



Mid-Term Evaluation Report for
Adaptation Fund supported Project
**“Climate smart actions and strategies in North
Western Himalayan region for sustainable
livelihoods of agriculture-dependent hill communities”**

Implementing Country:

INDIA

Implementing Entity:

**NATIONAL BANK FOR
AGRICULTURE AND
RURAL DEVELOPMENT
(NABARD)**

Executing Entity:

**BAIF DEVELOPMENT
AND RESEARCH
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Farm fields of village Manar and the project beneficiaries of the village, Champawat district.

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Executive summary

The Adaptation Fund supported project *“Climate smart actions and strategies in North Western Himalayan region for sustainable livelihoods of agriculture-dependent hill communities”* was implemented in 10 villages falling under Champawat and Pati blocks of the Champawat district of the Himalayan state of Uttarakhand. This project was implemented by National Bank for Agriculture and Rural Development (NABARD) and executed by NGO BAIF Research Foundation. Champawat is poor, strongly impacted by climate change effects and has been established as one of the most vulnerable districts of India in terms of economic backwardness, natural hazards and weather stress. The village and household selection was done keeping in mind the equity, social justice and representativeness of the area in mind so that the model that is implemented here can be scaled up in similar regions in North Western Himalayan states of India including parts of Uttarakhand, Himachal Pradesh and Jammu & Kashmir. The project components were drafted after a through vulnerability assessment of the households of the identified villages and after receiving inputs from the experts who are working on issues related to climate change impacts over the area. Thus, the interventions were designed as per the requirements of the region and thus, have been well accepted and giving good results. Most of the project beneficiaries are scheduled caste households, small and marginal farmers and women headed households.

Project objectives and Interventions

The project had twin objectives: (i) improving the adaptive capacity of rural small and marginal farmers including hill women to respond to climate change and (ii) creating field-based evidence of climate resilient strategies and approaches in mountain ecosystems. To attain these objectives, the project executed the following interventions: (i) Formed Community Based Organizations, (ii) Spring Rejuvenation, (iii) Roof Top Rain-Water Harvesting, (iv) Drip Irrigation, (v) Poly houses for alternate agriculture and improved livelihood, (vi) Horticulture Development, (vii) Community Forest Development, (viii) Fodder Development, (ix) Seed bank and Conservation of indigenous seeds, (x) Livestock breeding and management and (xi) Preparation and dissemination of knowledge material. The interventions started in August 2016 and mid-term evaluation was undertaken during December 2020.

Results from the Assessment

This study used some qualitative assessment techniques like focus group discussions, stakeholders' interview, visit to intervention areas, interaction with beneficiary households, etc. to make a mid-term assessment of the project impact. We conducted 27 interviews and site visits within the 10 program villages and the response was overwhelming. People seem to be earning good benefits from the project and the most rewarding intervention seemed to be the Polyhouses. These are low cost bamboo based polyhouses with a lifetime of 8-10 years. The designs are tuned to the requirement of small and medium farmers, it requires minimum investment, less water to grow crops (mainly vegetables), protect the crops from weather/climate hazards and wild animals, provide possible cost recovery within six months, etc. Farmers owning such a house are growing 3-4 crops in a year, earning good profit and have become climate resilient as project intervention has increased the water availability in the area.

Farmers overwhelmingly adopted polyhouses followed by water and livestock related interventions, fruit orchards, panchayat restoration etc. People gradually understood climate change, change impact and are confident to be able to deal with these challenges with the help of polyhouses.

Quality of implementation

The implementation of this project seems to have been very fair if one looks at relevant indicators like composition of beneficiary households, timeliness of intervention, stakeholders' opinion on implementation process, etc. As per the basic minimum requirement of the project interventions and mandate of the project, preference was given to weaker sections of the society (scheduled caste, poor) and vulnerable families and women headed households having the availability of land, water and interest in farming. Verification of beneficiaries' details proved it as well. Thus equity and social justice have been honored in project implementation. When the opinion of beneficiaries and stakeholders were solicited on a Likert scale, many of them gave a very high score (shown later in the report) that proves the fairness in implementation of the project. Of course, there were few hurdles due to remoteness of the area, broken road links, households being scattered on the hills, etc. that delayed or put extra burden on the executors to implement the project, but none-the-less, these obstacles have been tackled quite efficiently.

