis of Fuelwood Plantations

	General conditions	Units
1	Area (Ha)	50
2	HHs in JFMC	200
3	Number of trees planted	16,000
4	No of tree per Ha	500
5	Number of trees survived	12,000
6	Survival rate (%)	75

Table 12: Cost Benefit Analysis of Fuelwood Plantation at Christian Basti JFMC

	Costs and income	INR	€
1	Plantation cost per ha (including site preparation without fencing)	42,000	494
2	Weeding costs per ha and year	7,500	88
3	Harvest costs per ha (after 10 years)	7,500	88
4	Revenue per ha (after 10 years)	200,000	2,353
5	Net income per ha (after 10 years)	143,000	1,682
6	Total income (after 10 years)	7,150,000	84,118
7	Value of environmental services per ha/year	3,080	36
8	Total value of environmental services (10 years)	1,540,000	18,118

9	**Internal rate of return**	**35.8**	

Considering the above to be the norm in all cases, it is expected that the firewood plantations of 8,473 ha would provide an total environment value of Euro 153.51 million over the next 10 years. **This is 6.4 times the Phase 1 project expenditure of Euro 24 million**.

4.3.3 Biodiversity conservation and management

The activities under this sub-component were taken up under the Research sub-component of Component 1.

4.4 Component 4 - Adding value and opening markets/opportunities

Two major sub-components were implemented under this component, viz.,

- Income generation through livelihood trainings
- REDD+ preparedness

These are discussed below.

4.4.1 Supporting Income Generating Activities through livelihood trainings

Relevance

Forest fringe communities living around reserve forest areas are dependent on forests for their various needs such as fire wood, NTFP, fodder etc. The degree of dependence varies based on the socio-economic status of the household –economically weaker households depend more on forest for their economic needs compared to those who are economically stronger. Further, many areas are dominated by tribal communities who have a long-standing history of co-existence with forest & wildlife and are systemically more dependent on forest compared to their non-tribal counterpart.

According to the primary survey, 67% households in the project villages are below poverty line (BPL), these are the ones who are legally recognised as being BPL. Literacy levels of the project communities is also low, 20% are illiterate and 49% are below grade 8. Only 12% have completed up to grade 12 or above. This clearly indicates that the target communities are challenged in terms of their economic and social conditions.

The top two occupations are agriculture and unskilled labor. Most women are at least moderately proficient in traditional trades such as weaving, embroidery, bamboo crafts, etc., though a lack of market reach, time and basic business skills prevents them from capitalizing on it.

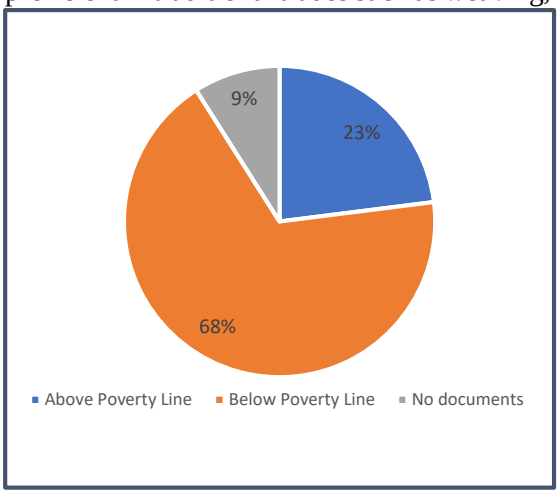

Figure 20 Economic Status of surveyed sample

One of the major objective of the project was "*to enhance the forest dependent communities' livelihoods and ensure conservation and sustainable use of biodiversity*", with the overall aim of enhancing their livelihood opportunities, promoting sustainable use of forest and biodiversity products and reducing pressure on the forests. This approach was taken keeping in mind the poor socio-economic condition of the forest dependent communities.

Potential and markets exist for a variety of forest and non-forest related products such as rubber, natural dyes, medicinal plants, seedlings, mushroom

cultivation, handmade clothing and crafts but as the feasibility study found, these supply chains are weak and the actual producers earn very little of the total revenue generated. The low accessibility of the forest villages is also a barrier that prevents villagers from accessing required resources readily. This scenario limits the amount of livelihood opportunities as well the level of income that one can earn.

In this context, the project aimed to empower these forest and fringe communities through a livelihood training program, supporting local production and sustainable use of forest and biodiversity goods. This activity was conducted by the Indian Institute of Entrepreneurship (IIE) and Rashtriya GraminVikas Nidhi (RGVN) who comprised COMPELO. The efforts spanned 95 JFMCs and 45 EDCs. This happened under 3 different programs and focused on imparting and enhancing the income generating skills of the participants.

Efficiency and Effectiveness

A total 6,710 forest villagers were trained under 3 type of programs across 140 JFMC/EDCs. This process included:

- Livelihood trainings for various skills for a time period between 1 week to 3 months (depending on the trade).
- Distribution of equipment or relevant raw material such as sewing machines, Jacquard looms, piglets for livestock, etc.
- Marketing support to connect goods generated through the trainings to the market.

Table 13: Livelihood Training Program at a Glance

Program	Male	Female	Total
Skill development Program [main skill training program covering 24 trades across 140 villages]	1,580	4,361	5,941
Entrepreneurship Orientation Program [2 day program to impart basics of entrepreneurship to 7% of those who completed their skill training]	275	152	1,302
New Product Development [advanced training to facilitate access to newer designs and products, imparted to 12% of those who completed skill training]	43	659	769

The trades were selected based on what would be most relevant to the community. Thus the focus was on traditional skills such as weaving, tailoring, livestock, bamboo craft etc (the list of all trades with number of participants can be found in the annexure 6.8). The main training component was covered under the Skill Development Program. The project chose trades based on traditional skills, market potential and resources accessible to the villagers. Thus the top three trades by number of participants emerged to be tailoring, weaving and livestock cultivation. The trainings were largely imparted within the village itself, or in case of smaller numbers at a central village in cluster of 3-4 villages. Apart from all the training programs, 23 exposure visits were conducted for 465 JFMC/EDC members. This was done for 6 trades which had high numbers of participants (list in annexure 6.9). Overall the trainings incurred an expenditure of Euro 1,605,938 against an allotment of Euro 1,849,336 (13.1% less than planned).

The evaluation found that in 59% households, at least one person has received training under the project. Owing to the choice of trades, a most the participants were women (73%). Apart from the main training program (SDP), additionally the Entrepreneurship Orientation Program (EOP) and the New Product Development (NDP) programs were also conducted.

EOP was done with the objective of engendering the entrepreneurial spirit by teaching basic business skills. All the EOP trainees surveyed reported developing a better understanding of the nuances of operating and setting up an enterprise. However, as this was optional, the EOP covered only 22% of the trainees (1302 out of 5,941).

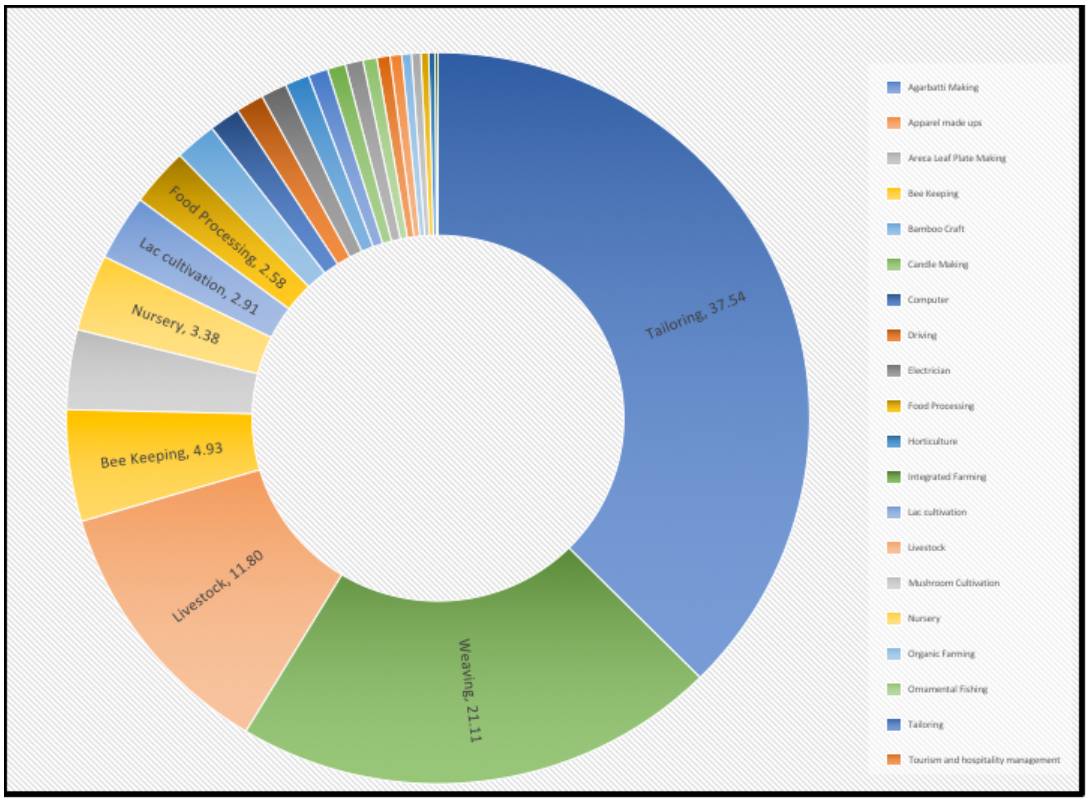

Figure 21 Distribution of participants across trades

Under the New Product Development, advanced training for 9 trades was provided. The NDP was an in-depth training specifically for new product development and designing. The objective of the training was "to access the latest trends and outlines of the product relevant to markets". This was done by exposing trainees to established business that they could emulate and learn from.

Trade	No. of Participants
Block Printing	9
Cane and Bamboo	25
SitalPati	30
Tailoring and Embroidery	230
Water Hyacinth	90
Weaving	327
Value addition on meat processing	42
Value addition on food processing	10
Bakery	10
Total	**769**

Table 14: Participants of New Product Development Training Program

Gender Focus

Women account for 73% of the total trainees since most trades chosen are primarily practiced by women. While it is too early to see a lasting impact on women due to the trainings, the preliminary findings are encouraging:

- 99% female respondents said they have a say in decision making at household level
- 92% of those involved in IGA reported increased mobility after the training intervention
- Women reported an increase (to a great extent) in their confidence (50%) and leadership skills (42%)
- Females contribution into household expenditure increased, though it is hard to identify exactly how much

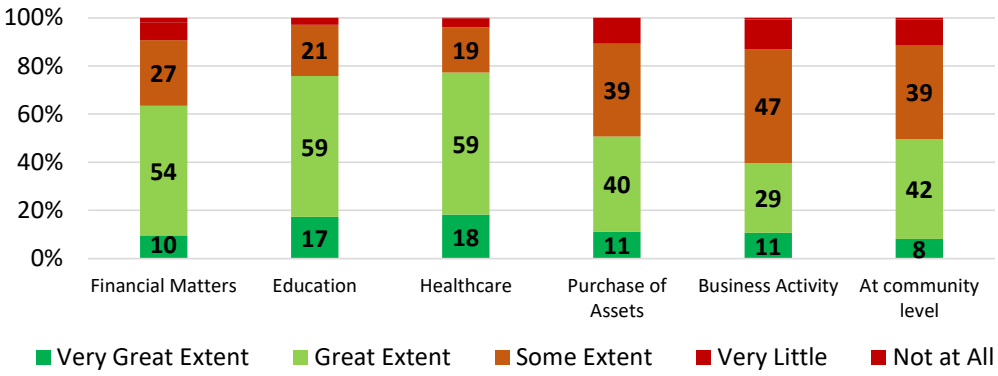

Figure 22: Extent of Female Participation in Household Decision Making

Since the trades were women focused, it meant that the mobilization efforts were focused on women who apart from enhancing their skills, got to go on exposure visits or travel out of their village as a part of the trainings.

However, despite the trainings and encouragement to experiment with new and improved products, very few units of the products made have got sold. It must be noted here that the Forest Department and COMPELO have launched Banashrity brand to sell products made by the artisans. Full-fledged production has not started yet, the products made during the training programs are currently being sold

at the Banashristy stores. Banashristy sales figures discussed in the case study highlights the need to strengthen the market linkages.

The low sales have not disappointed women participants. In most focus group discussions, the women proactively brought their products and displayed it with pride. Women reported an increase in confidence levels since they can now handle some of the household work of tailoring and weaving on their own.

The COMPELO's reach has been impressive in terms of the number of participants trained, and the quality of the training imparted given the short amount of time. The fact that traditional trades were chosen aided the program's effectiveness since there was already a skill base (especially in women) that could be built upon. The trainings have been effective in:

- Reaching a large number of participants
- Covering forest fringe/dependent villages across the entire geography of the state
- Wide selection of trades that could accommodate villagers' needs
- Ensuring a relatively uniform level of quality across the trades
- Generating products that are made of natural raw materials and are eco-friendly and biodegradable.

Technology and Markets

Machines and equipment was given to participants of certain trainings. These included:

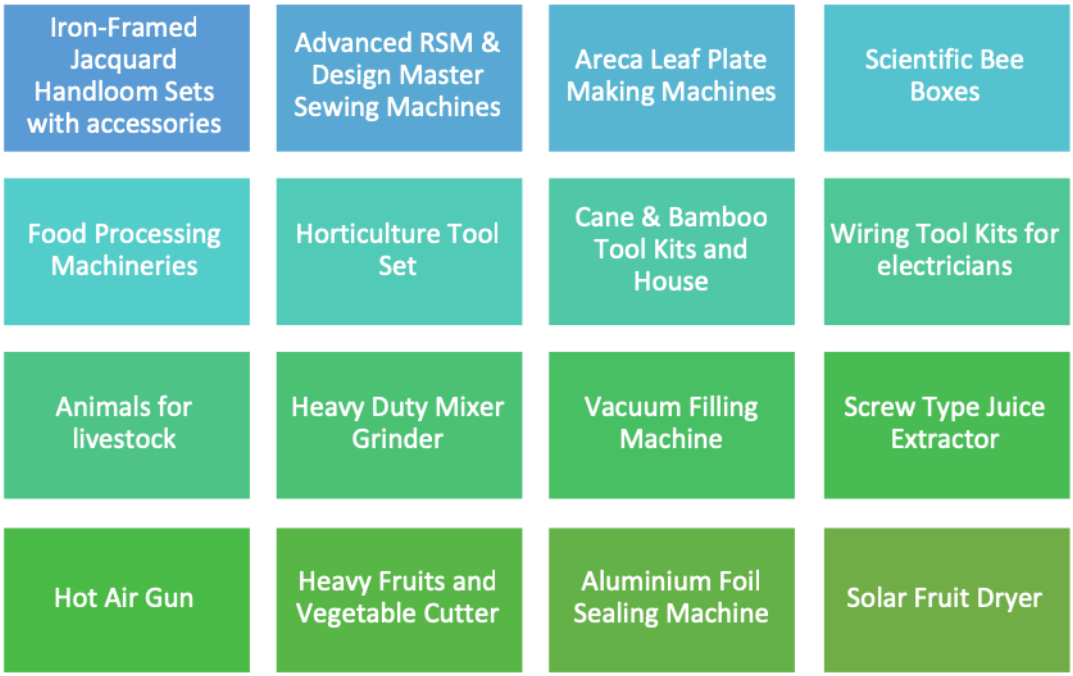

Figure 23: Machines and equipment distributed

In the villages surveyed, the Jacquard handlooms and sewing machines were observed. While the machines themselves are relevant and can potentially act as enablers, they have not been as effective as expected:

- The number of machines are not adequate. The survey found between 3-6 sewing machines and/or looms in a village. The number of machines given to communities were such that on average 1 machine was to be used by 5-6 beneficiaries for training. Since there are more people and not enough machines, this can create conflict for usage in the absence of a clear usage

protocol. Few villages implemented rotating timeslots for small batches, but this is not a consistent practice. As a result, in many villages, machines were used infrequently or not at all.

However, it must be mentioned here that in some villages around Kaziranga, the participant found the Jacquard handloom to be more efficient and some families invested between Rs. 30,000- 50,000 each to buy one for their family. This indicates that there is appreciation about the benefits of new technology and a sustainable market linkage could act as a multiplier both for production and family incomes.

- In many villages visited by the survey team, at least one machine was found to be needing repairs. The repairs are delayed since the locations are remote, thus further reducing the number of machines available in the villages. This also suggests that *there needs to be a clear process for reporting and enabling repairs.*

- In case of livestock distribution such as piglets and chicks, nearly all villagers reported that the animals provided had died. The reason was 2 fold:
    - These were not local species, thus did not have immunity to local diseases and were not able to have some of the local fodder
    - Piglets and chicks were given rather than adult animals. Young animals are much more vulnerable and weak, and being in a new ecosystem puts them at further risk.

  For the livestock distribution, the villagers recommended that adult animals be bought from the local markets. Adult animals are more expensive, but this will ensure a better probability of survival and a faster return for income.

- Many villages reported a bumper crop of mushrooms. However, as there was no post-harvest processing and no linkages to markets, the entire crop was wasted and not attempted again. *This yet again highlights the need to introduce trainings on products and trades for which market linkages could be sustainably established.*

Impact and sustainability

The implementation of this sub-component was originally envisioned over a 4 year period, however owing to the late commencement of the project, the implementation time period was reduced to less than half. The efforts thus undertaken have been effective in setting up a "foundation" to build on, though the long term impact on income and forest dependency is yet to be achieved.

All those who have been trained reported benefitting from the trainings, out of which:

- 76% have acquired a new skill
- 24% reported improvement in their existing skills

While all participants reported benefitting from the trainings, only 21% trainees are continuing with the trade as an income generating activity. Of those not continuing the trade after training, the following were the top 3 reasons (each respondent was allowed to give multiple reasons):

- 58% reported not having enough working capital
- 47% said they do not have the right tools and equipment
- 27% said there aren't enough opportunities in the village

Only 14% have reported receiving marketing support. However, the level of support varies and as the results indicate, it is inadequate at this stage. This is the critical missing link – both forward and backward market linkages need to be strengthened to activate the supply chains.

Only 4% have reported increased income as compared to before the trainings. The major gap here is the lack of a strong market linkage. Since the market reach is lacking, there is not enough revenue and

hence not enough encouragement or working capital to produce more. For most trainees, the production cycle stopped after the first round of products.

In order to ensure lasting impact from the trainings and a sustainable change in the beneficiaries' economic status, strengthening market linkages needs to be one of the key areas of focus in this component for Phase 2.

The study also found a dire need to train all beneficiaries in basics of business skills such as accounting, raw material procurement, cost estimation and sales. Most villagers were not able to articulate their profit per product, what was the material cost, whether they were selling at a competitive rate, how much capital it would take to sustain the business, etc. It is recommended that the EOP be done for all trainees as a part of the skill development training itself.