Project Impact and benefits

As the project was still ongoing, the final impact assessment was not attempted in the mid-term evaluation, however, initial qualitative assessment shows strong positive impacts in terms of economic well-being, climate change knowledge, climate stress management, love for agriculture, changed outlook of women and attitude towards out migration. People are getting good benefits from selling of vegetables grown in polyhouses, fruits like malta, hill lemon, etc. Other fruit trees planted are small and they expect good return after 4-5 years. Availability of water has enabled them to grow many crops and

livestock management has improved the health of livestock and number of cows with people that in turn has increased the milk production. Though every households is yet to get the full benefits as everyone did not get all the interventions at the same time, the initial trends are positive and encouraging. A proper impact evaluation needs to be undertaken to measure the final impacts of the project in future.

Awareness and Scaling up

Women mainstreaming and awareness generation seemed to be the strongest achievements of the project. The number of awareness camps and meetings seem to have outnumbered the number of meetings promised (37 in place of 10) by the executing agency and all these seem to have created enough awareness among villagers. In every meeting, women participants outnumbered male participants significantly and were assertive, participated in all discussions fully and replied confidently to whatever was asked. People are aware of climate change, though interpreted it in terms of erratic rainfall and increase in summer period. Many of them attributed climatic changes to have been the result of deforestation and are passionate to regenerate and safeguard their village forest.

The project should be scaled up, especially the polyhouse. In every village limited number of families received the intervention and in every meeting many non-beneficiary households came just to request for polyhouses and related accessories. Such requests reflect the success of the project and need for scaling up. In a follow up question when people were asked whether the project should be replicated in other villages, the answer was overwhelmingly 'yes' and unanimous.

Challenges, lessons learnt and whether replicable

Many parts of the project area is a difficult terrain with bad connectivity and households are highly scattered. It's challenging to reach out to them and supply materials for project intervention. All these have required a readjustment of the management cost of the project. Probably, project budget should have little flexibility to make internal reallocation subject to approval, if needed.

Project area is having similar interventions from other government and non-government sources, but interventions under the Adaptation Fund project seem to be giving better results. The households gave credit to the implementers (BAIF team and NABARD Regional Office) for their regular interaction, supervision, non-bureaucratic attitude that makes interaction easy, status check at regular intervals, quick follow-up, etc. as the factors behind high success. Though the area hasn't witnessed any climatic extreme event after the initiation of the project, people's testimonials show it to be highly successful and to have increased the agricultural adaptability of small and marginal farmers to water and weather stress. These are strong reasons to replicate the interventions at similar locations in other hilly areas.

LIST OF ABBREVIATIONS

ACWADAM	Advance Center for Water Resource Development and Management
AFB	Adaptation Fund Board
ATR	Action Taken Report
BAIF	Bharatiya Agro Industries Foundation (a charitable non-government organization)
CBO	Community Based Organization
CSWCRTI	Central Soil & Water Conservation Research & Training Institute
DDM	District Development Manager (NABARD)
FGD	Focus Group Discussion
FPO	Farmer Producer Organization
ICIMOD	International Centre for Integrated Mountain Development
KVK	Krishi Vikas Kendras
NABARD	National Bank for Agriculture and Rural Development
NRSC	National Remote Sensing Center
NGO	Non-Government Organization
PO	Producer Organizations
PRA	Participatory Rural Appraisal
SSC	State Steering Committee
TAC	Technical Advisory Committee
ULDB	Uttarakhand Livestock Development Board
VIPKAS	Vivekananda Parvatiya Krishi Anusandhan Sansthan

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Mid-Term Evaluation Report for Adaptation Fund supported Project

“Climate smart actions and strategies in North Western Himalayan region for sustainable livelihoods of agriculture-dependent hill communities”