While this report largely concurs with the COMPELO report's identified areas of impact, it must be emphasised that all the indicators are currently 'work-in-progress'. The COMPELO report highlighted areas of impact such as market linkage, promotion of rural entrepreneurship and sustainable income generation amongst others. These key areas are yet to have the kind of impact that the project envisaged, though it must be noted that a foundation has been established to achieve them. Overall, the livelihood subcomponent has been successful in creating strong potential for livelihood improvement through its effective skill enhancement aspect. This is however only one link in the supply chain. In order to leverage the villager's market potential, the second phase needs to majorly focus on:

- Training on products and services that enables trainees to establish themselves independently. Many tailoring trainees suggested that training on daily use products would have enabled them to establish their own tailoring shops rather than being dependent on supplying to Banashristy which can take up their home furnishing products.
- Due to lack of strong market linkage, the beneficiaries haven't been able to capitalise on their skills. Apart from the obvious problem this presents in increasing income, a lot of beneficiaries noted that since they weren't practicing the skill regularly their proficiency may reduce over time. To that end, refresher trainings should be organised for the trainees to further improve their skills, this time accompanied with a module on basic accounting and business skills.
- A number of beneficiaries raised the issue of not receiving money from their products sold at Banashristy. The proceeds of the sales were to be transferred to the joint account of the JFMC/EDC and then from there to the individual beneficiary. While the money reached the joint account, the process often stopped here. Accountability at this stage is a challenge, further exacerbated by the fact that sometimes the beneficiaries themselves didn't know what exact amount to receive. This arises out of the previously highlighted problem of lack of basic accounting skills. The beneficiaries themselves are not clear about cost of manufacturing and selling price, how many of their pieces have been supplied, how many have been sold and at what price and what should be the precise amount to be received. As a means to counter this as well as make the training beneficiaries self-sufficient, it is strongly recommended that Self Help Groups (SHG) and Joint Liability Groups (JLG) may be formed. These will serve as independent units which can still function under the broader umbrella of the JFMC/EDC. These independent groups can supply directly to the COMPELO as well as to their other market channels and receive their sales proceeds directly. This has the additional benefit of eliminating any intermediary. Revival and formation of these legally recognized groups will allow them to be a part of the larger district and state federation of these groups and receive the requisite support from other government schemes/ programs and also make them credit worthy institutions from a formal financing perspective. This process must be done right at the start for the new villages that will be included in Phase 2 of the project.
- A lack of market intelligence of the trades has been a major barrier in realising the full benefit of the training effort. As showcased by the typical case of mushroom cultivation which produced high quality products but had no sale, there needs to be a better focus on marketable trades as well as a process which ensures high quality products. To that end, it is suggested that a "cluster" approach is taken for trainings. A market study may be used to choose

trades/products and a cluster of nearby villages can be trained for the common trade. This will facilitate better control on procurement & supply of raw material, stronger production control process, quality control, logistics control for finished products.

- Establishing forward and backward market linkages to activate the entire supply chain (sources of raw material procurement, transport facility to the market, financial disbursement channels)
- Setting up a system for quality control at a village or block level to ensure that the products being made are market ready and competitive
- While Banashristy is promising, it cannot accommodate the current need on its own. There is an urgent need to interface with more marketing channels, especially well-known ethnic brands which will provide much needed visibility to the products.

Simultaneous to the Impact Evaluation conducted by AFC-IDCG, the project commissioned an independent evaluation of the impact of the livelihood intervention by the OKD Institute of Social Change and Development, Guwahati. This evaluation was conducted over six weeks, covering a sample of 16 JFMCs and 13 EDCs. The OKD report largely concurs with the conclusions and recommendations of this report over the most important aspects of the intervention:

- The OKD report confirms that the shorter duration of the intervention (as compared to the planned duration) makes it unsuitable to see quantitative returns on income through the intervention, finding it "to be very short (one /one and half years) to find major outcome indicators in terms of quantitative changes in income".
- In terms of identifying barriers to increase in income, it mentions, "seed money/ start- up capital is a major challenge for starting and sustaining activity". This is consistent with our findings, where "lack of working capital" has been the most cited reason for not continuing with the skill as an income generating activity.
- On the topic of sustainability, the report mentions, "to ensure sustainability of the livelihood activities in small scale production it would be necessary to link the market institutions to serve these remote localities. The need is to explore the form of market mechanism which would ensure better return for the efforts put in by the beneficiaries of livelihood intervention process". This is consistent with our recommendation to strengthen forward and backward market linkages to ensure sustainable adoption of skills as an income generating activity.
- On general perception of the intervention, the report mentions that despite a lack of significant change in income as a result of these trainings, it has led to an increase in the mobility, confidence levels and sense of community for women working in groups and production centres. The report goes on to say that, "the intervention has been an effective way of building trust, motivation and group consolidation and stakeholder building process.". This is in line with the reported satisfaction levels found in this study, as all of the respondents mentioned that they benefitted from the trainings (as mentioned above.) The theme of increased trust and stakeholder building has also been a recurring finding for this study across both Component 4 as well as Component 3.

Case Study: Marketing through Banashristy

The Consortium for Microplanning and Enhanced Livelihood Opportunities (COMPELO) has established the Banashristy brand to provide market linkage to trainees under the project. Conceptualized as the marketing channel of the products made by members of the JFMCs/EDCs, Banashristy obtains finished products, sells them and transfers the proceeds to the respective JFMC/EDC joint account.

Two outlets of Banashristy have been opened- one at Assam State Zoo and another at the Hornbill Park, both in the last 6 months. Eleven more outlets are planned.

Being in its inception phase the Banashrishty brand isn't at a large enough scale to provide significant support. Only 18% trainees reported that their products are being sold under Banashristy. COMPELO also took the trainees for 17 exhibitions in the locally and nationally.

Thus, Banashristy is yet work in progress; while products have been put up for sale, not many have been sold. Infact, the total sale under the brand has only amounted to Rs. 340,504; of which 47% is through the outlets and 53% through exhibitions both state and national. The average sale under Banashristi has been Rs. 36,782 per month.

Sales proceeds have been transferred to the respective JFMC/EDC joint accounts; however in many cases these have not yet been credited into individual accounts.

One of the key benefits of a dedicated brand like Banashristy is that middle men and other intermediaries between the villager who produces it and the customer are largely eliminated.

It is expected that Banashristy brand will be strengthened and will continue to grow in the years ahead.

4.4.2 Climate Change and REDD+

There were no specific activities carried out directly focused on climate change. However, many tasks were accomplished to indirectly contribute to this endeavour. A Task Force has been formed to estimate potential value of ecosystem services and is functional. One of the major achievements under this component is the preparation of Assam State Biodiversity Strategy and Action Plan (2017 - 2030). Assam State Biodiversity Board in association with APFBC has carried out several studies and published the findings as - People's Biodiversity Register, Assam Biodiversity Portal, and several other publications. Many activities carried out under the EPA are related to climate change adaptation and the production of handicrafts under the skill enhancement as a brand of Banashristy, can be considered as green product. The project also created green employment for a large number of people by doing plantation and associated works in the project area.

Regarding REDD+ activities, the Forest Department selected two districts i.e. Nagaon and Majuli to pilot jurisdictional REDD+ and conducted some REDD+ readiness activities. Some of the important documentation and reports related to this component include:

Figure 24: REDD+ documents prepared under the project

Some posters on Carbon Neutral Majuli and Project/Programme Concept Note to Green Climate Fund (GCF) for the Development of a Jurisdictional REDD+ Programme has been prepared to develop a pilot jurisdictional REDD+ project in Nagaon. Though, some of the preparatory studies have been carried out for the readiness of the REDD+, and Low Carbon Strategies, some of the most important readiness/preparatory activities for the REDD+ readiness such as REDD+ desk, Creating reference levels (baseline survey), Identification of Drivers and Deforestation and Forest Degradation (D&D), Social and Environmental Impacts Assessment, Forest Carbon Ownership, Benefit Sharing Mechanism and Institutional Arrangement, Monitoring, Reporting and Verification (MRV) are missing in this phase. GIZ NAMA project is also in existence in the State but no coordination and synergy has been found to implement the REDD+.

A sum of Euro 84,844 was spent on activities for this sub-component against a budget of Euro 1,208,025.

4.5 Project Management

Assam Project on Forest and Biodiversity Conservation (APFBC) was designed as a Euro 60 million, 5 year intervention with a contribution of 10% from the Government of Assam.

The Assam Project on Forest and Biodiversity Conservation Society (APFBC Society)**,** was created by State Government of Assam as a Special Purpose Vehicle (SPV) registered under the Societies Registration Act, 1860. The Society has the mandate for planning, implementation, monitoring, coordination and management of all the activities proposed under the project.

The project is managed and implemented by a four-tier structure created from the APFBC and the Forest Department. This structure includes

- Governing Body, (GB) is chaired by the Chief Secretary to the Govt. of Assam (GOA). The GB is the highest policy and decision making body for the execution of the project goals and objectives. The GB is fully empowered to review project implementation, issue directions and make intra-component changes based on feedback for effective and efficient functioning of the Project.
- Executive Committee, (EC) is headed by the Principal Secretary to the GOA, Environment and Forest Department for overseeing implementation of the policies and programs approved by the GB and for achieving inter-departmental co-ordination to ensure non-duplication of management interventions.
- Project Management Unit, (PMU) comprises of a team of Forest Officers headed by Project Director in the rank of Addl. PCCF. Under authority of the PCCF and HoFF Assam, the Project Director (PD) exercises day to day executive control by establishing direct contact with concerned forest department staff. PD also coordinates with line departments, other partners including NGOs, public and private institutions under authority of GB/EC.
- Field Implementation Units, (FIUs) are headed by the DFOs of the concerned territorial / wild life or social forestry divisions hosting project activities with assistance of the Range Forest Officers and other subordinate staff of the Forest Department.

During the course of the project, both the Governing Body and the Executive Committee met 11 times. Also, during this period, two persons have been successively designated as the Project Director.

The original 5 year project period has been extended thrice:

- 3 months starting February 2017
- 1 year starting May 2017
- 1 year starting May 2018

Considering the slow start of the project, the overall project budget is now reduced to Euro 29.9 million. Of this Euro 3.9 m is the state contribution. Until September 2018, the 84% of the revised budget or Euro 25.07 milion has been spent. The figure below provides the financial progress of the project. It is worthwhile to note here that:

- The project size has been reduced by almost half
- The first two years of the project saw about 3% of the revised budget expenditure or 1.5% of the original budget expenditure
- 55% expenditure has been in the extended project period
- A change of leadership ie appointment of a new Project Director has resulted in expenditure of 76% of the revised project budget

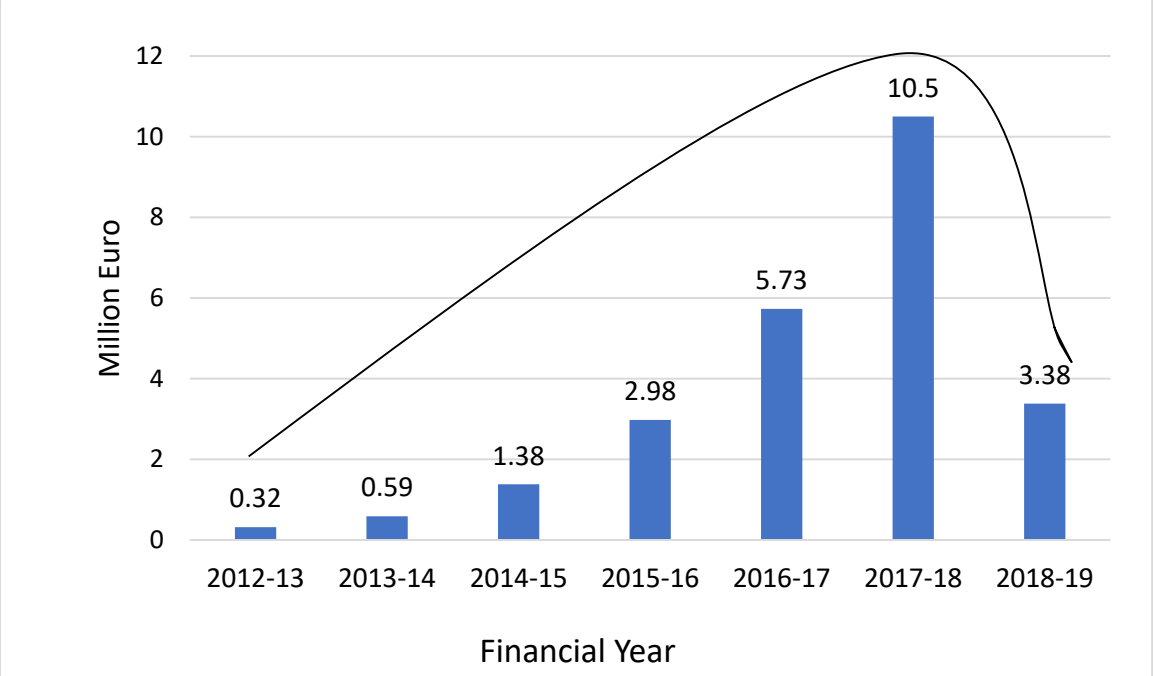

Figure 25: Financial Progress of the Project

The revised budget has also resulted in reduction in the size of the component budgets. No activities were taken up in component 2 (except the cost of the computers which were procured and charged to the head). A comparison of designed component budgets and actual expenditure till date is provided in the figure below:

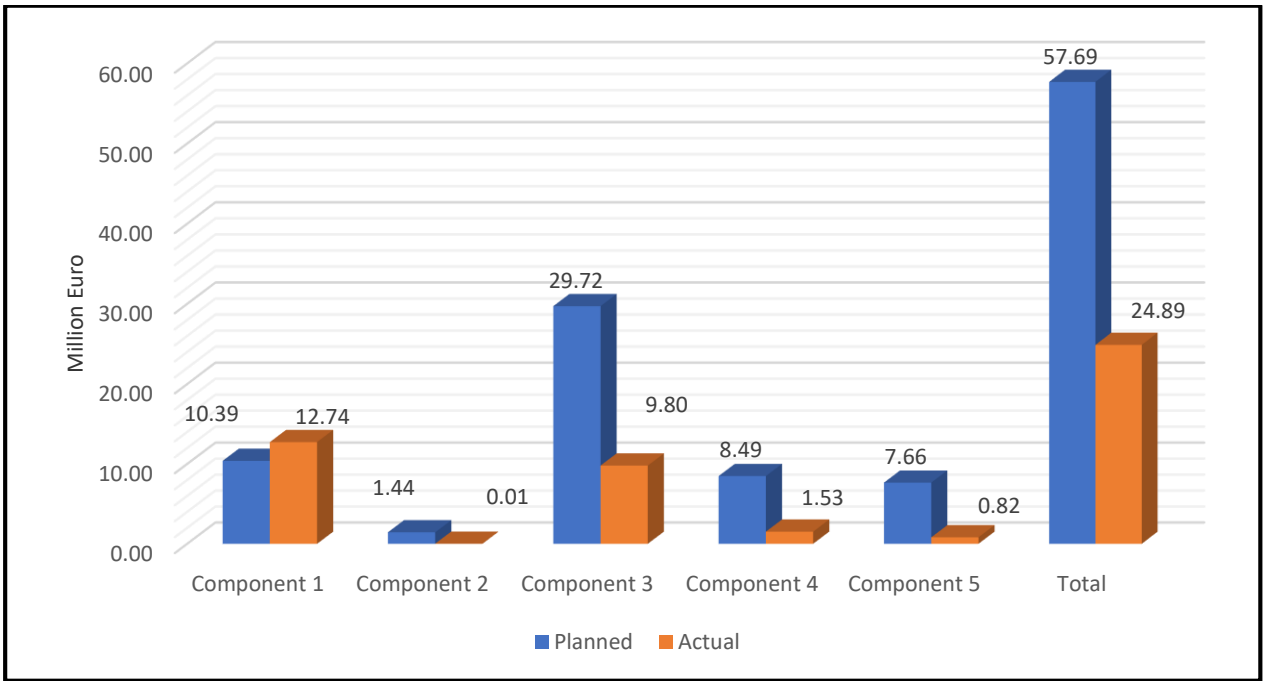

Figure 26 Planned vs Actual expenditure for each Component

Table 15 Planned vs Actual Costs for each Component

Component	Allocated Budget as per original Cost Sheet (Euro)	Actual Expenditure (Euro)	Actual Expenditure as % of Planned Expenditure
Component 1	10,390,107	12,735,238	122%
Component 2	1,441,017	14,164	0.9%
Component 3	29,715,962	9,799,306	40%
Component 4	8,485,861	1,525,065	18%
Component 5	7,659,361	815,650	11%
Total	57,692,308	24,889,423	43%

A major challenge in project implementation has been the number of activities that were designed to be taken up. The project lacked a comprehensive implementation plan that should have been prepared at the inception stage. An inception workshop where various project activities could be planned with the Forest Department was never organized. In fact, AFC-IDCG found many activities mentioned in the phase 1 Feasibility Report were not reflected in the Logical Framework and in many mentioned in both did not have a commensurate budget earmarked in the cost tables set out in July 2012, even at the inception of the project. The lack of the project implementation plan and corresponding costs resulted in lack of direction and low expenditures in the initial three years of the project.

As project implementation assumed greater seriousness after 2015, a number of activities were dropped while new activities were added considering the emerging requirements of the Forest Department. A summary of such changes is provided in the table below

Table 16: Component-wise Status of Implementation of Activities

Types of Actions	Components				Total
	1	2	3	4	
Total Activities Designed	39	2	61	16	**118**
Total Designed Activities Implemented	28	0	29	12	**69**
No. of activities completely implemented	26	0	28	12	**66**
No. of activities partially implemented	2	0	1	0	**3**
Total New Activities Implemented	13	0	6	0	**19**
Total activities dropped	11	2	32	4	**49**

Thus, 58% of the design activities were implemented (completed or partially) while 42% of the activities were dropped. Another 19 new activities were taken up to address the emerging needs of the Forest Department. A detailed listing of these activities is provided in Annexure 6.11.

Despite these changes, the project did not revise the project Logical Framework and the project cost tables appropriately. Both are live documents and are tools for project management and control. They also aid in more efficient evaluation of the project.

5.Conclusions and Recommendations

5.1 Conclusions

In general, the overall performance of the project since 2016 till date is satisfactory and the commitment of the Forest Department remained positive to achieve project results. However, due to the long duration of the project and changes in planned activities from its original design led to deviations in the project implementation. Similarly, the financial performance of the project also remained weak due to the limited absorption capacity of the FD in the initial years.

The survey found that there was no significant relationship between the proximity of communities and overall outcomes. For instance, Hailakandi and Dima Hasao West in the Southern part of Assam are hilly areas with especially poor transport infrastructure making their villages harder to reach. Some of the villages in the regions are also linguistically different from Assam in that Assamese is often not the first language, rather it's Hindi, Bengali or the indigenous tribal language (Boro, Dimasa, etc). Despite this difference, there is no noteworthy variation when it comes to outcomes: JFMC membership awareness was found to be 74% and 82% for Hailakandi and Dima Hasao West respectively, as compared to the overall average of 77%. Similarly, 78% and 75% respondents reported participating in the micro planning process as compared to the overall average of 64%. Participation in livelihood trainings was 64% and 52% as compared to the overall average of 64%. This trend of reasonable variation within the range of outcomes has no particular systematic pattern, nor is it specific to any division.

However, the one factor that did influence outcomes, skewing them in a positive direction, is the level of investment and enthusiasm in the individual communities themselves. For this reason, EDCs in the Eastern Assam Wildlife Division (Kaziranga region) showed better outcomes since a lot of their communities have had previous interventions and are active due to the regular engagement they have received over the years. As mentioned earlier, North Hatibanda and South Hatibanda JFMCs in the Parbatjhora and Kokrajhar divisions respectively had communities that were distinctively motivated (owing to reasons mentioned under sub-section 'activation of JFMCs/EDCs') and showed a higher level of ownership in activities. Villagers of South Hatibanda made fencing around their plantations by pooling in money themselves, and similarly villagers in North Hatibanda contributed to make small improvements in their community hall construction which went beyond the money allotted as per the approved estimate. In stark contrast, some villagers in Thaijuwari JFMC in Dima Hasao West said (in context of livelihood trainings) that they weren't especially interested in increasing their income, saying, "What will we buy with the extra money?". Their demand was instead to focus on getting solar panels in the villages as they weren't getting a regular supply of electricity. This varying level of interest has been corroborated by Forest Department officials as well, to the extent that many even suggested that this should be part of the criterion when selecting villages. This is a valuable input, especially meaningful in context of selecting beneficiaries who would be proactive and would benefit most from project interventions.