1. Introduction

The Adaptation Fund funded project *“Climate smart actions and strategies in North Western Himalayan region for sustainable livelihoods of agriculture-dependent hill communities”* was implemented in Champawat district, one of the remote and highly vulnerable district of the Himalayan state of Uttarakhand. This project was implemented by National Bank for Agriculture and Rural Development (NABARD) and executed by NGO BAIF Research Foundation. The district is highly vulnerable to climate change having a vulnerability score of 0.35 (1 being least vulnerable) as per the vulnerability ranking of Indian districts in year 2013 and such high vulnerability status was because of low adoptive capacity and high level of exposure from climatic stress like very frequent draught and scanty rainfall during crop growing season.¹ Nearly 82% of the district’s populations are rural, depend on agriculture for their livelihood and 92.4% of the cultivated land are rain fed that highlights the importance of monsoon rainfall and vulnerability to climate change. The district witnesses slow development as policies and institutions are getting stabilized. Moreover, Champawat’s vulnerability is heightened by the fact that 85% of its villages are along the slopes thereby making it more vulnerable to both water scarcity, precipitation induced landslides and non-climate hazard such as earthquake.² Thus, the selection of this district for the implementation of the Adaptation Fund project by NABARD is highly justified.

¹ Rama Rao C A, Raju B M K, Subba Rao A V M, Rao K V, Rao V U M, Kausalya Ramachandran, Venkateswarlu B and Sikka A K (2013) Atlas on Vulnerability of Indian Agriculture to Climate Change. Central Research Institute for Dryland Agriculture, Hyderabad P 116.

² <https://reliefweb.int/report/india/uttarakhand-facing-acute-water-crisis-undp-report>

1.1 Project Area and selection of beneficiaries' households

The project was implemented in 10 gram panchayat/villages in the Champawat and Pati tehsils of the district Champawat. Village selection, like district selection was based on vulnerability rating and locational features for ease of implementation, learning and monitoring. All these ten villages namely Goshni, Mannar, Narsingdanda, Khalkandiya, Tapnival, Bhagnabhandari, Suyalkharka, Tyarson, Dingdai and Bangaon were close to each other and surrounding the Champawat and Lohaghat towns of the district. Figure 1 shows the location of the project villages. Again to select beneficiaries' households, a through vulnerability scaling of all the households of the villages was undertaken and then 180 families from these 10 villages were selected to run the pilots of the project activities or interventions. Next project interventions were rolled out to other households with very low coping capacity like small and marginal farmers (small and marginal -farmers with a landholding of less than 2 hectares and 1 hectares of land respectively) scheduled caste and women headed households. Nearly 67% of the total number of households in the villages were covered under the project. Table 1 lists out the number of such households village wise. Result section gives the details of interventions.

Figure 1: Project villages of Adaptation Fund funded project implemented in Champawat, India