In terms of project achievement, the following conclusions are based on the 17 success indicators developed for the evaluation of the phase 1 project in consultation with Forest Department. The status of achievement of each indicator is categorised as

- achieved – where there are evidences to demonstrate achievement of the indicator;
- partially achieved - where there are evidences to demonstrate partial achievement of the indicator;
- not achieved - where there are no evidences to demonstrate achievement of the indicator;
- cannot be assessed – where there is inadequate data or evidence to draw a conclusion.

S.N.	Indicator/ Description	Status of Achievement
1.	Better Communication and Coordination between wings of FD	Partially Achieved
Construction of Forest Department Headquarters "Aranya Bhawan" has been an instrumental in ensuring better communication and coordination between different wings and departments of forest department. Aranya Bhawan has brought most Guwahati based forest offices (9 out of 15) under one roof which were previously operating in different locations across the city. Further, national and international exposure visits have also helped in developing uniform understanding about various core issues of forestry and wildlife management. The visits have also worked as platform for peer-learning through exchange of knowledge and experience among group members belonging from different wings of forest department.		
2.	Availability of standard procedures for planning and execution	Partially Achieved
Working plans and management plans were expected to bring uniformity in planning and execution of activities by the forest department including adoption of common procedures related to JFMC and EDC operations. The development of working plans in Assam has suffered from various procedural challenges, as a result out of the 32 Divisions, only 5 have operational working plans at present and none are approved till date. A JFMC and EDC operational manual has been prepared under the project to guide the JFMC/EDC members for carrying out different tasks mentioned in the project components of APFBC. The handbook is expected to guide them during managing the JFMC/EDC and administer their power and processes. However, no capacity building interventions were implemented under the project for JFMC and EDC members with respect to the operational manual.		
3.	Improved efficacy of forest department staff	Achieved
A range of activities planned and implemented under the project were aimed at improving the operational efficacy of forest department staff at all levels. The major activities include (i) capacity building (ii) development & operationalisation of forest management information system (FMIS) (iii) rehabilitation and enhancement of infrastructure (office and residential buildings, anti-poaching camps, heritage buildings) (iv) mobility interventions (roads and vehicles) etc. In terms of extent of implementation and impact of these activities, the capacity building interventions were limited to national and international exposure visits which provided knowledge and hands on experience on a range of forestry and wildlife management issues; while the infrastructure and mobility interventions have contributed significantly toward improving the field level infrastructure and mobility of forest department staff. However, the FMIS has not been able to contribute much as it is not being widely used in the forest department on regular basis.		
4.	Reduction in faunal mortality rate	Cannot be Assessed
Every year many animals die in Kaziranag National Park during floods. The highlands constructed in Kaziranaga were aimed at providing safe shelter to wild animals during floods. Highlands are raised earthen platform constructed within the natural habitat that can be used by animals to protect themselves from flood. The highlands constructed under the project are now covered with grass and is well integrated with the habitat, Rhinos and other animals can be spotted grazing on the highlands. As there were no floods in 2018, the utility and relevance of the highlands could not be ascertained.		
5.	Better access of local communities to the services and market centers	Partially Achieved
Interventions focused on improving surface communication such as construction and repaid of roads has benefited both forest department and communities living in the forest fringe areas. Wherever the forest roads are connecting or passing through human settlements, they have been extremely beneficial in improving the overall wellbeing of people in the villages by providing them with better access to market for their produce, healthcare, education and other essential services.		

6.	Better living and working conditions for FD staff	Achieved
Infrastructure improvement activities such renovation and construction of office buildings, residential buildings, anti-poaching camps etc has significantly contributed towards better living and working conditions of forest department staff. Many forest department offices and residences in the field were in an unusable state due to poor maintenance. The construction and renovation of such unusable buildings has given a new life to the forest department. The front line forest staff now has better offices, camps and residences with basic facilities like water supply and toilets. Apart from the unhygienic living condition, unavailability of toilets in camps have resulted in animal attacks on forest staff in the past, which is now expected to be minimised.		
7.	Improved sustainable forest management based on research results	Not Achieved
Research efforts under the project were originally planned across component 1, 2 and 3. However, many activities were dropped owing to a shortage of time and resources. A total of 6 research activities were undertaken under the project ranging across different topics. The hi-tech nursery established under the research component has proved valuable as it is now being used as a training tool to demonstrate best practices on how to grow high quality seedlings. While the other research interventions have resulted in publication/ reports. The use of research results by the forest department is very limited at the moment, as all the topics were not very relevant with respect to the business as usual of forest department.		
8.	Landscape level Strategic plans prepared and accessible by staff	Not Achieved
One of the objectives of the project was to develop landscape level integrated management strategies and identify priority areas of intervention, through the design of an Assam State level forest strategic plan, itself supported by a landscape level multisectoral assessment. The Assam State forest strategic plan was supposed to provide for general long term guidance and vision at Assam level, as well as the framework for site management and planning, at circle and division levels. However, these activities were not implemented under the project.		
9.	Degraded forest rehabilitated through afforestation	Partially Achieved
Six types of plantations were made in the reserve forests under the project. These plantations covered an area of 13,182 ha. These plantations were made over the last 3-4 years in 31 divisions across 9 circles. While the plantations have been raised, its outcome and impact can be ascertained only after 7-10 years.		
10.	Improved management of protected areas	Cannot be Assessed
The feasibility study proposed to introduce the Adapted Management Concept for implementation of management measures proposed in the plans. Since, there was no management plan available for implementation during the project period some planned and unplanned activities were taken up in national parks and protected areas viz. creation of artificial waterholes, grassland management, wetland management, invasive weed management, establishment of highlands. While the activities have been implemented and are deemed beneficial, it is very difficult to measure the impact on the ecology of the park in any meaningful manner due to the limited area under treatment/ intervention.		
11.	Community organizations involved in planning & executing forest management and village development intervention	Achieved
The project has played a very major role in involving community in forest management activities. More than 216 JFMC/EDC have been either revived or formed under the project. Over 8,473 ha of firewood plantation has been raised and maintained by 159 JFMC across the state. Over 151 micro		

plans have been made and entry point activities implemented. All these activities have had a positive impact on the communities residing around the reserve forest and protected areas. The communities share a very healthy relationship with forest department and are supporting conservation & protection efforts.

12.	Increased awareness amongst communities on biodiversity and its conservation	Partially Achieved

While JFMCs and EDCs have been formed or revived and engaged in forest management activities, there was no targeted action towards capacity building of JFMCs/EDCs on aspects related to biodiversity conservation. Despite that a large section of community members are aware about the need to conserve biodiversity. Whatever knowledge is available with the community is an outcome of their involvement in forest management activities or information attained from other sources, thus it cannot be completely attributed to the project.

13.	Increased availability of fuel wood from non-forest areas	Cannot be Assessed

Over 8,473 ha of firewood plantation has been raised and maintained by 159 JFMC across the state. All these plantations were raised in the last 3-4 years and the first harvest/thinning will be done after 5-7 years. Thus, there are no evidences to prove their utility at the moment. Since, firewood is the primary source of fuel for most households, the plantation activities are relevant and would help in reducing anthropogenic pressure on forest in future.

14.	Decreased anthropogenic pressure on forest	Partially Achieved

Over 8,473 ha of firewood plantation and training interventions were targeted at reducing anthropogenic pressure on forest by reducing dependence on forest for firewood, fodder and income generation (illegal logging, mining NTFP extraction etc.). While the plantations are raised, and training imparted, the impacts are yet to the ascertained as the plantations are too young to provide firewood and a large section of trainees are yet to start any income generation activity using the trainings provided. However, with continued efforts the expected outcomes are achievable in near future.

15.	Decrease in the number of man-animal conflict cases	Cannot be Assessed

As a result of depleting forest resources, man animal conflicts are on a rise. Apart from two awareness generation programs there was no activity in the project that directly targeted at reducing man-animal conflicts. The evaluation could not gather any substantial evidence on this aspect as not all cases are reported and documented appropriately by concerned authorities.

16.	Increased household income and livelihood options for forest dependent communities	Partially Achieved

Livelihood training were targeted at providing alternate source of livelihood and increased household income to forest dependent communities. The trainings have been effective and well received by the communities, however market linkages and effective production management including quality control is still work in progress. Creation of Banashristy brand and establishment of sales outlets has been a significant step, however sales volume are still very low. The trainees require continued support on skills upgradation, designing, production management, quality control, market linkages etc to make the intervention beneficial and sustainable.

17.	REDD+ readiness achieved	Partially Achieved

There were no specific activities carried out directly focused on climate change. However, many tasks were accomplished to indirectly contribute to this endeavor. Regarding REDD+ activities, the Forest Department piloted jurisdictional REDD+ and conducted some REDD+ readiness activities Nagaon and Majuli. Though, some of the preparatory studies have been carried out for the readiness of the REDD+, and Low Carbon Strategies, some of the most important readiness/preparatory activities at yet to be initiated.

Thus out of 17 success indicators,

- 3 are achieved
- 8 are partially achieved
- 2 are not achieved
- 4 cannot be assessed

All phase 1 activities were started late and many have not been completed yet, as a result they are yet demonstrate the expected outcomes and impacts. Thus, these activities needs to be consolidated in the second phase of the project with a more focused approach. **Further, in the given scenario it would be more appropriate to consider this evaluation as a mid-term evaluation of the project instead of final evaluation.**

Overall, the project has added tremendous value and the department has been proactive in leveraging it. There have been a number of tangible as well as intangible contributions of the project. The Forest Department had been resource constrained for many years now, lagging behind in receiving financial support as well as in its capacity to do a number of a tasks under its mandate. The project has been a major boost in addressing both the financial aspect and supporting the department institutionally. Perhaps the greatest value that the project has added is in terms of providing increased planning support and direction to the department. While undertaking the activities of the project, the department has been goal oriented as well as it refined and expanded the scope of activities. Aranya Bhawan becoming functional has been instrumental in increasing coordination within the wings of the department, thus increasing the department's effectiveness as a whole. This intervention alone that has brought immense value.

The commissioning of the Forest Management Information System is a major move towards making the department more systematic and tech-savvy, and is bringing forest related knowledge under a single accessible digital database for the first time. As it gets enhanced further in Phase 2, it has the potential to greatly increase the department's capacity to plan, execute and monitor nearly all of its work. The mobility intervention has filled a major gap in the department's capacity. Vehicles and transport facilities are a critical resource that the department needs to monitor the forests. The project intervention has addressed this need to an extent and has empowered the department to be much stronger in responding to the threats to Assam's biodiversity. This was further supported by the other activities that got incorporated adaptively such as construction of anti-poaching camps and toilets in remote areas. While it is difficult to attribute a direct link, the interventions have definitely contributed to the improved status of biodiversity conservation in the state.

Another factor that has majorly secured the forest resources is the improved relationship between the department and communities. This has been a result of conducting livelihood trainings and facilitating Entry Point Activities which has brought relief the to the remote forest villages. The result is the emergence of a symbiotic relationship between the department and the communities as they have received trainings, infrastructure and plantations through the department. The villagers are now grateful and motivated in ensuring that they don't encroach on the forests. More importantly, a sustainable shift has occurred in the mindset of the villagers who can now say that if they cut forests without regard to consequences, it can be disastrous for them as well as the environment. This is an essential conversation that needed to take place at the grassroot level to ensure that the direct users of the forests factor in sustainability in their usage. The COMPELO must be commended for executing their role in conducting the microplanning process which brought the communities together in a constructive manner and paved the way for the work that followed. This has been done under significant constraints of time.

As the project concludes, it has left the staff much more engaged and motivated, especially bringing relief to the lower level staff as their needs have been addressed at an unprecedented scale. The execution of the project itself is has been an exercise of learning and capacity building which puts the department in a much better state than before to execute such large-scale, externally aided projects.

5.2 Recommendations

Based on these key findings of the evaluation, the following recommendations are suggested for consolidation of Phase I and implementation of Phase II Project:

Project Management and Planning:

- Late project kick off delayed operationalization of project activities. Lack of pre-defined results framework and milestones hindered better and timely management of the project. Hence, it is suggested to design results based project management framework to allow better project performance in the future.
- Top down planning process was observed with limited participation of the beneficiaries affecting community ownership and accountability for sustainability of services. Suggest to practice decentralized participatory planning process allowing need based planning and implementation of the project.
- Limited participation of stakeholders in the overall project planning, implementation and monitoring constrained the engagement and ownership at all levels. It is highly recommended to ensure active and meaningful participation of all concerned stakeholders in all phases of the project.
- Lack of periodic reviews and reporting led to weak assessment of the issues, challenges and key leanings for improvement. It is suggested to ensure periodic participatory review and project monitoring to strengthen project efficiency and effectiveness.
- Low transparency was observed at the field level. To enhance better transparency, it is suggested to carry out social and public audits at different levels.
- The project lacked initial assessment of risks that could impede the project actions. It is suggested to assess risks and develop a mitigation plan to avert or minimize risks for project performance improvement.
- Lack ofneed assessment before planning and investment jeopardized the effectiveness of the project. Suggest to design resource based investment planning for optimizing results.
- The project was executed to ensure that there is a focus on empowering women, as a result of which 73% of the beneficiaries of the livelihood training component were women. This happened despite the fact that the project lacked a Gender Equality and Social Inclusion (GESI) Framework to address gender needs and empowerment of beneficiaries. However, to have a more clear and systematic focus in the next phase, development of GESI accountability mechanism and complaint redressal system is recommended to ensure the voices of women and marginalized communities are heard and addressed.

Forest Department Institutional Strengthening and Legal Reforms:

- Operationalization and sustainability of the equipment is critical to ensure sustainability of the services. It is suggested to identify a source of funding to cover and sustain the recurrent costs to minimize financial burden on the FD.
- Though legal reforms was envisioned as part of the project, due to complexities and process oriented nature of legal reform, no action was taken in this regard. This jeopardized the amendment process to address the need and the gaps. It is suggested to strengthen vertical and horizontal coordination for legal reforms.

Multi-level strategic planning:

- This component has been adapted and changed to fit within the capacity of the department at the time, and owing to lack of time in properly coordinating with all entities involved. The FMIS is a valuable output, though it needs to be completed as envisaged (data collection is in progress) and institutionalised in the working of the department via a formal order. Without this aspect, it wouldn't achieve it's intended impact. It is suggested to use the FMIS platform for regular reporting and monitoring of APFBC phase 2.

- While this approach was appropriate in Phase 1 owing to the limitations at the time, Phase 2 needs to execute these activities in a significantly more systematic manner. This can be ensured by being very mindful of the department's capability and needs at the start of the project and planning accordingly. This will avoid the need to make ad-hoc changes at later stages and instead execute the work with precision and in line with the plan.

Sustainable Forest Management

- This component lacked proper norms and coherence for various activities carried out at the implementation level. This component has huge potential to contribute to reduce the carbon footprint and provide green employment to the local people. To ensure effective implementation and results, more synergy and coordination is necessary with other similar initiatives such as – CAMPA, etc.
- The micro plan prepared at JFMC/EDC has been prepared after an extensive Participatory Rural Appraisal (PRA) exercise and has helped villagers come together to articulate and plan their needs. The major gap remaining here is a complete lack of involvement of the other line departments. While the line departments have been informed about their role in fulfilling requirements at a state level, initiative from their side is yet to start. It is suggested to establish an mechanism to ensure that these departments are engaged from the planning stage itself and their roles are clearly articulated within the microplan.

Adding value and opening markets/opportunities:

- Because of limited time and inappropriate trade selection for skills development actions, the project could not demonstrate encouraging impact on the lives of beneficiaries. It is suggested to assess the market and the supply chain as well as undertake cost-benefit analysis and consumption patterns to ensure the market and profits for the project beneficiaries.
- It is suggested to link the products with the wider market for commercial and large scale consumption. Various models including SHG/JLG, cooperatives etc. can be considered for promoting producer-centric approach.
- Explore market oriented skills (based on market intelligence/study) to ensure apprenticeship and certified/accredited TVET opportunities.

Process Recommendations for implementation of phase II:

Project Design

- Develop Project Logical framework with measurable indicators to assess before and after situation of the project.
- Develop realistic and achievable project activities based on the needs.

Start-up

- Ensure participation of stakeholders at all phases of the project to ensure ownership and accountability at all levels.
- Prioritize needs assessments at the beginning of the project e.g. equipment, infrastructure, policy/legislation, research, market analyses for forest and non-forest products etc. to ensure proper return on investment.
- Undertake proper resource assessment using cutting-edge technology e.g., use of satellite image for forest resource verification, ground trothing and planning.
- Systematize capacity building package based on the needs assessment and long-term plan.
- Conduct market analysis for forest and non-forest products to ensure relevance and effectiveness of livelihood trainings.
- Prepare baseline before Phase 2 starts

Implementation

- Develop detailed project plan and monitoring system including systematic reporting system to ensure proper project performance and appraisal.
- Maintain independence of procurement services from the project implementation wing to allow greater transparency and performance.
- Assess Technical assistance support in critical areas to allow quality of implementation and timely completion of project activities.
- Integrate a monitoring system based on satellite image interpretation and field assessments (forest inventory)
- Develop and ensure safeguards (social, economic, environmental and ecological) to comply with national and donor requirements.
- Explore REDD+ financing opportunities for climate mitigation measures.
- Design and implement climate adaptation and proofing activities for enhanced climate resilient development.

6. Annexures

6.1 Evaluation Framework

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
Component 1: Forest Department Institutional Strengthening and Legal Reforms					
1.1 Streamlining work procedures within the FD					
1. Streamlining procedures within Forest Department	To be considered in Phase 2		• Better Communication and Coordination between wings of FD • Availability of standard procedures for planning and execution		
2. Share experiences and staff between wings	To continue				
3. Adopt similar approaches for common procedures related to JFMC and EDC	• Adopt similar approaches for common procedures related to JFMC and EDC (JFMC Operational Manual)	• No. of manuals/ guidelines developed to ensure adoption of common procedures related to JFMC and EDC and its usage • Number of FD Staff aware about JFMC/ EDC manual		Primary & Secondary	IDIs and FGD with FD staff and document review
4. Harmonise Forest units management plans/working plans procedures for PA & RF.	To continue				
1.2 Capacity Building					
1.2.1 Develop Human Resource Management Information System (HARMIS)	• Developed Forest Management Information System (FMIS)	• Availability of a functional FMIS • Number of divisions using FMIS • Number of FD staff using FMIS	• Increased efficacy of forest department staff	Primary & Secondary	IDIs and FGD with FD staff
1.2.1.1 Conduct TNA/Identification of individual training needs	To be considered in Phase 2				

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
1.2.1.2 Implementation and use of HARMIS	• Operationalization and use of FMIS	• Number of reports generated by FMIS • Number of decisions taken by divisions/ senior officers based on FMIS		Primary & Secondary	IDIs and FGD with FD staff
1.2.1.3 Conduct Annual Individual Assessment (AIA)	To be considered in Phase 2				
1.2.1.4 Make digital portal for HARMIS to manage staff	To be considered in Phase 2				
1.2.2 Design In-Service Training Program	Dropped, (This activity was carried out under JICA project)	• Number of training programs conducted • Number of participants from forest department (disaggregated by grade/ category and gender) • Number of participants confirming enhancement of skill or knowledge from the training received (disaggregated by grade/ category and gender) • Number of participants confirming use of knowledge or skill obtained in their work activities (disaggregated by grade/ category and gender)		Primary & Secondary	IDIs and FGD with FD staff

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
1.2.3 Design and deliver refresher courses/programme including skills (eco-restoration techniques, agro forestry, forest and biodiversity survey and monitoring, legal knowledge, GIS and soft support infrastructure management) 1.2.4 New Skills and Tools training program	• Workshops/ trainings have been organized	• Number of refresher course modules developed • Number of external experts hired for development and/or delivery of refresher courses • Number of refresher course conducted using the new modules • Number of FD staff trained using the new refresher course modules (disaggregated by grade/ category and gender)		Primary & Secondary	IDIs and FGD with FD staff; document review
1.2.5 Impact assessment of training programs	• Experience sharing and training assessment were carried out	• Number of reports and presentations made		Primary & Secondary	IDIs and FGD with FD staff; document review
a. Project Orientation (New/Unplanned Activity)	• Project orientation program for entire forest staff up to Range Officer	• Number of FD staff participating in orientation program (disaggregated by grade/ category and gender)		Primary & Secondary	IDIs and FGD with FD staff; document review
b. Exposure Visit (New/Unplanned Activity)	• National and International exposure visits for FD staff	• Number of forest department staff attended exposure visits (national/ international) (disaggregated by grade/ category, location, subject and gender)		Primary & Secondary	IDIs and FGD with FD staff; document review
1.3 Rehabilitate and Enhance Existing Infrastructure and Equipment					
1.3.1 Improvement of Infrastructure/Surface Communication			• Improved efficacy of forest department staff		
1.3.1.1 Road Construction for critical priority access to selected sites	• Construction of new roads (86.96 Km)	• Total length of new road constructed (disaggregated by Division)		Primary & Secondary	IDIs and FGD with FD staff; document review;

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
		• Number of Divisions/FD staff reporting reduction in emergency response time • Number of Divisions/FD staff reporting improvement in wildlife crime detection and control • Number of Divisions/FD staff reporting improved dominance in the area of intervention • Number of Divisions/FD staff reporting improved operational efficiency including faster resolution of local issues • Number of communities and households benefitted due to construction of new roads	• Reduction in faunal mortality rate • Better access of local communities to the services and market centers • Better living and working conditions for FD		household survey & FGD with community
1.3.1.2 Road Repair/Improvement for critical priority access to selected sites	• Repair of existing roads (40 Km in each division) – Total 474.5 km	• Total length of existing road repaired (disaggregated by Division) • Number of Divisions/FD staff reporting reduction in emergency response time • Number of Divisions/FD staff reporting improvement in wildlife crime detection and control • Number of Divisions/FD staff reporting improved dominance in the area of intervention • Number of Divisions/FD staff reporting improved operational efficiency		Primary & Secondary	IDIs and FGD with FD staff; document review; household survey & FGD with community

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
		including faster resolution of local issues • Number of communities and households benefitted due to repair of roads			
1.3.2 Enhance the office and residential infrastructure for the Forest Department					
1.3.2.1 Construction of new office building (division & state) (20 Nos.) and Restoration/Improvement of existing office building (20 Nos.)	• Construction of new office building (division & state) (18 Nos.) • Restoration/Improvement of existing office building (114 Nos.)	• Number of new Office buildings constructed (disaggregated by type of residence and location) • Number of existing Office buildings repaired/ renovated (disaggregated by type of residence and location) • Percentage of FD staff reporting improved access to essential facilities		Primary & Secondary	IDIs and FGD with FD staff; document review
a. Anti-Poaching Camp (New/Renovation) *(New/Unplanned Activity)*	• Anti-Poaching Camp (17 New/69 Renovation)	• Number of new anti-poaching camps constructed (disaggregated by location) • Number of existing anti-poaching camps repaired/ renovated (disaggregated by location) • Number of Divisions/FD staff reporting reduction in emergency response time • Improvement in wildlife crime detection and control • Number of Divisions/FD staff reporting improved dominance in the area of intervention		Primary & Secondary	IDIs and FGD with FD staff; document review; observation

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
		• Number of Divisions/FD staff reporting improved operational efficiency including faster resolution of local issues • Percentage of FD staff reporting improved access to essential facilities			
b. Animal Enclosure (Repair) *(New/Unplanned Activity)*	• Animal Enclosure (19 Repair)			Observation	IDI with Assam State Zoo Official
c. Installation of Solar Panel (New) *(New/Unplanned Activity)*	• Installation of Solar Panel (41 New)			Observation	IDI with FD staff
d. Highland (New) *(New/Unplanned Activity)*	• Highland (33 New)	• Number of highlands created • Number of highlands being used by animals during flood • Percentage reduction in wild animal casualty due to flooding		Primary & Secondary	IDIs and FGD with FD staff; Observation
e. Toilet (New) *(New/Unplanned Activity)*	• Toilet (74 New/ 6 Renovation) • Construction of toilets in Anti-Poaching Camps	• Number of new toilets constructed (before and after) • Number of existing toilets repaired • Number of animal attacks reduced due to construction of toilets in APC • Percentage of FD staff reporting improved access to essential facilities		Primary & Secondary	IDIs and FGD with FD staff; Observation
f. Tubewell (New/ Renovation) *(New/Unplanned Activity)*	• Tube well (22 New/100 Renovation)	• Number of new tube wells constructed (before and after) • Number of existing tube wells repaired		Primary & Secondary	IDIs and FGD with FD staff; document review; Observation

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
		• Percentage of FD staff reporting improved access to essential facilities (improved water supply)			
g. Ring well (New/ Renovation) *(New/Unplanned Activity)*	• Ring well (4 New/1 Renovation)	• Number of new ring wells constructed (before and after) • Number of existing ring wells repaired • Percentage of FD staff reporting improved access to essential facilities (improved water supply)		Primary & Secondary	IDIs and FGD with FD staff; Observation
h. Water Supply (New/ Renovation) *(New/Unplanned Activity)*	• Water Supply (8 New/5 Renovation) (Zoo)	• Number of new water supply constructed (before and after) • Number of existing water supply repaired • Percentage of FD staff reporting improved access to essential facilities (improved water supply • Improved water supply in Assam State Zoo (including the benefits of improved water supply)		Primary & Secondary	IDIs and FGD with FD staff; document review; Observation
i. Watch Tower (New) *(New/Unplanned Activity)*	• Watch Tower (4 New)	• Number of new watch towers constructed (before and after)		Primary & Secondary	IDIs and FGD with FD staff; document review; Observation
1.3.2.2 Construction of new residential building (division & state) (100 Nos.) and Restoration/Improvement of existing residential building (80 Nos.)	• Construction of new residential building (division & state) (75 Nos.) • Restoration/Improvement of existing residential building (258 Nos.)	• Number of new residential buildings constructed (disaggregated by type of residence and location) • Number of existing residential buildings repaired/		Primary & Secondary	IDIs and FGD with FD staff; Observation

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
		renovated (disaggregated by type of residence and location) • Number of FD staff provided with new/improved residential facility			
1.3.2.3 Restoration/Improvement of Heritage Buildings (30 Nos.) (70 Years)	• Restoration/Improvement of Heritage Buildings (22 Nos.) (70 Years)	• Number of heritage buildings restored/ renovated (disaggregated by type of building and location)		Primary & Secondary	IDIs and FGD with FD staff; Observation
1.3.3 Purchase of equipment and vehicles to enhance the ability of forest department staff					
1.3.3.1 Purchase of Vehicles	• Purchase of equipment and vehicles to enhance the capability of forest department staff (1287 Nos.)	• Number of vehicles available (at state/division/range/beat level) (before and after) • Number of Divisions/FD staff reporting reduction in emergency response time • Number of Divisions/FD staff reporting improvement in wildlife crime detection and control • Number of Divisions/FD staff reporting improved dominance in the area of intervention • Number of Divisions/FD staff reporting improved operational efficiency including faster resolution of local issues (including use of JCB, dumper etc.) • Increased access to difficult terrain (for ATV)		Primary & Secondary	IDIs and FGD with FD staff; document review; Observation
a. Vehicle - Head office (20 Nos.)	• Vehicle - Head office (7 Nos.)				
b. Vehicle - Field office (90 Nos.)	• Vehicle - Field office (202 Nos.)				
c. Vehicle - Beat (2 wheeler) (300 Nos.)	• Vehicle - Beat (2 wheeler) (322 Nos.)				
d. Cycles (2,400 Nos.)	• Cycles (700 Nos.)				
e. Patrol Boats (50 Nos.)	• Patrol Boats (32 Nos.)				

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
1.3.3.4 Forest Equipment (tapes, compass, GPS etc.)					
a. Small Equipment (300 Nos.)	• Small equipment purchased	• Number of small equipment procured • Number of Divisions/FD staff reporting improved operational efficiency including faster resolution of local issues		Primary & Secondary	IDIs and FGD with FD staff; document review; Observation
b. High-tech/ Large Equipment (100 Nos.)	Dropped				
1.4 Enhance interaction with other departments and partners					
1.4.1. Provide incentives for workshops	• Organized inter departmental workshops • Incentive for interdepartmental workshops	• Number of departments participated in inter-departmental workshops • Number of joint actions/ initiatives taken • Total amount of fund utilised to provide logistics for interdepartmental workshops		Primary & Secondary	IDIs and FGD with FD staff; document review; Observation
1.4.2 Provide logistics for interdepartmental workshops – regional and divisional level	• Provided logistics for interdepartmental workshops	• Number of inter-department workshops conducted (with details of incentive)		Primary & Secondary	IDIs and FGD with FD staff; document review; Observation
1.5 Legal reforms, Assess and update, disseminate regulation					
1.5.1 Supporting project decision with jurist advice	Dropped				
1.5.1.1 Subcontract with Environment /forestry jurist body					
1.5.1.2 Establishing dissemination channels to inform forest department, other depts and people about the updated regulations					

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
1.6 Research and Development					
1.6.1 Constitute a multidisciplinary committee and identify key knowledge gaps in the sector	• Research advisory committee established	• Research Advisory Committee formed • No. of committee meetings conducted	• Improved sustainable forest management based on research results	Primary & Secondary	IDIs and FGD with FD staff; document review; Observation
a. Priority setting in consultation with local stakeholders and NGOs to identify key knowledge gaps in the sector	Dropped				
b. Establish formal links with key educational and research institutions in India and abroad	• Linkages established with educational institutions and NGO through Assam State Biodiversity Board A) NGO: Dolphin Foundation: Study on Fish Diversity in Bhramaputra River inside Assam to identify the threatened species, evaluate and determine their current conservation status and needs B) NGO: Aaranyak: Enhancing conservation efforts in Hollongapar Gibbon Wildlife Sanctuary C) NGO: The Orchid Society of Eastern Himalayas (Assam) Documentation of Wild Orchids of Assam D) USTM (University of Science Technology and Management):				

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
	Inventory and Documentation of Insect Fauna of Assam from existing entomological resources in association with University of USTM				
1.6.2 Manage calls for proposals on the topics identified in 1.6.1 (Assist in research project proposals writing for funding)	*Initiated but later dropped*				
1.6.3 Disseminate the results amongst the Assam stakeholders to ensure ownership	• Assam State Biodiversity portal developed for dissemination/publication of research papers	• Number of portals established • No. of publications		Primary & Secondary	IDIs and FGD with FD staff; document review; Observation
A. New/Unplanned Activity	Infrastructure for research • Silviculture Division a. 3 Orchid House and b. Preservation Blocks • Genetic Cell a. Hi-tech Nursery, root trainers b. Botanical Garden for rare and endangered species	• Number of infrastructure facilities established • Number of forest department staff confirming the use of infrastructure for research • Number of research studies produced at new infrastructure facilities		Primary & Secondary	IDIs and FGD with FD staff; document review; Observation
Component 2: Multi-level strategic planning					
2.1 Assam State level forest strategic planning policy					
2.1.1 Design strategic plan, database and GIS design, training			• Landscape level Strategic plans prepared and accessible by staff	Secondary	PMU
2.1.1.1 Strategic Plan design by subcontracted operator including hardware and software	• Procurement of hardware for multi-level planning a. Computer and Maintenance b. Additional Computing Equipment	• No. and types of computer and computing equipment procured			
2.1.2 Develop spatial database/GIS including remote	• Limited to preparation of working plans (3.1.1.1)			Primary & Secondary	IDIs and FGD with FD staff; document

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
sensing data (eg.: satellite images)					review; Observation
2.1.3 Implement information programme on forest strategic plan	• Assam Biodiversity Strategy and Action Plan prepared	• State biodiversity strategy and action plan available		Primary & Secondary	IDIs and FGD with FD staff; document review; Observation
2.1.4 Build and update knowledge bases "central repository of knowledge" of forest sector	• Bio-diversity Portal Developed • Digital People's Biodiversity Register Database Developed	• Digital portals accessible		Primary & Secondary	IDIs and FGD with FD staff; document review; Observation
3. Sustainable Forest Management					
3.1 Sustainable Forest Management by the Forest Department					
3.1.1 SFM in Reserved Forest area			• Degraded forest rehabilitated through afforestation		
3.1.1.1 Prepare/update Working Plans	• Prepare/ update working plans (21 prepared & submitted to GoI for approval)			Primary & Secondary	PMU/ FD/ External Consultant
3.1.1.2 Study and design pilot programs for sustainable management of production forest (TAs)	To be considered in Phase 2				
3.1.1.3 Commission wood balance study					
3.1.1.4 Design the revised integrate workplan					
3.1.1.5 Develop a tracking system for forest product					
3.1.1.6 Forest Rehabilitation		• Total area under ANR, Sal, MHW, NTFP and Block plantation • Total number of saplings planted and survival rate under ANR, Sal, MHW, NTFP & block plantation			
a. Assisted Natural Regeneration (ANR) (2,100 Ha)	• ANR (2,090 Ha)			Primary, Secondary & Observation	PMU/ Forest Dept. Staff/ JFMC
b. Sal Regeneration (2,000 Ha)	• Sal Regeneration (965 Ha) • Sal coppice regeneration (350 Ha) –New activity			Primary, Secondary & Observation	PMU/ Forest Dept. Staff/ JFMC

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
c. Mixed Hard Wood (MHW) (5000 Ha)	• MHW (4,697 Ha)	(disaggregated by location and species) • Reduction in area under degraded and open forest (baseline was 14,784km2) • Number of plantation sites showing envisaged growth		Primary, Secondary & Observation	PMU/ Forest Dept. Staff/ JFMC
d. Non-Timber Forest Products (NTFP) (5,000 Ha) and rehabilitation of degraded forests	• NTFP (4,380 Ha)	• Number of households reporting increase in NTFP availability • Reduction in area under degraded and open forest (baseline was 14,784km2)		Primary, Secondary & Observation	PMU/ Forest Dept. Staff/ JFMC/ House-hold Survey
e. Bamboo (2500 Ha)	• Covered under National Bamboo Mission				
3.1.1.7 Identify forest products chains and strategy for return of benefits	Dropped				
Prepare Inventory of Wetlands within Reserved Forest area of Assam (7,313 Ha) (New/Unplanned Activity)	• Prepare Inventory of Wetlands within Reserved Forest area of Assam (7,313 Ha)	• Detailed inventory of wetland available with the forest department with locations and maps		Secondary	Forest Dept. Staff
Block Plantation (New/Unplanned Activity)	• Block Plantation (700 Ha)	• Number of Ha. of block plantation		Primary, Secondary & Observation	PMU/ Forest Dept. Staff
Indigenous Nursery (New/Unplanned Activity)	• Indigenous Nursery (31 Nos.)	• Total number of saplings produced and used for plantation by Indigenous Nursery (disaggregated by plant species and nursery) • Total number of plant species grown in Indigenous Nursery (disaggregated by nursery) • Increase availability and accessibility of indigenous species saplings		Primary, Secondary & Observation	PMU/ Forest Dept. Staff

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
3.1.2 Improved Management Plans of Protected Areas			• Improved management of protected areas		
3.1.2.1 Update management plans for PA	To be considered in Phase 2	• Number of protected area with new/updated management plan • Number of divisions where protected area planning, and implementation of activities are done as per the approved management plan		Primary & Secondary	IDI with PMU/ FD Staff/ External Consultant
3.1.2.3 Hire national/ international consultancy/ experts for exploring opportunities for conservation and community reserves	Dropped				
3.1.2.4 Identification and rehabilitation of degraded critical habitats					
a. Desiltation (30 Nos.)	Dropped				
b. Artificial Waterholes (30 Nos)	• Artificial Waterholes (14 Nos)	• Number of artificial waterholes made (disaggregated by location) • Usage of artificial water holes by animals (increase in wildlife sighting around the area of intervention)		Primary & Secondary	Secondary data; FGD with FD staff; observation
c. Grassland Management (1000 Ha)	• Grassland Management (360 Ha)	• Total area of rehabilitated grassland (in Ha.) • Increase in area under grassland (in Ha.) • Increased wildlife sighting in the area of intervention		Primary, Secondary & Observation	Secondary data; FGD with FD staff; observation
d. Wetland Management (25 Nos)	• Wetland Management (4 Nos)	• Total area of wetlands rehabilitated (in Ha)		Primary & Secondary	Secondary data; FGD with FD staff

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
e. Invasive weed management (organic)	• Invasive weed management (organic) (190 Ha)	• Total number of locations identified for weed management • Total area covered under weed management activities		Primary, Secondary & Observation	Secondary data; FGD with FD staff;
Wetland Restoration through Ipomea Eradication (New/Unplanned Activity)	• Wetland Restoration through Ipomea Eradication (20 Ha)	• Total area covered under Ipomea Eradication (in Ha.)		Primary & Secondary	Secondary data; FGD with FD staff
3.1.2.5 Develop Adaptive Management for PAs	To be considered in Phase 2				
3.1.2.6 Develop database for Operation & Maintenance of plans for PAs	To be considered in Phase 2				
Awareness activities (New/Unplanned Activity)	• Publicity and awareness campaigns during festivals as Wildlife Week, World Environment Day and Vanmahotsav, etc	• Number of events organized		Secondary	PMU, Document review
3.2 Participatory Forest Management					
3.2.1 JFMC & EDC support and strengthening			• Community organizations involved in planning & executing forest management and village development intervention		
3.2.1.1 Project rooting through early JFM and ED people empowerment	• Create JFMCs/EDCs • Revive existing JFMCs/EDCs	• Number of JFMC and EDC having legal existence • Number of active JFMC and EDC • Number of JFMC and EDCs with role based sub-committees		Primary & Secondary	Forest Dept. Staff/ FGD with JFMC/ EDC, Household Survey
3.2.1.2 Prepare Micro Plans	• Prepared Micro Plans	• Number of JFMC and EDC with approved micro plan • No. of languages Micro plans have been translated in • Level of community participation in micro planning activity (disaggregated by gender)		Primary & Secondary	Forest Dept. Staff/ FGD with JFMC/ EDC, Household Survey

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
		• Number of forest department staff participated in micro planning exercise (disaggregated by rank/ grade and gender) • Number of external experts hired for micro planning exercise			
3.2.1.3 Entry Point Activities (EPA) (community and environment development, women empowerment)	• Planned and implemented Entry Point Activities though JFMCs/EDCs	• Number of JFMC and EDC received funds for EPAs • Number of JFMC and EDC implemented EPAs • Number of community members benefited from • EPAs (Ring-wells, toilets, market shed, community center, road, training, livelihood etc.) (disaggregated by gender) • Change in income as a result of EPA (only specific activities) (in percent) (disaggregated by gender) • Number of JFMC and EDC members reporting increased engagement with Forest Department Staff/ forest management activities (disaggregated by gender)		Primary & Secondary	Forest Dept. Staff/ FGD with JFMC/ EDC, Household Survey
3.2.1.4 Nursery for agro forestry and forest tree samplings					
3.2.1.5 Dairy Pilot Activity	Dropped				
3.2.2 Participatory Forest management: community					