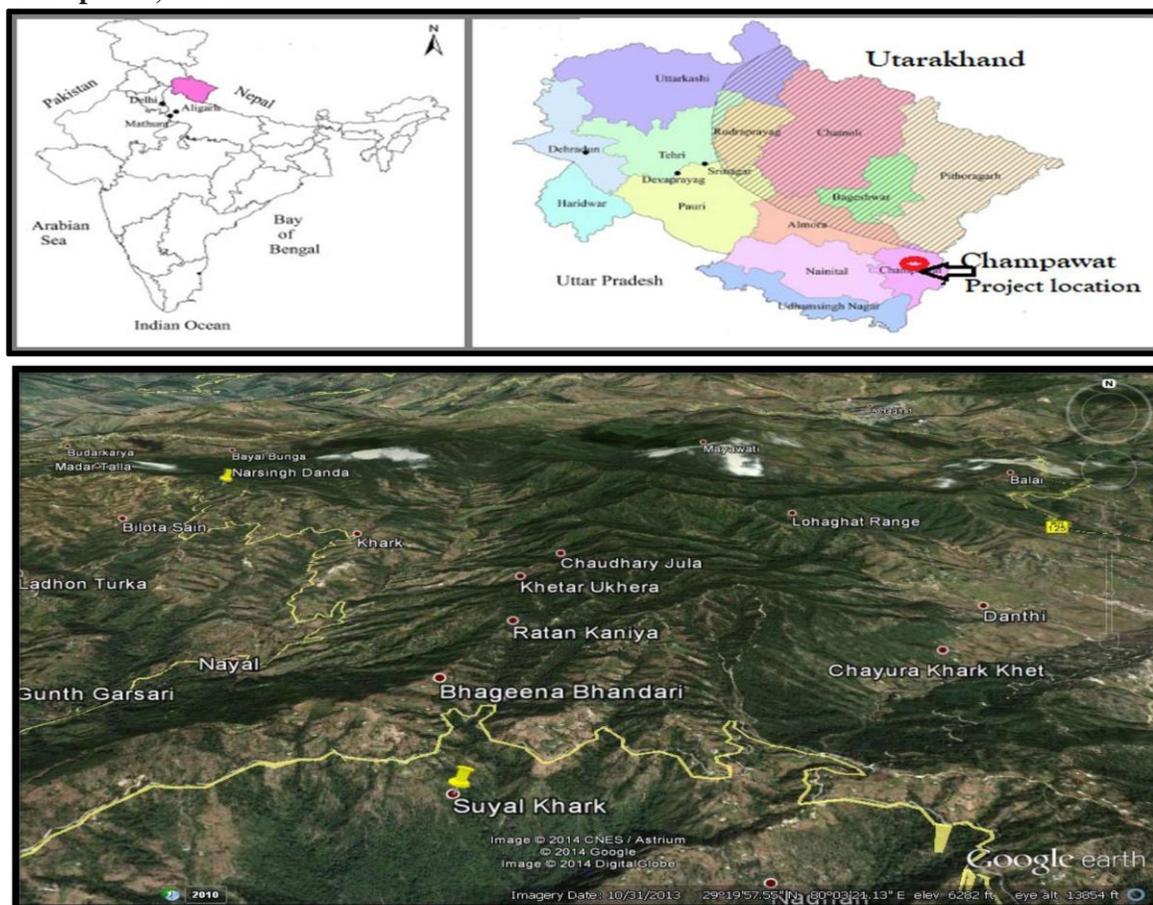


Table 1: Program villages and number of beneficiary households

Village names	Block names	Number of beneficiary households	Share in total number of households in the village
Khal Kandiya	Champawat	49	0.59
SuyalKharka	Champawat	58	0.65
Dingdai	Champawat	42	0.54
Bhageena Bhandari	Champawat	104	0.76
Narsingh Danda	Champawat	92	0.61
Tapnipal	Pati	78	0.93
Goshni	Pati	193	0.66
Tyarson	Pati	68	0.70
Mannar Malla	Pati	78	0.57
Bangaon	Patti	94	0.73

1.2 Project Components & Interventions

Project interventions were finalized after a systematic appraisal was undertaken to identify the issues, problems, target beneficiaries and the type of interventions needed to provide immediate help and increase the adaptive capacity of people. To quote the project document *“Focus Group Discussions (FGD) were conducted in each of the Gram Panchayat to understand their lifestyle, availability of natural resources, economic status, crop pattern, and so on. These discussions triggered the community members to think of the changes happening around them with respect to the changing climatic conditions. Using the Participatory Rural Appraisal (PRA) approach, opinions and knowledge of the community was used to find the pressing issues and design a solution for the same”*-(*Process document and compendium of best practice case studies – BAIF documentation on AFB Champawat*).

Villagers reported reduced agricultural activities due to less water availability and animal attack as the primary concerns of the area. Change in climatic conditions, mainly erratic and reduced rainfall in winter, reduced snow fall, increase in temperature, number of hot days and frequent draught were reported as main reasons for agricultural shocks. *“Winter precipitation, which is most important for recharging the water table, is decreasing every passing year. Though the rain days have increased, most of the showers are non-seasonal. These periods of high intensity rainfall has instead caused flash floods, landslides, and soil erosion”* was reported to be a consensus opinion of the villagers of the region. Features like high dependency on agriculture, near absence of irrigation facilities, more than 70 % of the land holdings being less than one hectare in size with an average land holding of about 0.91 hectare per household provided limited coping capacity to people. Soil erosion and consequent

poor soil health resulted in very poor productivity of land leading to reduced well-being and out-migration of working age group people. Because of out-migration, women had to manage the families and increasing women's skill through capacity building and exposure activities was the other urgent need of the region. *Thus, water enhancing and alternate livelihood facilitating interventions that can increase the adaptive capacity of small and marginal farmers, economically weaker scheduled caste people and hill women were given priority in the project* – said Dr. Dinesh Rathuri, Program Coordinator, BAIF.

1.2.1 Project Objectives/Goals

The project had identified two prime goals to achieve:

1. Improve the adaptive capacity of rural small and marginal farmers including hill women in North Western Himalayan region to respond to climate change.
2. Creating field-based evidence of climate resilient strategies and approaches in mountain ecosystems.