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
forest rights and resources (CoFR) (FRA)					
3.2.2.1 Studies to link CoFR under FRA to Forest Dept. strategies					
3.2.2.2 Design policy and guidelines for FD and communities under CoFR area					
3.2.2.3 Test preliminary modalities and participatory vehicles on pilot sites					
3.2.3 Agroforestry and trees outside forests					
3.2.3.1 Assess opportunities for agroforestry and tree management outside forest - study through external experts	Dropped				
3.2.3.2 Take lessons from national and international initiatives - expo visit (2 national & 2 international)	• Exposure visits (2 national & 2 international) organized for taking lessons from national and international initiatives	• Number of national and international exposure visits organized • Number of FD staff participated in exposure visits (disaggregated by rank/grade, gender, location and subject/topic covered) • Number of FD staff reporting usage of learning from the exposure visit • Number of experience sharing or dissemination sessions organized post exposure visit		Primary & Secondary	IDIs with Forest Dept. Staff
3.2.3.3 Implement Pilots for testing AGF representative of Assam's landscape(15 nos.)	Dropped				

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
3.2.3.4 Implement large scale AGF through participatory approach (45 Nos.)					
3.2.3.5 Enhance productivity of recognized land under FRA					
3.3 Biodiversity Conservation and Management					
3.3.1 Assess state biodiversity strategy and action plan	• State biodiversity strategy and action plan prepared	• State biodiversity strategy and action plan available	• Increased awareness amongst communities on biodiversity and its conservation	State biodiversity strategy and action plan	State biodiversity strategy and action plan
3.3.2. Requirements of Biodiversity Strategy incorporated in Working and Micro Plans	To continue				
3.3.3 Bioresource mapping for Assam using database layers	To be considered in Phase 2				
3.3.4 Access and benefit sharing(ABS) of biodiversity - assess criteria for Assam	Study commissioned - To continue	• Number of studies commissioned		State biodiversity strategy and action plan	State biodiversity strategy and action plan
3.3.5 Establish people's Biodiversity registers	• Preparation of People's Biodiversity Registers	• Number of People's Biodiversity Registers prepared/updated • ABS criterion developed		Primary, Secondary	IDI with PMU & Forest Dept. Staff
3.3.6 Develop criteria for community intellectual property rights	• PBR and ABS developed				
3.3.7 Biodiversity information management	• Biodiversity portal developed • PBR digital database developed	• Biodiversity portal available • PBR digital database available		State biodiversity strategy and action plan	State biodiversity strategy and action plan
3.3.8 Establish local biodiversity management committee LBMC	• LBMC established	• Number of LBMC prepared		State biodiversity strategy and action plan	State biodiversity strategy and action plan
3.4 Implement sustainable fuel wood production strategy and promotion of alternatives					

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
3.4.1 Prepare study on fuel wood needs	Taken up separately in NARMIL project		• Increased availability of fuel wood from non-forest areas • Decreased anthropogenic pressure on forest		
3.4.2 Prepare fuel wood policy	To be considered in Phase 2				
3.4.3 Support plantation of fuelwood and fodder trees (20000 Ha.)	• Plantation of fuelwood trees (8,473 Ha.)	• Number of hectares of fuel wood plantation established (disaggregated by JFMC) • Percentage decrease in dependence on forest for firewood • Survival rate of plantation		Primary, Secondary, Observation	Forest Dept. Staff/ FGD with JFMC/ EDC, Household Survey
3.4.4 Identify and support opportunities through interdepartmental approach for fuelwood alternatives in EC/EPA	To be considered in Phase 2				
3.4.5 Identify and support opportunities for alternative energy sources					
3.4.6 Study, pilot and promotion of mini power grids (1)	Dropped				
3.5 Mitigation of conflicts including human/wildlife and land usage					
3.5.1 Analyze main causes and consequences of conflicts	To continue in Phase 2		• Decrease in the number of man-animal conflict cases		
3.5.2 Enhance capacities for conflict management/mitigation					
3.5.3 Improve monitoring of conflicts					
3.5.4 Develop procedures/tool kits for conflict prevention and mitigation	• Toolkit distributed	Number of toolkits distributed		State biodiversity strategy and action plan	State biodiversity strategy and action plan

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
3.5.5 Implement specific programmes targeted at conflict prevention/mitigation	To continue in Phase 2				
3.5.6 Implement public information programme addressing conflicting issues	• Awareness generation programs on mitigation of conflicts (2 programs)	• No. of publicity and awareness program/ campaign undertaken • No of villages/ communities targeted under the campaign • Number of interdepartmental meetings/ stakeholder meetings organized as part of the awareness work • Communication documents (leaflets, webpage, etc.) available to the general public		Secondary	Forest Dept. Staff
3.5.7 Station Rapid Response Teams at 16 sensitive locations	• 20 vehicles provided	• Availability of vehicles for rapid response • Number of FD staff reporting reduction in emergency response time			
3.5.7.1 Barracks, communication at sensitive spots	• Covered under infrastructure component (camps)	• Covered under infrastructure indicators (for camps)			
3.6 Explore opportunities and support pilot schemes to develop a private forest sector					
3.6.1 Exchange with other states, identifies species and products	Dropped				
3.6.2 Develop pilot scheme					
4. Adding value and opening markets/opportunities					
4.1 Support forest product/goods promotion and marketing					
4.1.1 Identification of site-specific income generating activities using forest products	• Identification of site-specific income generating activities using forest product	• Number of activities undertaken for identification of income generating activities using forest products	• Increased household income and livelihood options for	Primary, Secondary & Observation	IDI with PMU, FD staff and COMPELO/ FGD with community/

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
		• Number of site-specific income generating activities using forest product identified	forest dependent communities • Decreased anthropogenic pressure on forest		House-hold Survey
4.1.5 Assess and streamline existing marketing channels for forest products	• Assess and streamline existing marketing channels for forest products	• Number of people reporting better price for their produce (due to new market, processing, value addition etc.) • Number of activities undertakenfor assessing and streamline existing marketing channels for forest products • Brand created for products made by community (type and brand) • Unambiguous norms available for community access to forest products (NTFP)/ resources		Primary, Secondary & Observation	IDI with PMU, FD staff and COMPELO/ FGD with community/ House-hold Survey
4.2 Support IGA outside forests					
4.2.1 Identification of site-specific income generating activities outside forest	Identification of site-specific income generating activities outside forest	• Number of activities undertaken for identification of non-forest based income generating activities • Number of site-specific income generating activities using forest product identified (use micro-plan to study this, can be removed) (2 trades per JFMC) • Number of sales outlets established • Sales volume (current)	• Increased household income and livelihood options for forest dependent communities • Decreased anthropogenic pressure on forest	Primary, Secondary, Observation	IDI with PMU, FD staff and COMPELO/ FGD with community/ House-hold Survey

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
4.2.5 Study and pilot tourism at least 30 hot spots including providing improvements and infrastructure facilities	To be considered in Phase 2			Primary, Secondary & Observation	IDI with PMU, FD staff and COMPELO/ FGD with community/ House-hold Survey
Assess and explore potential for ecotourism	To be considered in Phase 2			Primary, Secondary, Observation	IDI with PMU, FD staff and COMPELO/ FGD with community/ House-hold Survey
Common Activities of Section 4.1 and 4.2					
4.(1/2).2 Organise target communities and build entrepreneurial and technical capacities		• Number of persons trained (disaggregated by type, activity, gender, duration) • Number of women reporting increased participation in decision making at family/ community level (empowerment) • Number of women reporting increased mobility (empowerment) • Number of households reporting increased spend on health, education, clothing, entertainment etc.	• Increased household income and livelihood options for forest dependent communities • Decreased anthropogenic pressure on forest	Primary, Secondary & Observation	IDI with PMU, FD staff and COMPELO/ FGD with community/ House-hold Survey
a. Entrepreneurship orientation programme	• Entrepreneurship orientation programme	• Number of entrepreneurship orientation programme organized (Disaggregated by Division/JFMC/EDC) • Number of people exhibiting improved knowledge about market condition, regulatory		Primary, Secondary & Observation	IDI with PMU, FD staff and COMPELO/ FGD with community/ House-hold Survey

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
		framework for business, access to finance etc. • Number and type of new enterprises established post entrepreneurship & skill trainings • Number and type of enterprises which were not able to sustain and would require additional support to make them sustainable (post entrepreneurship & skill trainings and reasons thereof)			
b. Skill development training programme	• Skill development training programme	• Number of skill development training programme organized (Disaggregated by Division/JFMC/EDC) • Number of people trained under skill development training programme (Disaggregated by Division/JFMC/EDC and gender) • Number of people acquiring new skill acquisition (Disaggregated by Division/JFMC/EDC and gender) • Number of people utilizing new/ upgraded skill (Disaggregated by Division/JFMC/EDC and gender)		Primary, Secondary & Observation	IDI with PMU, FD staff and COMPELO/ FGD with community/ House-hold Survey
4.(1/2).3 Support increased value addition through improved production and product processing					

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
a. New product Development	a. New product Development	• Number of new product development training/workshop organized (Disaggregated by Division/JFMC/EDC) • Number of people participated in new product development training/workshop (Disaggregated by Division/JFMC/EDC and gender) • Number of new prototypes developed		Primary, Secondary & Observation	IDI with PMU, FD staff and COMPELO/ FGD with community/ House-hold Survey
b. Value addition for income diversification and livelihood subsistence of fringe communities	b. Value addition for income diversification and livelihood subsistence of fringe communities	• Number of people adopting a new/ alternate/ additional IGA post training/workshop (Disaggregated by Division/JFMC/EDC and gender) • Number of people reporting increase in their individual/ household income		Primary, Secondary & Observation	IDI with PMU, FD staff and COMPELO/ FGD with community/ House-hold Survey
c. Design workshop and training of trainers (TOT) on IGA	c. Design workshop and training of trainers (TOT) on IGA	• Number of design workshop on organized (Disaggregated by Division/JFMC/EDC) • Number of people participated in the design workshop (Disaggregated by Division/JFMC/EDC and gender) • Number of trainers trained through TOT on weaving and tailoring (Disaggregated by Division/JFMC/EDC and gender)		Primary, Secondary & Observation	IDI with PMU, FD staff and COMPELO/ FGD with community/ House-hold Survey

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
		• Number of training programs delivered by ToT participants (Disaggregated by Division/JFMC/EDC and gender of the trainer) • Number of people trained by ToT participants (Disaggregated by Division/JFMC /EDC and gender)			
4.(1/2).4 Support identification and access to markets	• Support identification and access to markets	• Number of people reporting access to market and/or new market • Number of new sales outlets established • Number of new sales outlets selling products made by the project beneficiaries • Number of people reporting increase in sales volume as a result of market support activities • Number of exhibitions organized/ participated by producers		Primary, Secondary & Observation	IDI with PMU, FD staff and COMPELO/ FGD with community/ House-hold Survey
4.3 Estimate potential value of ecosystem services (including carbon and biodiversity)					
4.3.1 Establishing baselines, according to national guidelines, with focus on small scale forestry	• Afforestation and deforestation activities in clean development mechanism or in voluntary markets	• Reference levels (baseline survey)	• REDD+ readiness achieved	Primary & Secondary	IDI with Forest Dept. Staff
4.3.2 Training and Capacity Building of FD in designing		• Number of training program organized		Primary & Secondary	IDI with Forest Dept. Staff

Planned Activities and Targets	Implemented/ New Activities	Indicators	Success /Goal Indicators	Type of Data	Source
CDM/REDD+ carbon sink programme/ voluntary carbon trade programme, through eco-restoration including small scale forestry		• Number of FD staff trained			
4.3.4 Support CDM/REDD+ carbon sink program design and implementation	• Formulate procedure and guideline for new REDD+ mechanism • Establishment of a state-wide system for carbon stock monitoring • Study on carbon neutral Majuli • Study in Nagaon	• Number of studies conducted to get entry into the REDD+ • Number of activities carried out for the preparation of REDD+ project and carbon trading • Preparation for readiness phase - Selection of funding mechanism / modality and geographical coverage for REDD+ (FCPF, GCF, EURO REDD, etc.) and qualify for the further process • REDD+ project implemented		Primary & Secondary	IDI with Forest Dept. Staff
4.3.4. Conducting impact assessment of eco rehabilitation through carbon schemes	To be considered in Phase 2				

6.2 Household Questionnaire

Introduction & Disclaimer

My name is_____ and I am working for Insight Development Consulting Group (IDCG). Agriculture Finance Corporation (AFC) and IDCG has been contracted by Assam Project on Forest & Biodiversity Conservation (APFBC) for conducting evaluation of French Development Agency (AFD) supported APFBC. Your participation and unbiased responses for the study would be pivotal to the success of this initiative. This survey would take between 20-25 minutes to complete. The data/information shared by you for the survey will be kept confidential and will not be shared with third parties or used inappropriately by IDCG and / or APFBC. The information provided by you in this questionnaire will be used only for research purpose and will not be used in a manner which allows identification of your individual responses during the study or any time in the future.

Participation in this survey is purely voluntary, you have the right to reserve your views/opinion on specific questions in the questionnaire. Do I have your consent to proceed with the survey?

1. GENERAL IDENTIFICATION

Name of the Village		Panchayat	
Name of JFMC		Forest Range	
Block		District	
Forest Division			
Distance from District HQ (in KM)			

2. HOUSEHOLD INFORMATION

2.1	Name of the respondent					
2.2	Contact No.					
2.3	Category	General – 1 SC – 2 ST – Hills – 3 ST Plains – 4 OBC – 5 MOBC – 6				
2.4	Religion	Hinduism -1 Islam – 2 Christianity – 3 Buddhism - 4 Sikhism – 5 Other (specify) …….. 6				
2.5	Economic Status	APL	1	BPL	2	

2.6	Do you have access to agriculture land for cultivation (owned, leased-in etc.)	Yes	1	No	2	
2.7	If yes, area of cultivable land	Owned		……. (in acre)		
		Leased-in		……. (in acre)		

2.8 Family Roster *(Details of family members over the age of 18 years)*

Sl. Nº	Name (Start with head of the household in row 01)	Age (Years)	Sex (1=Male, 2=Female)	Marital Status	Education	Primary Occupation[23] (before PI)	Primary Occupation (after PI)	New IGA Started after project intervention	Avg. Monthly Income (before PI)	Avg. Monthly Income (after PI)
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										

[23] **PI** = Project Intervention; primary occupation is the occupation which contributes maximum to ones total income.

14										
15										

Code for Education:	1= Illiterate, 2=Literate (Grade 1-4), 3=Up to primary (grade 5-7), 4=Middle (grade 8-9), 5=Secondary (grade 10-11), 6= Higher Secondary (grade 12 and above), 7= Graduate, 8=Post Graduate, 9= Diploma/ITI, 10=Informal Education in Madarsa
Code for Occupation:	1=Agriculture, 2= Skilled Labour, 3= Unskilled Labour, 4= NTFP Collection & Sale, 5=Self Employed (artisan, manufacturer etc.) 6=Study/Student, 7=Housewife (not involved in any economic activity), 8= Unemployed, 9= Government Employee, 10= Private Employee, 11=Pensioner, , 12= Too old/Unfit for Work, 13=Handicap 14= other
Code for Marital Status:	1= Married, 2=Unmarried/single, 3=Widow, 4=Widower, 5= Separated, 6=Divorced
Code for New IGA:	1=Agarbatti Making, 2=Apparel Making, 3=Areca Leaf Plate Making, 4=Bee Keeping, 5=Cane and Bamboo Products Making, 6=Candle Making, 7=Computer (software/hardware work), 8=Driving, 9=Electrician, 10=Food Processing, 11=Integrated Farming, 12=Lac cultivation, 13=Livestock Rearing (All), 14=Mushroom Cultivation, 15=Nursery, 16=Organic Farming, 17=Ornamental Fishing, 18=Tailoring, 19=Tourism and hospitality management, 20=Sitalpati product making, 21=Water Hyacinth product making, 22=Weaving

2.9	If Female member is the primary income earner, categorise her as	Single	1
		Widowed	2
		Divorced	3
		Separated	4
		Abandoned	5
		Married but husband economically inactive due to illness, disability or old age	6
		Married but husband has migrated out and does not support economically	7
		Married but husband is unemployed	8
2.10	Does the female member suffer from any disability	Yes	1
		No	2

3. JFMC/EDC

A. JFMC/EDC Creation

3.1	Is there a JFMC/EDC in your village?	Yes	1
		No	2 (skip to 4.1)
		Don't Know	3 (skip to 4.1)
3.2	Are you a member of JFMC/EDC?	Yes	1
		No	2 (skip to 3.5)
		Don't Know	3 (skip to 3.5)
3.3	Are you a member of the executive committee of JFMC/EDC?	Yes	1
		No	2
3.4	What are your major roles and responsibilities as a member of JFMC/EDC?	Describe…… …..	
		No (If the person is not able to respond)	2
3.5	Is someone else from your family a member of JFMC/EDC?	Yes	1
		No	2
		Don't Know	3

B. JFMC/EDC Management & Participation

(This section is only for those who have responded "Yes" in 3.2)

3.7	How many JFMC/EDC meetings are held in a year?	Nos……	
		Don't Know	2
3.8	How many JFMC/EDC meetings have you attended in the last 1 year?	Nos……	If none, write '0'

			and skip this section
3.9	Do you take part in the decision making process of JFMC/EDC (i.e.; speak or present your views in the JFMC/EDC meetings)	Yes	1 (skip to 3.11)
		No	2
3.10	If No, why	General Body Member are not allowed to speak/ contribute	1
		My suggestion/ contribution is never considered	2
		No decisions are taken in the meeting	3
		The decisions are taken prior to the meeting, and we are just informed about it in the meetings	4
		Other (specify)_____	5
3.11	Do you see adequate representation of women in JFMC/EDC meetings? (minimum 33%)	Yes	1
		No	2
3.12	Do you see active participation from women in decision making process at JFMC/EDC meetings?	To a very great extent	1
		To a great extent	2
		To some extent	3
		Very little	4
		Not at all	5
3.13	How transparent is the decision making process in JFMC/EDC?	To a very great extent	1
		To a great extent	2
		To some extent	3
		Very little	4
		Not at all	5
		Don't Know	6
3.14	How transparent is the JFMC/EDC about their income and expenditure?	To a very great extent	1
		To a great extent	2
		To some extent	3
		Very little	4
		Not at all	5
		Don't Know	6

4. MICRO PLANNING

4.1	Is there a micro plan available for your village	Yes	1
		No	2 (skip to 5.1)
		Don't Know	3 (skip to 5.1)
4.2	If yes, is the micro plan approved by competent authority?	Yes	1
		No	2
		Don't Know	3
4.3		Yes	1

	Did you take part in the micro planning process for your village?	No	2 (skip to 4.7)
4.4	If yes, were you provided with equal opportunity to participate and present your views in the micro planning process	To a very great extent	1
		To a great extent	2
		To some extent	3
		Very little	4
		Not at all	5
4.5	Did you see adequate representation of women in micro planning process?	Yes	1
		No	2
4.6	To what extent did the front-line forest department staff participate in the micro planning process	To a very great extent	1
		To a great extent	2
		To some extent	3
		Very little	4
4.7	If no, why did you not participate in the micro planning process?	I was not in the village during that time	1
		I was not made aware about the micro planning process	2
		I had other important things to take care of	3
		I was not interested in it	4
		Other (specify)_____	5

5. Entry Point Activity (EPA)

5.1	Did your JFMC/EDC/village receive funds for EPAs	Yes	1
		No	2
		Don't Know	3
5.2	What is the status of EPA implementation in your village	Yet to start	1
		Completed	2
		Ongoing	3
		Don't Know	4
5.3	To what extent have you and your family benefited from the EPA undertaken under the project (APFBC)	To a very great extent	1
		To a great extent	2
		To some extent	3
		Very little	4
		Not at all	5
5.4	To what extent other people in the village would have benefited (directly & indirectly) from the EPA	To a very great extent	1
		To a great extent	2
		To some extent	3
		Very little	4
		Not at all	5
		Don't know/ Not able to comment	6
5.5	What are the top benefits of EPA to you and/or the community? (up to 5 benefits)	1.	
		2.	
		3.	
		4.	