1.2.2 Outcomes of the project:

The project goals were to be achieved by successful delivery of the following outcomes.

Outcome 1	Improved community mobilization to collectively plan and undertake climate change adaptation
Outcome 2.1	Building resilience through increased water availability and efficient water use in hill region
Outcome 2.2	Adoption of climate smart agriculture technologies and farm diversification options for climate resilient livelihoods
Outcome 2.3	Improved potential of livestock resources as an option for livelihood stabilization in hills
Outcome 3	Knowledge generation based on field actions and wider dissemination to enhance awareness of hill communities and stakeholders as well as for better policy inputs

The project activities were divided into seven components to achieve the goals.

1.2.3 Project Components:

Components	Description
1. Community Mobilization and Organization	Building cohesive groups of villagers most affected by climate hazards to respond positively to climate change
2. Planning and strategies for improved adoption of climate smart technologies	Focus on strengthening of Community Based Organizations (CBOs)/Producer Organizations (POs) for improved adaptation.
3. Introduction of water resource development actions	Activities such as rejuvenation of natural springs, roof top rainwater harvesting, water use efficiency, water management etc.

4. Climate smart farming technologies and farm diversification options for climate resilient livelihoods	Along with cereals go for vegetable crops, fruit tree, indigenous crops, livestock, etc. considering the hill conditions and diversity of bio-geographic zones by forming Farmer Producer Organizations (FPOs) and providing market linkages.
5. Conservation, revival and adoption of climate resilient indigenous food crops	Crops which are proved to tolerate stress and have adapted well to unique climatic conditions in fragile hill areas (seed banks, village level seed production).
6. Improving the potential of livestock resource in hills	As a strategy for risk and income diversification (improved breeding service with required management practices in livestock resources, nutritious fodder promotion).
7. Knowledge Management	Knowledge creation and wider dissemination actions

Project implementation followed a participatory approach by involving scientific and technical institutions of the region through partnership and activity linkages and this was to ensure that interventions are suitable to the region and to the taste and culture of the people. This was to ensure higher success rate. Broadly, the following were the primary interventions of the project.

1.2.4 Project Interventions

- Formation of Community Based Organizations
- Spring Rejuvenation for water conservation and availability at the regional level
- Roof Top Rain-Water Harvesting for water conservation and availability at household level
- Drip Irrigation for water conservation through efficient water use
- Poly houses for alternate agriculture and improved livelihood
- Horticulture Development for alternate agriculture and livelihood
- Community Forest Development for forest conservation and water recharge
- Fodder Development for forest conservation better livestock holding
- Seed bank and Conservation of indigenous seeds
- Livestock breeding and management services
- Preparation and dissemination of knowledge material

Thus, the interventions tried to address both adaptation and mitigation, though adaptation was the prime focus. The interventions started in August 2016 and mid-term evaluation was undertaken during December 2020, when maximum beneficiaries have had few years of experience of enjoying the benefits from the project. The evaluation was also delayed because of the COVID-19 pandemic outbreak.

2. Objectives and Methodology of Evaluation

This evaluation study was undertaken for a mid-term assessment of the progress of the project work and to learn about the pros and cons, the difficulties faced or any non-fulfillment of the promises made. The following points, keeping the objectives of the Terms of Reference (TOR) of the evaluation agreement were evaluated in this study:

2.1 Objectives of study

- Initial outputs and outcome indicators of the project and the achievements compared to the targets
- Quality of implementation
- Financial management
- Assumptions made during the preparation stage, particular objectives and agreed upon indicators and current status
- Factors affecting the achievement of objectives;
- M & E systems and their implementation
- Important learning
- Present status of documentation
- Suggestions for mid-course correction/improvements

2.2 Methodology of evaluation

This study followed mainly a qualitative assessment process to evaluate the project activities. Accordingly, these points were discussed with beneficiaries, project partners, implementers and also with non-beneficiaries (neighbors, researchers working in the project area, etc.). Multiple visits were undertaken to different project sites and many focus group discussions were organized to know beneficiaries knowledge, gains and losses (if any) and their perception regarding what more needs to be done or should have been done differently and whether they are going to continue with the interventions introduced by the project after the completion of the project period and after the withdrawal of the implementing agency. To summarize the following methods were used for assessment:

- Focus Group Discussions with beneficiaries.
- Scanning of implementer's documents regarding project activities, progress, meetings, financial disbursements, other data registers, etc.