		5.	

6. Trainings

6.1	Have you or anyone from your household participated in any training program organised under APFBC?	Yes	1
		No	2
6.2	If yes, what type of training was it? *(more than one response possible)*	Entrepreneurship Orientation	1
		Skill Development	2
		New Product Development	3
		Other (specify)	4
6.3	To what extent did the entrepreneurship orientation program help you in understanding the nuances of setting up and operating an enterprise? (CAPI: *Q6.3 is applicable only on participants of* entrepreneurship orientation program in Q 6.2)	To a very great extent	1
		To a great extent	2
		To some extent	3
		Very little	4
		Not at all	5
6.4	How did the skill training program help? (CAPI: *Q6.4 and 6.5 are applicable only on participants of* skill training program *in Q 6.2)*	Acquired a new skill	1
		Improvised an existing skill	2
		Other (specify)……	3
6.5	If skill training, please specify the trade?	Agarbatti Making	1
		Apparel made ups	2
		Areca Leaf Plate Making	3
		Bee Keeping	4
		Cane and Bamboo Products	5
		Candle Making	6
		Computer*#	7
		Driving*#	8
		Electrician*#	9
		Food Processing (technology)	10
		Integrated Farming*#	11
		Lac cultivation*	12
		Livestock Rearing (All)*	13
		Mushroom Cultivation*	14
		Nursery*	15
		Organic Farming*	16
		Ornamental Fishing*	17
		Tailoring	18
		Tourism and hospitality management*	19
		Sitalpati	20
		Water Hyacinth	21
		Weaving	22
		Other (specify)…….....	23
6.6	How did the new product development training help?	Commercialising existing/ new skill	1

	(Instruction for CAPI: Q6.6 and 6.7 are applicable only on participants of new product development training Q 6.2) *(Applicable on participants of apparel made up, cane and bamboo products, tailoring, water hyacinth, weaving training)*	Making products/ designs which have a better uptake in in market	2
		Product/ design diversification (product range)	3
		Better price for the products	4
		Other (specify)……..	5
6.7	How many new (only the ones that were not made earlier) products or designs are you making/producing after participating in the training program?	Nos……	
6.8	Are you or your other family members currently using the skills/techniques/ knowledge attained through the training program for income generation	Yes	1 (skip to 6.10)
		No	2
6.9	If No, why are you/they not using skills/techniques/ knowledge acquired from training program for income generation (Instruction for CAPI: skip to section 7 after this question)	There are not enough opportunities in the village/ area	1
		Do not have working capital	2
		Do not have necessary tools/ equipment	3
		It has to be a group work, cannot do it alone	4
		Skill needs further improvisation	5
		Inadequate marketing support	6
		Raw material supply is not streamlined	7
		Other (Specify)……	8

6.10	Have you or your other family members started using any new production technology or technique after participating in the training program	Yes	1
		No	2 (skip to 6.12)
		NA (for those who have not been trained on use of any new technology or technique)	3 (skip to 6.12)
6.11	If yes, please provide details about the new technology or technique used (for e.g.: use of renewable energy based dryers for drying fruits/vegetables)	Describe……	
6.12	Have you or anyone in your family been provided with any tools/ machine/ equipment and inputs for supporting your IGA	Yes	1
		No	2
		NA (for trades marked with # in Q 6.5)	3
6.13	If yes, what tools/ machine/ equipment and inputs has been provided for supporting IGA	Cane and bamboo tool kit	1
		House wiring tool kit	2
		Jacquard Looms	3
		Warping Drum	4
		Sewing Machines	5
		Bee Box	6

		Gator Rocking Sprayer (for lac)	7
		Factor Pr. 2x Gear Pro by Pass Loaper (for lac)	8
		Heavy duty Mixture Grinder	9
		Screw type Juice Extractor	10
		Sealing Machine	11
		Aluminium Foil Sealing Machine	12
		Hot Air Gun	13
		S.S Heavy Fruits & Vegetable Extractor	14
		Mini Vacuum Filling Machine	15
		Yarn	16
		Mate Making Loom	17
		Flattening Machine	18
		Bee Keeping Kit (Bee hives, honey extractor, bee vail, swarm catcher)	19
		Piglets	20
		Poultry	21
		Pig Feed	22
		Water Hyacinth Pasting Machine	23
		31 K Commercial Sewing Machine	24
		Water Hyacinth Weaving Set	25
		Jute machine	26
		Embroidery Machine	27
		Pico Machine	28
		Candle Mould	29
		Tool Kits Boxes	30
		Other (specify)……	31
6.14	To what extent have you or anyone in your family received marketing support under APFBC interventions? (including access to new market which was not available earlier)	To a very great extent	1
		To a great extent	2
		To some extent	3
		Very little	4
		Not at all	5
		Don't know/ Not able to comment	6
6.15	Have you or anyone in your family participated in any exhibition, trade fair or other similar events ? (record number of male and female family members)	Number of events attended within Assam	Male……. Female……
		Number of events attended outside Assam	Male……. Female……
		NA (for trades marked with * in Q 6.5)	7
6.16		Yes	1

	Is the product made by you or your family members sold under the *"Banashristi"* brand	No	2
		Don't know/ Not able to comment	3
		Not eligible to be sold under the brand	4
		NA	5
6.17	To what extent marketing interventions have helped in receiving better price for products	To a very great extent	1
		To a great extent	2
		To some extent	3
		Very little	4
		Not at all	5
		Don't know/ Not able to comment	6
6.18	To what extent have you or anyone in your family received support for establishing micro/ household enterprises under APFBC?	To a very great extent	1
		To a great extent	2
		To some extent	3
		Very little	4
		Not at all	5
		Don't know/ Not able to comment	6
6.19	Based on your experience, what can be done to further strengthen the existing interventions?	Provide working capital	1
		Train more people	2
		Develop more products/ prototypes	3
		Strengthen Market Linkages/ Marketing Support	4
		Strengthen Raw Material Supply Chain	5
		Provide tools/equipment/machinery and other inputs	6
		Create social institutions (SHGs/JLGs)	7
		More sales outlets	8
		More product certification	9
		Other (specify)……	10
6.20	How many unemployed family members from your household are now associated with some IGA as a result of APFBC interventions (excluding plantation activities)	Nos…….	
6.21	How many additional person day employment have been created for your household as a result of APFBC interventions? (excluding plantation activities)	Nos. of person days…….	
6.22	To what extent, your household income has increased as a result of APFBC interventions? (excluding plantation activities)	To a very great extent	1
		To a great extent	2
		To some extent	3
		Very little	4
		Not at all	5

7. Plantation (Only for JFMC)

7.1	Were you or someone from your family involved in plantation and plantation maintenance activities carried out by the JFMC in your village (including construction of cattle trenches, fencing, fire protection activities etc.)	Yes	1 (Skip to 7.3)
		No	2
		No plantation activity was undertaken	3
7.2	If No, why were you/they not involved in plantation and plantation maintenance activities (Instruction for CAPI: skip to 7.4)	I am not interested in doing that work	1
		I/we were not provided with any work	2
		Other (Specify)……	3
7.3	According to you what are the benefits of plantation activity undertaken in your village? (multiple response)	Increased availability of firewood	1
		Increased availability of fodder	2
		Drudgery reduction (time spent on collecting firewood has reduced)	3
		Reduced expenditure on firewood purchase	4
		Additional income /employment opportunity	5
		More green cover/ environmental benefits	6
		Other (specify)……	7

7.4	Which of the following fuel sources were used for cooking at your household before project interventions and what are being used now? (Ranking question) (Instruction for CAPI: If option 1 is not selected, then skip to 7.13)	Source	Before PI	After PI
		Firewood		
		Kerosene		
		LPG		
		Other (specify)……		

7.5	To what extent firewood plantation has reduced your dependence on forest for firewood requirements ? (including collection of firewood for own use and/or sale)	To a very great extent	1
		To a great extent	2
		To some extent	3
		Very little	4
		Not at all	5
7.6	If very little or not at all, please provide a reason for your choice and give suggestions for improvement (Instruction for CAPI: this question is linked to 7.5)	Reason……	
		Suggestion……	
7.7	If the reason is – "plantation is young", then to what extent firewood plantation will reduce your dependence	To a very great extent	1
		To a great extent	2

	on forest for firewood requirements? (including collection of firewood for own use and/or sale)	To some extent	3
		Very little	4
		Not at all	5
		Can't Say/ Not able to comment	6
7.8	If option 1, 2 or 3 are selected, please provide an estimate of reduction in terms of percentage. (for eg: if the requirement has reduced from 50 kg per month to 30 kg, then the reduction is 20%) (Instruction for CAPI: this question is linked to 7.5)	Average monthly requirement…….	
		% reduction in requirement……..	
7.9	Do you get adequate firewood from the plantation site to meet your daily firewood requirement?	Yes	
		No	
7.10	If No, how do you manage the deficit?	Collect from forest	1
		Purchase from market	2
		Use alternate sources (agriculture waste, cow dung cakes, kerosene etc.)	3
		Other (specify)…… ….	4
7.11	Are their specific norms available for collection of firewood from common plantation area ?	Yes	1
		No	2 (skip to 7.13)
7.12	If yes, are the norms properly followed and benefits equitably distributed among everyone (eligible people)	Yes	1
		No	2
7.13	If no, does it lead to some conflict among community members	Yes	1
		No	2
7.14	Are you aware about the need to conserve the forest and protect the wildlife	Yes	1
		No	2

8 Relationship Between Forest Department and Community

8.1	To what extent community members are involved in activities related to forest conservation and protection of wildlife (including protection of wildlife)?	To a very great extent	1
		To a great extent	2
		To some extent	3
		Very little	4
		Not at all	5 Skip to 8.5
8.2	How do you help forest department in forest conservation and protection of wildlife. Please give details of your major activities. (descriptive response)	1.	
		2.	
		3.	
8.3	Has the involvement of community members increased after inception of APFBC project	Yes	1
		No	2
8.4	If yes, can the increase in involvement be attributed to APFBC interventions	Yes	1
		No	2
		Can't Say/Not sure	3

8.5	To what extent has your trust in forest department increased in the past 3 years (after the project interventions)?	To a very great extent	1
		To a great extent	2
		To some extent	3
		Very little	4
		Not at all	5
		Can't Say/Not sure	6
8.6	To what extent illegal activities such as poaching and tree felling has reduced in your area after the project interventions	To a very great extent	1
		To a great extent	2
		To some extent	3
		Very little	4
		Not at all	5
		Can't Say/Not sure	6
8.7	To what extent human-wildlife conflicts have reduced in your area after the project interventions	To a very great extent	1
		To a great extent	2
		To some extent	3
		Very little	4
		Not at all	5
		Not Applicable (NA)	6
8.8	To what extent communities tolerance level towards wildlife has changed over the past 3 years?	People have become more tolerant	1
		No change	2
		People have become more intolerant	3
		Not applicable (NA)	4

9. Women Empowerment (for women respondents only)

9.1	How much is the female members contribution to the total household income in a year?	Before project intervention _____%			
		After project intervention _____%			
9.2	Do female member of your household have any say in decision making of household matters?	Yes	1		
		No	2 Skip to Q 9.4		

9.3	**If Yes, to what extent the role of female members have increased in decision making at household and community level?**					
Sl. No.	**Issues**	To a very great extent	To a great extent	To some extent	Very little	Not at all
1	Financial matters	1	2	3	4	5
2	Education of child	1	2	3	4	5
3	Health care of child	1	2	3	4	5
4	Purchase of assets	1	2	3	4	5
5	Business activities (related to IGA)	1	2	3	4	5

6	At community level events (Gram Sabha, SHG meetings etc)	1	2	3	4	5
7	Others…					

9.4	Are you or other female family members associated with any women-led micro enterprises/ business that are active in your area?	Yes	1
		No	2 Skip to Q 9.6
9.5	Has involvement in project activities like training, micro enterprise development, plantation etc resulted in increased mobility of female member of your family	Yes	1
		No	2
9.6	To what extent involvement in project activities like training, micro enterprise development, plantation etc has enhanced your self-confidence and self-esteem	To a very great extent	1
		To a great extent	2
		To some extent	3
		Very little	4
		Not at all	5
9.7	To what extent involvement in project activities like training, micro enterprise development, plantation etc has enhanced your leadership skills	To a very great extent	1
		To a great extent	2
		To some extent	3
		Very little	4
		Not at all	5
9.6 What should be done for social and economic empowerment of women of your village? (up to three suggestions)			

9.7	Are there any societal barriers that discourages women from participating in skill trainings?	Yes	1
		No	2
9.8	If yes, what are they?		

10. Roads

(only for villages which have been connected with Roads constructed or renovated under the project)

10.1	Is your village accessible by road throughout the year (all 12 months)?	Yes	1 (skip to 10.3)
		No	2
10.2	If No, for how many months in a year your village is not accessible by road and during which months ?	No. of Months……..	
		Name of Months……..	
10.3		Yes	1

	If yes, was your village accessible by road throughout the year, before construction or repair of road by forest department?		(End the interview)
		No	2
10.4	If No, for how many months in a year your village is not accessible by road and during which months?	No. of Months…….	
		Name of Months…….	
10.5	How has the road construction activity benefited you and other community members?	Increased access to healthcare services	1
		Increased access to educational services	2
		Increased access to markets for both inputs and outputs	3
		Increased access to public transport	4
		Increased mobility	5
		Strengthened livelihood options (increased income)	6
		Other (specify)…… ….	7

6.3 Focus Group Discussion with JFMC/EDC Members (including Executive Committee members)

GENERAL IDENTIFICATION

Name of the Village		Panchayat	
Name of JFMC		Forest Range	
Block		District	
Forest Division			
Distance from District HQ (in KM)			

Basic Demographic:

1. Number of Households in the Village
2. Population of the Village
3. Year of formation of JFMC/EDC in the village

Clarity on Objectives and Roles & Responsibility:

1. Are you aware of the purpose and objectives of the JFMC/EDC? If yes, please tell us more about your roles and responsibilities.
2. Have you attended any training/ workshop which informs you about the roles and responsibilities of JFMC/EDC? Do you need more trainings on this aspect ? any specific aspects that you would like to mentioned which needs to be addressed on priority basis.
3. Is it difficult to ensure active participation of community members (including vulnerable groups) in JFMC/EDC meetings (both general body and executive committee)? What can be done to ensure better participation?
4. Is there adequate representation of vulnerable groups in the Executive Committee of JFMC/EDC?
5. How are decisions made in JFMC/EDC meetings?
6. What kind of support have you received from forest department and/or other line departments for carrying out development activities in your village? Please give us some more details about the support received?

Micro-planning:

7. What do you want to say about the micro planning process that was carried out in your village ?
    - Was there adequate participation from different caste/category, religious groups, women and youth?
    - Do you find the micro-plan was relevant to the needs of your community? If no, what was not relevant?
    - How was the participation of forest department staff in the micro planning process?
    - What could be improved in the micro planning process?
8. Is there a copy of the micro plan available with your JFMC/EDC and Panchayat? Yes/No/Don't Know
    - Is the micro plan available in local language? Yes/No/ Don't know
        - If yes, how does it help you?
    - Has some other department provided support in implementation of development activities identified in your micro plan?
        - If yes, how did you manage co-ordination with other department?
        - If no, what can be done to engage/involve other departments as well?

EPA:

- How much fund did your JFMC/EDC receive for EPA?
    - Did you receive it on time? If no, how did it impact the implementation of EPA activities?

    - Was the fund adequate for implementation of EPA? If no, what challenges dd you face and how did you overcome them?
    - What kind of challenges did you face in implementation of EPA in your village and how did you overcome them? (eg: land allocation, labour, material supply etc.)
- What are the major benefits of EPA for the community? Give us some examples of how EPA have positively impacted the lives of people in this village?
    - How many households have directly benefited from the EPA activities? (nos. & percentage)
    - How many households have in-directly benefited from the EPA activities? (in nos. & percentage)
    - What can be done to extend the benefit of EPA to a larger population? Please specify, If any?

Training & Skill Building:

- Collect the following information about the different type of training programs conducted under the project :

Name of Training/Trade	Duration (number of a days)	Location	Number of Participants		Number of Participants who have taken up new IGA after training	
			Male	Female	Male	Female

- For those who are not using the acquired skill for IGA, what are the reasons for not utilizing the skills for IGA? (eg: problem with raw material supply, tools not available, lack of marketing support, limited/no working capital etc.)
- What was the process of selecting the trades for training? Was the trade selection appropriate, if not what was not correct and what should have been done to select the most appropriate trades?
- What was the process of selecting the participants for the training? Did the process ensured selection of most appropriate participants for the training? If no, what was not right in the process and what can be done to improve the process of beneficiary selection.
- What is your opinion on the duration, timing, location and content of the training programs? Was it enough to appropriately transfer the knowledge and skills? If no, what were the missing elements and what could be done make the training program more effective?
- What is your opinion about the marketing support provided under the project? Benefits and challenges?
    - Are you getting institutional orders?
- What should be done to enhance the positive impact of training and skill building intervention?
- What kind of challenges are being faced by the existing micro and household enterprises? What can be done to support such existing micro/household enterprises?
- What has been the impact of training, skill building and IGA on women in terms of their empowerment? Decision making, mobility, confidence, self-esteem, better control over resources etc.

Plantation:

- What kind of plantation activities have been taken up in your village/JFMC?
- What is the total area of the plantation (in ha)?
- Did the JFMC/EDC members worked on this plantation? If yes how many HH?
- At the plantation check, observe and note as under:

Location coordinator (N/E)	
Name of the location/project area	
Distance from the village (in km)	
Size of the area	
Topography (plain/ slope)	
Soil Type	
Activities Undertaken (Discussion and observation)	• Land preparation • Provision of Tree-guard • Provision of fencing • Cattle trench • Soil and water conservation activities • Any other (specify)
Year of planting (age of plants)	
Year by which plantation will be mature	
Number of plants planted	
Survival Ratio (secondary)	
Protection measures-fence; tree guards	
Cattle in the plantation	
Wild animals in the plantation	
Average height of the plants	
Plant's health	
Photographs (before and after)	

- Have you or the forest department calculated the survival rate using a scientific method? If yes, what is the survival rate?
    a. If the survival rate is good, what are the reasons for better survival rate?
    b. If the survival rate is not good, what are the reasons for poor survival rate? What measures should be taken to ensure better survival rate in future?
- Are you aware about any specific norms which have been laid down for benefit sharing? (firewood, fruits etc. from the plantation area)
- What percentage of people are dependent on forest for their firewood, fodder and other requirement? As a percentage of total number of household?
    a. Firewood - % HH
    b. Fodder - % HH
    c. List down others requirements with % HH
    d. To what extent the plantation will reduce communities' dependence on forest for firewood & fodder? In percentage?
- How is communities relationship with the forest department? Has it improved over the last 2-3 years? If yes, in what ways?
- How is the community contributing towards forest conservation and wildlife protection?
- Were the plantation activities successful? Rate on a scale of 0 to 10 with remarks.
- What are your suggestions for plantation activity in the second phase?