- A systematic tabular assessment of the progress of the project activities from BAIF Research Foundation.
- Physical checking of project interventions inside the villages and verification of the suitability and benefits of the interventions from the opinion of beneficiary household.
- Multiple visits to project villages, intervention sites (multiple visits to polyhouses, checking the status of the crops being grown, fodder trees plantation sites, orchard plantation sites, rain water harvesting tanks, spring shed rejuvenation sites, check dam sites, seed banks, cowsheds, etc.) and both formal and informal discussions with villagers.
- Meetings with NABARD District Development Manager, Champawat.

Table 2 shows the field visit details.³ The locations, the intervention sites, the participants, nature of discussions, etc., are described in the table in great detail. Nearly 25 meetings were organized with the villagers to get their feedback and understand their level of satisfaction with the project activities and if it has led to any improvement in their adaptive capacity. The feedback from the villagers are described under the section “Observations from the field”.

3. Progress of the project – Findings from the documentations

In this chapter the progress of the project work, as accessed from the executing entity’s documents, are described under different heads. First of all, village wise activities and their status by the time of evaluation is described. This is followed by block level assessment (aggregate outcome update), rating of the implementation process, etc.

3.1 Village wise result tracker

As mentioned before, 10 villages from Champawat and Pati blocks of Champawat district were selected as the program villages under this project. Table 3 shows the details of the interventions, the level of completion, involvement of women in project activities, etc. All villages seem to have all the interventions, though beneficiary households were different from each other. In total 13 different activities were undertaken under the project and some of the activities involve multiple actions and supervision for three to four years. Out of ten, four villages had low representation of women in village committees due to scattered household locations. However, women are regular in meeting attendance and participation. The aggregate completion levels of the activities are ranging between 77% to 85% in different villages and this was explained to be dependent on the nature of the interventions. In all

³ All the main tables (2 to 8) are put at the end of the document for the sake of convenience of the reader.

villages activities 1 to 6 are 100% complete, whereas, completion is 75-85% for activities 7 and 12 and 85-95% for activity 8.

3.2 Aggregate Outcome tracker and factors affecting progress

The project had three broad outcome and ten sub outcomes and the target was specified differently for different outcomes. Table 4 shows the aggregate outcome tracking of the project at the level of the blocks. The achievement level for almost all outcome seems to have surpassed the promised target under the project document. Outcome 1 was community mobilization for awareness and strengthening of local bodies and had a target to sensitize 60% of the households. The actual achievement is around 80% and so are the present status for other outcome levels. Except outcome 2.1 and output 2.1.2, which are related to water availability, the targets have been achieved for all others. Water levels have improved, but the availability is less than the target to some extent. Regarding factors affecting the aggregate outcome/output of water related activities, three problems were reported. (i) Lack of funds in between due to late submission of reports both from EE side and NIE side, (ii) Delay due to increased costs of material, COVID and absence of local material and (iii) Delay in construction of few poly houses in which these drip systems were to be put up. There were no such issues for other outcomes.

3.3 Indicators of Outcome/Output and present status

This is described in Table 5. It first describes the components of the project, the indicators of the output/outcomes component wise, their status at the baseline and then the status of those indicators by the time of evaluation. There are 2-3 indicators for each of the outputs and the status looks to be very satisfactory. In almost every case except few, the present status seems to have exceeded the target for most of the indicators. Rain water harvesting, drip irrigation, establishing marketing linkages and formation of co-operatives, and dissemination activities are somehow lagging behind.

3.4 Activity-wise Result tracker

Table 6 presents an aggregative picture of the indicators of table 4. It shows how many activities have been completed, how many incomplete, status of improvement etc. Of the 22 different activities, 16 have been fully completed, three are yet to be done (dissemination workshop, formation of women dairy co-operative and formation of marketing group) and three are incomplete. These three are - roof top rain water harvesting by 150 families, drip irrigation

in 20,000 m² area and revival and adoption of indigenous food crops and agriculture practices. Covid-19 lockdown delayed some of these activities, as these were to be completed towards the last leg of the project. Table 6 shows the exact status vis-à-vis the targets of these activities.

3.5 Risk Assessment and Present Status

The project had identified 17 different types of risk at the beginning and had taken enough measures to neutralize those risks during the implementation process. Table 7 describes those risks and the exact steps taken to neutralize those. No new risk has been found. Moreover, the project area has not witnessed any extreme weather event after the project was implemented in 2016 and thus, no threats to project activities have been witnessed.

The onset of COVID-19, the lockdown and suspension of all activities including project work was likely to pose a threat to the project, but no such threat/impediment was found during the evaluation except delay in completion of some of the project components. Rather the backward migration of people from cities to their villages has been good for the project and the returnees have decided to stay back due to the conducive agricultural atmosphere created by the project in their villages. Thus, project has been able to address some unexpected risk component.

3.6 Stakeholders Involvement

The following organizations (government/non-government), technical institutions, departments and local bodies were reported to be the different stakeholders of the project.

- NABARD Head Office, Mumbai
- NABARD Regional Office, Uttarakhand
- BAIF team Uttarakhand,
- BAIF team, Pune
- Technical Advisory Committee of the project,
- State Steering Committee of the Project,
- Local Community Cadre KVKs,
- Local Panchayats,
- Local CBOs
- Experts institutions like HESCO, ACWADAM, VIPKAS – Almora,
- GB Pant Institute Of Himalayan Environment and Development, Garhwal;
- Dr. Y.S. Parmar University Of Horticulture & Forestry- Solan;
- Central Soil Conservation Research and Training Institute (CSWTRI),
- National Remote Sensing Centre (NRSC)
- BAIF Livestock Experts at Central Research Station, Pune,
- State level Livestock Experts

- ULDB- State animal husbandry department

Table 8 describes the level of involvement of different stakeholders in different activities/interventions and if any change over time. As expected BAIF has associated maximum number of technical and expert organizations in component 2 that related to water and livelihood aspects and no change is noted. Project activities seem to have been benefited from intellectual contributions of many local/regional experts.

3.7 Documentations

The agency plans for the following type of documentation, though some has already been completed.

- Best practice notes (Few of them on Vanpanchayat , Polyhouses, etc. have already been prepared)
- Project Brochure (Prepared)
- Project Film (This has been done by NABARD Head Office)
- Process notes (A 30 pages document with case studies is prepared by BAIF)
- Regular project reports for sharing with the stakeholders
- A knowledge workshop/ multi stakeholder consultation is also planned for April 2021
- The Model along with best practices was shared in the Resilient Mountain Initiative partner’s meet held in 2019 by ICIMOD -Nepal
- News coverage (There has already been press coverage on the project).

3.8 Monitoring and Evaluation

Monitoring and evaluation was a built-in feature of the project implementation and it seems to have been followed carefully. BAIF, the EE, has been submitting monthly, quarterly and yearly reports to NABARD. The project is tracked by BAIF state level seniors on monthly and quarterly basis. The Technical Advisory Committees (TAC) and state level Steering Committee, formed under the project, meet regularly and discuss on the developments regarding interventions in these meetings. Both the bodies have members who are domain experts, heads of premiere institutes of the region and government officials. Along with these, NABARD DDM carries out monitoring visits on a monthly basis and NABARD Regional Office carries out monitoring on yearly basis. The Action Taken Reports (ATRs) on the points noted by the monitoring officers and other meetings are submitted from time to time.

4. Findings from the field – villager’s opinion

During the process of evaluation, 25 meetings were organized with the villagers, in group as well as individually to make an assessment of their perception regarding project intervention. Basic questions asked were the types of interventions received, benefits accruing from those, how have their life changed after the project, whether their agricultural loss from climatic stress has gone down, how have their adaptability to climatic variables changed, do they want anything differently, how will they continue the activities after the project period, etc. Of the three components of the project, Component1 on awareness and forming village level organizations seems to have gone well as expected. Every village is having multiple organizations and women are participating in all activities regularly. Members attending the meetings also gave good evidence of awareness of climate change, visible effects and how they are coping with it.