Road:

- If roads have been constructed or repaired, what has been the impact of it on community?

6.4 Range Level Discussions Checklist and Observations

Date	
Name of the Range	
Name of the Division	
Participants & Designation	1. 2. 3. 4. 5. 6. 7. 8.
Discussion Anchor	

Type of Activities Undertaken in the Division (Pre-Fill From Division Office)

Plantations	ANR	Sal	Firewood	Hardwood	NTFP
Nursey	Community	Indigenous Fruit			
Buildings & Infrastructure	Office Building New	Office Building Renovation	Residential Building New	Residential Building Renovation	Toilets New
	Toilet Renovation	Tube Well New	Tube Well Renovation	Ring Well New	Ring Well Renovation
	Water Supply New	Water Supply Renovation	Watch Tower	Highland	Installation of Solar Panel
	Heritage Building	Anti-Poaching Camp New	APC Renovation	Roads New	Roads Renovation
Vehicles including Boats	List				
Specialized Vehicle	List				
Community Activities	Formation of JFMC/ EDCs	Micro Planning	Entry Point Activities	Firewood Plantation	
Rehabilitation of Degraded Critical Habitats	Grassland Management	Artificial Water Holes	Wetland Management	Wetland Management Ipomea Eradication	Invasive Weed Management
	Inventory of wetland				
Training of Staff					

Checklist for Discussions

What kind of activities were conducted in your range area? (tick as required)

Plantations	ANR	Sal	Firewood	Hardwood	NTFP
Nursey	Community	Indigenous Fruit			

Buildings & Infrastructure	Office Building New	Office Building Renovation	Residential Building New	Residential Building Renovation	Toilets New
	Toilet Renovation	Tube Well New	Tube Well Renovation	Ring Well New	Ring Well Renovation
	Water Supply New	Water Supply Renovation	Watch Tower	Highland	Installation of Solar Panel
	Heritage Building	Anti-Poaching Camp New	APC Renovation	Roads New	Roads Renovation
Vehicles including Boats	List				
Specialized Vehicle	List				
Community Activities	Formation of JFMC/ EDCs	Micro Planning	Entry Point Activities	Firewood Plantation	
Rehabilitation of Degraded CriticalHabitats	Grassland Management	Artificial Water Holes	Wetland Management	Wetland Management Ipomea Eradication	Invasive Weed Management
	Inventory of wetland				
Training of Staff					

Community activities

1. Were you involved in formation of JFMC/EDC in your range?
2. What was your experience of forming JFMC/EDC? What was your role in motivating the villagers to participate in JFMC/EDC?
3. Did you take part in the micro-planning process? If yes, was this for the first time?
4. What do you think is the significance of micro-planning for community and forest department?
5. What kind of entry point activities were conducted in your range?
6. Are the villagers satisfied with entry point activities?
7. Were training activities conducted in your range?
8. Are the villagers satisfied with trainings provided?
9. Do you think that the villagers' incomes have increased as a result of training activities?
10. Do the villagers acknowledge the efforts of the forest department for micro-planning, entry point activities and trainings?
11. Do you think there is greater trust between villagers and forest department as a result of micro-planning, entry point activities and trainings?
12. Do villagers inform forest department more regularly about illegal activities in forest areas?
13. What more do you think should be done to increase trust between villagers and forest department?

Plantation *(if the above has been confirmed earlier)*

2. What kind of plantation activities have been taken up in your range?
3. What is the total area of the plantation (in ha)?
4. Did the JFMC/EDC members worked on this plantation? If no then who?
5. Can we visit the plantation?
6. At the plantation check, observe and note as under:

Location coordinator (N/E)	
Name of the location/project area	
Distance from the village (in km)	
Size of the area	

Topography (plain/ slope)	
Soil Type	
Activities Undertaken (Discussion and observation)	• Land preparation • Provision of Tree-guard • Provision of fencing • Cattle trench • Soil and water conservation activities • Any other (specify)
Year of planting (age of plants)	
Year by which plantation will be mature	
Number of plants planted	
Survival Ratio (secondary)	
Protection measures-fence; tree guards	
Cattle in the plantation	
Wild animals in the plantation	
Average height of the plants	
Plant's health	
Photographs (before and after)	

7. Do you think that there is an increase in bio-diversity because of this plantation?
8. Have you calculated the survival rate using a scientific method? If yes, what is the survival rate?
    a. If the survival rate is good, what are the reasons for better survival rate?
    b. If the survival rate is not good, what are the reasons for poor survival rate? What measures should be taken to ensure better survival rate in future?
9. Are you aware about any specific norms which have been laid down for benefit sharing? (firewood, fruitsetc. from the plantation area)
10. What percentage of HH worked on plantation and related activities?
11. How is the community contributing towards forest conservation and wildlife protection?
12. Were the plantation activities successful? Rate on a scale of 0 to 10 with remarks.
13. What are your suggestions for plantation activity in the second phase?

Road:*(if the same has been confirmed earlier)*

- How has the road construction/ repair activity benefited you in carrying your duties efficiently? Please explain with examples. What were the challenges that you use to face in the absence of roads?
    - Probe Points
        - Impact on patrolling; Impact on conservation activities; Impact on wildlife protection activities; Impact on emergency response etc.; Other benefits.

Challenges	Benefits

Office Buildings (including construction of toilets, water supply etc):*(if the same has been confirmed earlier)(only if participants have benefited from the activity)*

- How has the office building construction / repair benefited you in carrying your duties efficiently? Please explain with examples. What were the challenges that you use to face in the absence of office building?
    - Probe Points
        - Impact on morale; Better hygiene; Better working conditions etc.; Other benefits

Challenges	Benefits

Anti-poaching Camps (including construction of toilets, water supply etc.) *(if the same has been confirmed earlier)(only if participants have benefited from the activity)*

- How has the APC construction/ repair activity benefited you in carrying out your duties efficiently? Please explain with examples? What were the challenges that you use to face in the absence of APC?
    - Probe Points:
        - Impact on patrolling; Impact on conservation activities; Impact on wildlife protection activities; Impact on emergency response; Impact on morale; Better hygiene; Better working conditions etc.; Other benefits.

Challenges	Benefits

Vehicles/Boats: *(if the same has been confirmed earlier) (only if participants have benefited from the activity)*

- How has availability of vehicles/ boats benefited you in carrying out your duties efficiently? Please explain with examples. What were the challenges that you use to face in the absence of vehicles?
    - Probe Points:
        - Impact on patrolling; Impact on conservation activities; Impact on wildlife protection activities; Impact on emergency response; Better working conditions; Time saving; Other benefits.

Challenges	Benefits

Specialized Vehicles (ATV, JCB, dumper etc.):*(if the same has been confirmed earlier)* (only if participants have benefited from the activity)

- How has availability of ATV, JCB, dumpers etc. benefited you in carrying out your duties efficiently? Please explain with examples. What were the challenges that you use to face in the absence of vehicles?
    - Probe Points:
        - Access to difficult areas; Impact on conservation activities; Impact on wildlife protection activities; Impact on emergency response; Time saving; Other benefits:

Challenges	Benefits

Residential Buildings (including construction of toilets, water supply etc.): *(if the same has been confirmed earlier)* (only if participants have benefited from the activity)

- How has the residential building construction / repair benefited you in carrying your duties efficiently? Please explain with examples. What were the challenges that you use to face in the absence of residential buildings?
    - Probe Points:
        - Impact on morale; Better hygiene; Better living conditions etc.; Other benefits

Challenges	Benefits

- What was the process of selection of areas for:
    - Plantation
    - Grassland Management
    - Wetland Management including weed management

    - Artificial Water Holes
    - Highlands
- Do you think that there is an increase in bio-diversity because of these activities?
- Is there an increase in wild animal sighting in the area of intervention?
- Were these activities successful – rate on a scale of 0-10 (0 being the lowest score and 10 highest) and give reasons for your statement.
- Any suggestions for process improvement in future?
- What type of activities were more successful and what were not?
- Do you think the second phase of the project should come?
- What do you expect form the next phase?
- What should be the priority activities for the second phase of the project? Why?
- What do you do not want to do in the next phase? Why?

6.5 In-depth Interview with Divisional Forest Officers

Date	
Name of the Division	
Name of DFO	
Discussion Anchor	

- Are the forests in the intervention area in a better condition than non-intervention areas?
- Do you feel that plantation and rehabilitation activities have been effective? Are they maintained?
- Was the activity design, budget allocation and technical inputs (design, support) suitable to the local context? If no, what could be done to make it more effective in the next phase?
- Did staff in your division receive training? If yes, was the training appropriate and effective?
- How have the capacity building activities (training, infrastructure works, vehicles, roads) improved the effectiveness of the staff (please provide examples)?
- Did you have enough resources to carry out the work? If no, what were the constraints and for which activities.
- What type of activities were more successful and what were not? Why?
    - Plantation
    - Grassland Management
    - Wetland Management including weed management
    - Artificial Water Holes
    - Highlands
    - Roads
    - Office Buildings
    - Residential Buildings
    - Anti-poaching camps
    - Vehicle
    - Specialized Vehicle
- Have JFMCs/EDCs been established in your division? What was your focus on gender and socially excluded groups while establishing the JFMCs/EDCs?
- Do you think with the new IGAs the pressure on the forest has been reduced or will reduce in future?
- Are you satisfied with the performance of the project activities in your area?
- Were your activities successful? Why?
- Which activities did not succeed? Why?
- Any suggestions for process improvement in future?
- How do you rate the project in nutshell? on a scale of 10 with remark.

- Do you think the second phase of the project should come?
- What do you expect form the next phase?
- What should be the priority activities for the second phase of the project? and why?
- What do you do not want to do in the next phase?

6.6 EquipmentObservation Checklist

Evidence: *photo (pre and post comparison if available)*

TYPE OF SCHEMES AND OBSERVATION TOOLS:

- Infrastructure (road, buildings, APC, toilets etc.):
    - Location coordinator (N/E):
    - Name of the location/project area:
    - Type of infrastructure:
    - Status of Infrastructure:
    - Use of infrastructure:
    - Who is using:
    - Critical Observations:
    - Overall rating with remarks:

- Equipment for livelihood activities:
    - Location coordinator (N/E):
    - Name of the location/project area:
    - Type of equipment:
    - For which activity:
    - Usefulness:
    - Frequency of use:
    - Who is using: (gender/trained/age)
    - Norms:
    - Critical Observations:
    - Overall rating with remarks:

6.7 Division-wise Data Analysis used for Sampling

Division wise mapping of various budget spreads and activities, tracking which are high, medium or low. Blue: high; Dark Brown: medium; Light Brown: low. The sampled divisions are highlighted in yellow for comparison.

Wing	Division	Total Activities Done	Total Budget Spread %	No. of JFMCs and EDCs	Training Participants	Community Activities Budget Spread (Plantation creating and maintenance, EPAs, Trainings)
		Nos.	%		Nos.	%
Other	1st AFPF	1.00	0.27	0.00	0.00	0.00
Other	Assam Forest Guard School Makum	3.00	0.37	0.00	0.00	0.20
Other	Assam State Biodiversity Board	1.00	1.07	0.00	0.00	1.94
Other	Assam State Zoo	6.00	2.09	0.00	0.00	0.08
Other	Majuli	1.00	0.07	0.00	0.00	0.00
Other	PMU	0.00	0.00	0.00	0.00	
REWP	Assam Forest School	5.00	0.30	0.00	0.00	0.17
REWP	Guwahati Genetic cell	3.00	0.68	0.00	0.00	0.73
REWP	SilviculureDiv	3.00	0.11	0.00	0.00	0.00
REWP	TT & Plant Div	2.00	0.28	0.00	0.00	0.00
SF	Aie Valley	5.00	1.82	0.00	0.00	2.50
SF	Barpeta SF	2.00	0.49	0.00	0.00	0.00
SF	Bongaigaon SF	5.00	0.69	0.00	0.00	0.00
SF	Dhubri	3.00	0.23	0.00	0.00	0.00
SF	Karimganj SF	5.00	0.68	0.00	0.00	0.28
SF	Goalpara SF	5.00	1.05	0.00	0.00	0.00
SF	Golaghat SF	2.00	0.23	2.00	0.00	0.00
SF	Guwahati SF	5.00	0.68	0.00	0.00	0.00
SF	Kachugaon	6.00	1.48	3.00	0.00	2.19
SF	Kokrajhar SF	7.00	3.02	7.00	356.00	4.43
SF	Dibrughar SF	2.00	0.15	0.00	0.00	0.14
SF	Lakhimpur SF	3.00	0.04	0.00	0.00	0.00
SF	Nagaon SF	4.00	1.36	0.00	0.00	0.00
SF	Nalbari SF	1.00	0.08	0.00	0.00	0.00
SF	Silchar SF	5.00	0.33	0.00	0.00	0.00
SF	Sivsagar SF	3.00	0.17	2.00	0.00	0.14
SF	Sonitpur SF	2.00	0.12	0.00	0.00	0.20
Terr	Baksa	5.00	0.48	0.00	0.00	0.33
Terr	Cachar	8.00	2.88	2.00	190.00	4.12
Terr	Central assamAforastation	5.00	0.24	0.00	0.00	0.00

Wing	Division	Total Activities Done	Total Budget Spread %	No. of JFMCs and EDCs	Training Participants	Community Activities Budget Spread (Plantation creating and maintenance, EPAs, Trainings)
		Nos.	%		Nos.	%
Terr	Chirang	6.00	0.58	6.00	0.00	0.43
Terr	Dima Hasao East	6.00	3.65	6.00	399.00	6.06
Terr	Hailakandi	7.00	3.67	17.00	502.00	5.96
Terr	Dibrughar	8.00	1.03	2.00	114.00	0.48
Terr	Dhansiri	7.00	1.67	10.00	211.00	1.47
Terr	Nagaon South	8.00	4.08	19.00	806.00	6.74
Terr	Dima Hasao West	8.00	3.44	3.00	179.00	4.01
Terr	Dhemaji	7.00	1.61	2.00	148.00	1.95
Terr	Goalpara	8.00	2.64	3.00	96.00	3.05
Terr	Golaghat	5.00	0.52	0.00	180.00	0.30
Terr	Digboi	8.00	5.37	12.00	541.00	7.87
Terr	Haltugaon	7.00	1.60	0.00	0.00	1.42
Terr	Hamren	6.00	0.83	0.00	0.00	0.50
Terr	Jorhat	7.00	0.64	0.00	0.00	0.10
Terr	Kamrup East	7.00	2.39	0.00	0.00	1.98
Terr	Kamrup West	8.00	2.67	3.00	136.00	2.81
Terr	KarbiAnglong East	5.00	0.93	7.00	0.00	1.34
Terr	KarbiAnglong West	3.00	0.94	7.00	0.00	1.63
Terr	Karimganj	7.00	2.07	2.00	115.00	2.74
Terr	Doomdooma	7.00	4.88	10.00	579.00	7.14
Terr	Nagaon	9.00	2.70	10.00	538.00	3.35
Terr	Lakhimpur	7.00	1.99	4.00	142.00	2.53
Terr	North Kamrup	7.00	0.90	0.00	0.00	0.66
Terr	Northern Assam Afforestation	3.00	2.11	23.00	0.00	3.74
Terr	Parbatjhora	8.00	3.75	4.00	204.00	4.11
Terr	Sibsagar	7.00	0.95	2.00	343.00	0.78
Terr	Sonitpur East	6.00	0.65	0.00	0.00	0.73
Terr	Sonitpur West	7.00	0.84	0.00	0.00	0.40
Terr	Southern Assam Afforestation	4.00	0.46	0.00	0.00	0.00
WL	Eastern Assam WL	6.00	7.67	22.00	733.00	2.76
WL	Guwahati WL	7.00	2.01	4.00	517.00	0.78
WL	Kokrajhar WL	3.00	0.12	0.00	0.00	0.00
WL	Manas Tiger Project	6.00	1.62	8.00	280.00	0.70
WL	Mongoldoi WL	6.00	2.68	1.00	25.00	0.43

Wing	Division	Total Activities Done	Total Budget Spread %	No. of JFMCs and EDCs	Training Participants	Community Activities Budget Spread (Plantation creating and maintenance, EPAs, Trainings)
		Nos.	%		Nos.	%
WL	Nagaon wild life	9.00	1.76	7.00	389.00	2.09
WL	Tinsukia WL	7.00	2.83	5.00	205.00	1.28
WL	Western Assam Wildlife Division	3.00	0.30	1.00	14.00	0.22

6.8 List of trades with no. of participants in Skill Development Program

Sl. No.	Name of the trade	No of trainings	No. of participants (Male)	No. of participants (Female)	Total no. of participants
1	Agarbatti Making	2	3	48	51
2	Apparel made ups	2	17	13	30
3	Areca Leaf Plate Making	2	14	10	24
4	Bee Keeping	10	243	50	293
5	Bamboo Craft	6	91	17	108
6	Candle Making	3	14	33	47
7	Computer	7	47	33	80
8	Driving	8	72	0	72
9	Electrician	4	67	0	67
10	Food Processing	5	17	136	153
11	Horticulture	1	16	0	16
12	Integrated Farming	1	8	0	8
13	Lac cultivation	4	138	35	173
14	Livestock	25	304	397	701
15	Mushroom Cultivation	7	111	98	209
16	Nursery	12	175	26	201
17	Organic Farming	1	25	0	25
18	Ornamental Fishing	5	16	20	36
19	Tailoring	73	90	2,140	2,230
20	Tourism and hospitality management	3	20	14	34
21	Sitalpati	2	3	43	46
22	Vermicompost	1	20	0	20
23	Water Hyacinth	4	20	43	63
24	Weaving	38	49	1,205	1,254
Total		**226**	**1,580**	**4,361**	**5,941**

6.9 List of trades with no. participants in New Product Development

6.9.1 NDP Trades

Sl No.	Name of the trade	Name of the division	Male	Female	Total
1	Block Printing	Nagaon South	0	9	9
Trade Total			**0**	**9**	**9**
2	Cane and Bamboo	Lakhimpur	3	17	20
		Nagaon Division	3	2	5
Trade Total			**6**	**19**	**25**
3	SitalPati	Nagaon South	3	27	30
Trade Total			**3**	**27**	**30**
4	Tailoring & embroidery	Cachar	0	31	31
		Guwahati WL	0	40	40
		Hailakandi	0	30	30
		EAWL (Kaziranga)	0	23	23
		Kokrajhar SF	9	51	60
		Nagaon Division	0	10	10
		Nagaon WL	0	16	16
		Nagaon South	0	20	20
Trade Total			**9**	**221**	**230**
5	WaterHyacinth	Kokrajhar SF	18	4	22
		Parbatjhora	0	8	8
		Nagaon WL	5	25	30
		Tinsukia	1	29	30
Trade Total			**24**	**66**	**90**
6	Weaving	Bornadi	1	75	76
		Cachar	0	12	12
		Dhemaji	0	48	48
		EAWL (Kaziranga)	0	32	32
		Goalpara	0	12	12
		Guwahati WL	0	19	19
		Nagoan South	0	20	20
		Nagaon WL	0	15	15
		Angoon Division	0	13	13
		Manas NP	0	80	80
Trade Total			**1**	**326**	**327**
Grand total			43	659	702

6.9.2 Value addition of meat for income diversification and livelihood subsistence of fringe communities

Sl No.	Name of the programme	Male	Female	Total
1	Value addition on meat processing	42	0	42
2	Value addition on food processing	5	5	10
3	Bakery	4	6	10
Total participants		**51**	**11**	**67**

6.10 Division-wise details of sample covered

S. No	Division	JFMCs Covered	EDCs Covered	JFMC HH Sample	EDC HH Sample	Village Level FGD	Forest Dept. FGD	IDI with Senior FD Officials (DFO/ACF)
1.	Eastern Assam (WL)	-	11	-	237	11	1	1
2.	Nagaon South (T)	9	-	186	-	9	1	1
3.	Manas Tiger Reserve (WL)	-	4	-	84	4	1	1
4.	Kokrajhar (SF)	4	-	86	-	4	1	1
5.	Dhansiri (T)	1	-	21	-	1	1	1
6.	Dhemaji(T)	1	-	21	-	1	1	1
7.	Lakhimpur (T)	2	-	48	-	2	1	1
8.	Parbatjhora (T)	2	-	41	-	2	1	1
9.	Tinsukhia (WL)	-	2	-	42	2	1	1
10.	Sibsagar (T)	1	1	22	22	2	1	1
11.	Digboi (T)	5	1	107	21	6	1	1
12.	Dima Hasao West (T)	1	-	22	-	1	1	1
13.	Hailakandi (T)	5	-	105	-	5	1	1
14.	Karimganj (SF)*	-	-	-	-	-	1	1
15.	Nagaon (SF)*	-	-	-	-	-	1	1
Total		**31**	**19**	**659**	**406**	**50**	**15**	**15**

*As there are no JFMCs/EDCs under these divisions, 1 visitor survey covering 10 visitors was conducted in a Social Forestry Park in these divisions.

6.11 Summary and Implementation status of Activities

Component 1: Forest Department Institutional Strengthening and Legal Reforms

Original plan from Feasibility Report and Logical Framework	Implemented Planned Activity	Implemented New Activity	Non-Implemented Activity Status
1.1 Streamlining work procedures within the FD			
1. Streamlining procedures within Forest Department			To be considered in Phase 2
2. Share experiences and staff between wings	Share experiences and staff between wings		
3. Adopt similar approaches for common procedures related to JFMC and EDC	Adopt similar approaches for common procedures related to JFMC and EDC (JFMC Operational Manual)		
4. Harmonise Forest units management plans/working plans procedures for PA & RF.	To continue		
1.2 Capacity Building			
1.2.1 Develop Human Resource Management Information System (HARMIS)		Developed Forest Management Information System (FMIS)	
1.2.1.1 Conduct TNA/Identification of individual training needs			To be considered in Phase 2
1.2.1.2 Implementation and use of HARMIS		Operationalization and use of FMIS	
1.2.1.3 Conduct Annual Individual Assessment (AIA)			To be considered in Phase 2
1.2.1.4 Make digital portal for HARMIS to manage staff			To be considered in Phase 2
1.2.2 Design In-Service Training Program			Dropped, (This activity was carried out under JICA project)
1.2.3 Design and deliver refresher courses/programme including skills	• Workshops/ trainings have been organized		

Original plan from Feasibility Report and Logical Framework	Implemented Planned Activity	Implemented New Activity	Non-Implemented Activity Status
(eco-restoration techniques, agro forestry, forest and biodiversity survey and monitoring, legal knowledge, GIS and soft support infrastructure management)			
1.2.4 New Skills and Tools training program			
1.2.5 Impact assessment of training programs	• Experience sharing and training assessment were carried out		
b.Project Orientation (New/Unplanned Activity)		• Project orientation program for entire forest staff up to Range Officer	
b. Exposure Visit (New/Unplanned Activity)		• National and International exposure visits for FD staff	
1.3 Rehabilitate and Enhance Existing Infrastructure and Equipment			
1.3.1 Improvement of Infrastructure/Surface Communication			
1.3.1.1 Road Construction for critical priority access to selected sites	• Construction of new roads (86.96 Km)		
1.3.1.2 Road Repair/Improvement for critical priority access to selected sites	• Repair of existing roads (40 Km in each division) – Total 474.5 km		
1.3.2 Enhance the office and residential infrastructure for the Forest Department			
1.3.2.1 Construction of new office building (division & state) (20 Nos.) and Restoration/Improvement of existing office building (20 Nos.)	• Construction of new office building (division & state) (18 Nos.) • Restoration/Improvement of existing office building (114 Nos.)		

Original plan from Feasibility Report and Logical Framework	Implemented Planned Activity	Implemented New Activity	Non-Implemented Activity Status
a. Anti-Poaching Camp (New/Renovation) *(New/Unplanned Activity)*		• Anti-Poaching Camp (17 New/69 Renovation)	
b. Animal Enclosure (Repair) *(New/Unplanned Activity)*		• Animal Enclosure (19 Repair)	
c. Installation of Solar Panel (New) *(New/Unplanned Activity)*		• Installation of Solar Panel (41 New)	
d. Highland (New) *(New/Unplanned Activity)*		• Highland (33 New)	
e. Toilet (New) *(New/Unplanned Activity)*		• Toilet (74 New/ 6 Renovation) • Construction of toilets in Anti-Poaching Camps	
f. Tubewell (New/ Renovation) *(New/Unplanned Activity)*		• Tube well (22 New/100 Renovation)	
g. Ring well (New/ Renovation) *(New/Unplanned Activity)*		• Ring well (4 New/1 Renovation)	
h. Water Supply (New/ Renovation) *(New/Unplanned Activity)*		• Water Supply (8 New/5 Renovation) (Zoo)	
i. Watch Tower (New) *(New/Unplanned Activity)*		• Watch Tower (4 New)	
1.3.2.2 Construction of new residential building (division & state) (100 Nos.) and Restoration/Improvement of existing residential building (80 Nos.)	• Construction of new residential building (division & state) (75 Nos.) • Restoration/Improvement of existing residential building (258 Nos.)		
1.3.2.3 Restoration/Improvement of Heritage Buildings (30 Nos.) (70 Years)	• Restoration/Improvement of Heritage Buildings (22 Nos.) (70 Years)		

Original plan from Feasibility Report and Logical Framework	Implemented Planned Activity	Implemented New Activity	Non-Implemented Activity Status
1.3.3 Purchase of equipment and vehicles to enhance the ability of forest department staff			
1.3.3.1 Purchase of Vehicles	• Purchase of equipment and vehicles to enhance the capability of forest department staff (1287 Nos.)		
a. Vehicle - Head office (20 Nos.)	• Vehicle - Head office (7 Nos.)		
b. Vehicle - Field office (90 Nos.)	• Vehicle - Field office (202 Nos.)		
c. Vehicle - Beat (2 wheeler) (300 Nos.)	• Vehicle - Beat (2 wheeler) (322 Nos.)		
d. Cycles (2,400 Nos.)	• Cycles (700 Nos.)		
e. Patrol Boats (50 Nos.)	• Patrol Boats (32 Nos.)		
1.3.3.4 Forest Equipment (tapes, compass, GPS etc.)			
a. Small Equipment (300 Nos.)	• Small equipment purchased		
b. High-tech/ Large Equipment (100 Nos.)			Dropped
1.4 Enhance interaction with other departments and partners			
1.4.1. Provide incentives for workshops	• Organized inter departmental workshops • Incentive for interdepartmental workshops		
1.4.2 Provide logistics for interdepartmental workshops – regional and divisional level	• Provided logistics for interdepartmental workshops		
1.5 Legal reforms, Assess and update, disseminate regulation			
1.5.1 Supporting project decision with jurist advice			Dropped
1.5.1.1 Subcontract with Environment /forestry jurist body			

Original plan from Feasibility Report and Logical Framework	Implemented Planned Activity	Implemented New Activity	Non-Implemented Activity Status
1.5.1.2 Establishing dissemination channels to inform forest department, other depts and people about the updated regulations			
1.6 Research and Development			
1.6.1 Constitute a multidisciplinary committee and identify key knowledge gaps in the sector	• Research advisory committee established		
a. Priority setting in consultation with local stakeholders and NGOs to identify key knowledge gaps in the sector			Dropped
b. Establish formal links with key educational and research institutions in India and abroad	• Linkages established with educational institutions and NGO through Assam State Biodiversity Board E) NGO: Dolphin Foundation: Study on Fish Diversity in Bhramaputra River inside Assam to identify the threatened species, evaluate and determine their current conservation status and needs F) NGO: Aaranyak: Enhancing conservation efforts in Hollongapar Gibbon Wildlife Sanctuary G) NGO: The Orchid Society of Eastern Himalayas (Assam) Documentation of Wild Orchids of Assam		

Original plan from Feasibility Report and Logical Framework	Implemented Planned Activity	Implemented New Activity	Non-Implemented Activity Status
	H) USTM (University of Science Technology and Management): Inventory and Documentation of Insect Fauna of Assam from existing entomological resources in association with University of USTM		
1.6.2 Manage calls for proposals on the topics identified in 1.6.1 (Assist in research project proposals writing for funding)			*Initiated but later dropped*
1.6.3 Disseminate the results amongst the Assam stakeholders to ensure ownership	• Assam State Biodiversity portal developed for dissemination/publication of research papers		
A. New/Unplanned Activity		Infrastructure for research • Silviculture Division a. 3 Orchid House and b. Preservation Blocks • Genetic Cell a. Hi-tech Nursery, root trainers b. Botanical Garden for rare and endangered species	

Component 1 Review		
Total Activities Planned		39
Total Planned Activities Implemented		28
a.	No. of activities completely implemented	26

b.	No. of activities partially implemented	2
Total New Activities Implemented		13
No. of activities dropped		11

Component 3: Sustainable Forest Management

Original plan from Feasibility Report and Logical Framework	Implemented Planned Activity	Implemented New Activity	Non-Implemented Activity Status
3.1 Sustainable Forest Management by the Forest Department			
3.1.1 SFM in Reserved Forest area			
3.1.1.1 Prepare/update Working Plans	• Prepare/ update working plans (21 prepared & submitted to GoI for approval)		
3.1.1.2 Study and design pilot programs for sustainable management of production forest (TAs)			To be considered in Phase 2
3.1.1.3 Commission wood balance study			
3.1.1.4 Design the revised integrate workplan			
3.1.1.5 Develop a tracking system for forest product			
3.1.1.6 Forest Rehabilitation			
a. Assisted Natural Regeneration (ANR) (2,100 Ha)	• ANR (2,090 Ha)		
b. Sal Regeneration (2,000 Ha)	• Sal Regeneration (965 Ha) • Sal coppice regeneration (350 Ha) –New activity		

Original plan from Feasibility Report and Logical Framework	Implemented Planned Activity	Implemented New Activity	Non-Implemented Activity Status
c. Mixed Hard Wood (MHW) (5000 Ha)	• MHW (4,697 Ha)		
d. Non-Timber Forest Products (NTFP) (5,000 Ha) and rehabilitation of degraded forests	• NTFP (4,380 Ha)		
e. Bamboo (2500 Ha)			Covered under National Bamboo Mission
3.1.1.7 Identify forest products chains and strategy for return of benefits			Dropped
Prepare Inventory of Wetlands within Reserved Forest area of Assam (7,313 Ha) (New/Unplanned Activity)		• Prepare Inventory of Wetlands within Reserved Forest area of Assam (7,313 Ha)	
Block Plantation (New/Unplanned Activity)		• Block Plantation (700 Ha)	
Indigenous Nursery (New/Unplanned Activity)		• Indigenous Nursery (31 Nos.)	
3.1.2 Improved Management Plans of Protected Areas			
3.1.2.1 Update management plans for PA			To be considered in Phase 2
3.1.2.3 Hire national/ international consultancy/ experts for exploring opportunities for conservation and community reserves			Dropped
3.1.2.4 Identification and rehabilitation of degraded critical habitats			
a. Desiltation (30 Nos.)			Dropped

Original plan from Feasibility Report and Logical Framework	Implemented Planned Activity	Implemented New Activity	Non-Implemented Activity Status
b. Artificial Waterholes (30 Nos)	• Artificial Waterholes (14 Nos)		
c. Grassland Management (1000 Ha)	• Grassland Management (360 Ha)		
d. Wetland Management (25 Nos)	• Wetland Management (4 Nos)		
e. Invasive weed management (organic)	• Invasive weed management (organic) (190 Ha)		
Wetland Restoration through Ipomea Eradication (New/Unplanned Activity)			Wetland Restoration through Ipomea Eradication (20 Ha)
3.1.2.5 Develop Adaptive Management for PAs			To be considered in Phase 2
3.1.2.6 Develop database for Operation & Maintenance of plans for PAs			To be considered in Phase 2
Awareness activities (New/Unplanned Activity)			Publicity and awareness campaigns during festivals as Wildlife Week, World Environment Day and Vanmahotsav, etc
3.2 Participatory Forest Management			
3.2.1 JFMC & EDC support and strengthening			
3.2.1.1 Project rooting through early JFM and ED people empowerment	• Create JFMCs/EDCs • Revive existing JFMCs/EDCs		
3.2.1.2 Prepare Micro Plans	• Prepared Micro Plans		
3.2.1.3 Entry Point Activities (EPA) (community and	• Planned and implemented Entry Point Activities though JFMCs/EDCs		

Original plan from Feasibility Report and Logical Framework	Implemented Planned Activity	Implemented New Activity	Non-Implemented Activity Status
environment development, women empowerment)			
3.2.1.4 Nursery for agro forestry and forest tree samplings			Dropped
3.2.1.5 Dairy Pilot Activity			Dropped
3.2.2 Participatory Forest management: community forest rights and resources (CoFR) (FRA)			
3.2.2.1 Studies to link CoFR under FRA to Forest Dept. strategies			
3.2.2.2 Design policy and guidelines for FD and communities under CoFR area			
3.2.2.3 Test preliminary modalities and participatory vehicles on pilot sites			
3.2.3 Agroforestry and trees outside forests			
3.2.3.1 Assess opportunities for agroforestry and tree management outside forest - study through external experts			
3.2.3.2 Take lessons from national and international initiatives - expo visit (2 national & 2 international)	• Exposure visits (2 national & 2 international) organized for taking lessons from national and international initiatives		
3.2.3.3 Implement Pilots for testing AGF representative of Assam's landscape(15 nos.)			Dropped

Original plan from Feasibility Report and Logical Framework	Implemented Planned Activity	Implemented New Activity	Non-Implemented Activity Status
3.2.3.4 Implement large scale AGF through participatory approach (45 Nos.)			
3.2.3.5 Enhance productivity of recognized land under FRA			
3.3 Biodiversity Conservation and Management			
3.3.1 Assess state biodiversity strategy and action plan	• State biodiversity strategy and action plan prepared		
3.3.2. Requirements of Biodiversity Strategy incorporated in Working and Micro Plans	To continue		
3.3.3 Bioresource mapping for Assam using database layers			To be considered in Phase 2
3.3.4 Access and benefit sharing(ABS) of biodiversity - assess criteria for Assam	Study commissioned - To continue		
3.3.5 Establish people's Biodiversity registers	• Preparation of People's Biodiversity Registers		
3.3.6 Develop criteria for community intellectual property rights	• PBR and ABS developed		
3.3.7 Biodiversity information management	• Biodiversity portal developed • PBR digital database developed		
3.3.8 Establish local biodiversity management committee LBMC	• LBMC established		
3.4 Implement sustainable fuel wood production strategy and promotion of alternatives			
3.4.1 Prepare study on fuel wood needs			Taken up separately in NARMIL project

Original plan from Feasibility Report and Logical Framework	Implemented Planned Activity	Implemented New Activity	Non-Implemented Activity Status
3.4.2 Prepare fuel wood policy			To be considered in Phase 2
3.4.3 Support plantation of fuelwood and fodder trees (20000 Ha.)	• Plantation of fuelwood trees (8,473 Ha.)		
3.4.4 Identify and support opportunities through interdepartmental approach for fuelwood alternatives in EC/EPA			To be considered in Phase 2
3.4.5 Identify and support opportunities for alternative energy sources			
3.4.6 Study, pilot and promotion of mini power grids (1)			Dropped
3.5 Mitigation of conflicts including human/wildlife and land usage			
3.5.1 Analyze main causes and consequences of conflicts			To continue in Phase 2
3.5.2 Enhance capacities for conflict management/mitigation			
3.5.3 Improve monitoring of conflicts			
3.5.4 Develop procedures/tool kits for conflict prevention and mitigation	• Toolkit distributed		
3.5.5 Implement specific programmes targeted at conflict prevention/mitigation	To continue in Phase 2		

Original plan from Feasibility Report and Logical Framework	Implemented Planned Activity	Implemented New Activity	Non-Implemented Activity Status
3.5.6 Implement public information programme addressing conflicting issues	• Awareness generation programs on mitigation of conflicts (2 programs)		
3.5.7 Station Rapid Response Teams at 16 sensitive locations	• 20 vehicles provided		
3.5.7.1 Barracks, communication at sensitive spots	• Covered under infrastructure component (camps)		
3.6.1 Exchange with other states, identifies species and products			Dropped
3.6.2 Develop pilot scheme			

Component 3 Review		
Total Activities Planned		61
Total Planned Activities Implemented		29
a.	No. of activities completely implemented	28
b.	No. of activities partially implemented	1
Total New Activities Implemented		6
No. of activities dropped		32

Component 4: Adding value and opening markets/opportunities

Original plan from Feasibility Report and Logical Framework	Implemented Planned Activity	Implemented New Activity	Non-Implemented Activity Status
4.1 Support forest product/goods promotion and marketing			
4.1.1 Identification of site-specific income generating activities using forest products	• Identification of site-specific income generating activities using forest product		
4.1.5 Assess and streamline existing marketing channels for forest products	• Assess and streamline existing marketing channels for forest products		
4.2 Support IGA outside forests			
4.2.1 Identification of site-specific income generating activities outside forest	• Identification of site-specific income generating activities outside forest		
4.2.5 Study and pilot tourism at least 30 hot spots including providing improvements and infrastructure facilities			To be considered in Phase 2
Assess and explore potential for ecotourism			To be considered in Phase 2
Common Activities of Section 4.1 and 4.2			
4.(1/2).2 Organise target communities and build entrepreneurial and technical capacities			
a. Entrepreneurship orientation programme	• Entrepreneurship orientation programme		
b. Skill development training programme	• Skill development training programme		
4.(1/2).3 Support increased value addition through improved			

Original plan from Feasibility Report and Logical Framework	Implemented Planned Activity	Implemented New Activity	Non-Implemented Activity Status
production and product processing			
a. New product Development	a. New product Development		
b. Value addition for income diversification and livelihood subsistence of fringe communities	b. Value addition for income diversification and livelihood subsistence of fringe communities		
c. Design workshop and training of trainers (TOT) on IGA	c. Design workshop and training of trainers (TOT) on IGA		
4.(1/2).4 Support identification and access to markets	• Support identification and access to markets		
4.3 Estimate potential value of ecosystem services (including carbon and biodiversity)			
4.3.1 Establishing baselines, according to national guidelines, with focus on small scale forestry	• Afforestation and deforestation activities in clean development mechanism or in voluntary markets		
4.3.2 Training and Capacity Building of FD in designing CDM/REDD+ carbon sink programme/ voluntary carbon trade programme, through eco-restoration including small scale forestry			Dropped
4.3.4 Support CDM/REDD+ carbon sink program design and implementation	• Formulate procedure and guideline for new REDD+ mechanism • Establishment of a state-wide system for carbon stock monitoring • Study on carbon neutral Majuli • Study in Nagaon		

Original plan from Feasibility Report and Logical Framework	Implemented Planned Activity	Implemented New Activity	Non-Implemented Activity Status
4.3.4. Conducting impact assessment of eco rehabilitation through carbon schemes			To be considered in Phase 2

Component 4 Review		
Total Activities Planned		16
Total Planned Activities Implemented		12
a.	No. of activities completely implemented	12
b.	No. of activities partially implemented	0
Total New Activities Implemented		0
No. of activities dropped		4