Component 2 on livelihood (water, agriculture and livestock) was given high priority by villagers. Of the different interventions, villagers gave highest priority to Polyhouses, followed by water related interventions, then orchards and then livestock in terms of getting immediate benefits. Conservation of indigenous seeds etc. was not given so much priority. We tried to capture the views of households regarding different components of the project including implementation success by capturing their perception on a Likert scale of 0 to 5, where 5 represented highest liking or full confirmation. The survey also had questions regarding the broad impact of the project on climate change adaptation and replicability elsewhere. Table 9 shows the average opinion with the maximum and minimum values. This opinion survey was conducted on telephone nearly one and half months after the field visits to these areas. Twelve questions were asked to household heads directly involved in the project and after explaining the question, the respondent was requested to give a score between 0 to 5 depending on her/his level of satisfaction or confidence on project outcome. Households gave full score to women empowerment and mainstreaming, replicability of the project, followed by the satisfaction and learning due to the project being in their village. Water related interventions, polyhouse, fodder availability, whether successfully implemented, etc. also received high score. Though many of them were skeptical that the project will help in adapting to draught situation now, they are confident that their future is safe after the trees grow and water supply becomes more secured because of good forest cover. As respondents were picked up randomly and every intervention was not given to all, the non receiving respondents gave low score to some of the interventions as observed from minimum scores.

Table 9: Beneficiaries and stakeholders perception regarding implementation and effect of the programs on wellbeing (Score in a scale of 0 to 5: 5 being highest)

Project implementation and components	Average score	Minimum score	Maximum score
1. Implemented successfully	4.4	4	5
2. Contribution in reducing poverty	3.8	2	5
3. Improving water availability	4.6	3	5
4. (a) How helpful to adapt to rainfall scarcity (draught situation) now	2.3	0	3
4. (b) How helpful to adapt to rainfall scarcity (draught situation) after few years	4.3	4	5
5. Impact on vegetable cultivation/orchard trees	2.7	1	4
6. How beneficial is livestock interventions	3.8	1	5
7. Impact on Fodder availability	4	3	5
8. Benefits from the Polyhouse	4.4	3	5
9. How likely the project will help people in adapting to climate change	3.6	3	4
10. Has the project improved women's outlook, their empowerment	5	5	5
11. How happy/satisfied are you with the project in your village	4.8	4	5
12. Should this project be implemented in similar villages elsewhere? Boon to the hilly region	5	5	5

Note: These scores are the opinion of 10 individuals from six of the project villages and two of the stakeholders of the project.

During interviews and meetings, it was clear that benefits from polyhouses outweigh all others. Every household craves to have polyhouses and this seems to have tremendously increased the well-being and adaptability of farmers. Figure 2 shows a typical polyhouse designed for small and marginal farmers and crops grown inside. Its low cost having a lifetime of 8-10 years and the break-even (cost recovery) happens in one crop cycle itself. This has made households self-sufficient economically. They are producing 3-4 crops in a year and earning good revenue after family consumption. Of course, there are issues of pest, over use of water or optimal crop mix, etc. but farmers are learning fast and craving to have more of it. Villagers, who are yet to be connected with regular water supply are eagerly waiting for the day when they get water and start using polyhouses. Polyhouses getting high priority as an adaptation measure came out very clearly from the opinion of the villagers as reported below. The study team visited the Tyarshun village first and the opinion of the village head and women members is reported in Figure 3. Polyhouse was mentioned as the most important intervention of the project to adapt to climate change followed by water. This story was repeated as we met other villagers or representatives from other villages. Almost every villager from each of the intervention villages was unanimous with this opinion. We report opinion from different villages in Table 10.



A low cost bamboo pillar based Polyhouse to grow vegetables. Villagers consider this as a blessing to fight climate change, animal attack and poverty. For small and marginal farmers, this is the best intervention under the Adaptation Fund Project.

These are specially designed for small and marginal farmers owning very small plots of land.

The top one is the polyhouse model and the bottom one shows cauliflower crop inside the polyhouse.



Figure 2: Polyhouse, the best intervention as per the villagers.

Tyarshun Village



Meeting with village Project committee members

“Our village has received many interventions, but the most helpful are polyhouses and water related ones. Polyhouse is a great boon, we are earning well because of that. Bad weather can’t damage our crops now. The check dam has increased the water availability and our water collection time has reduced much. We have time for family, children and for ourselves. Once our village forest plantation grows, our fodder collection time will also go down. Our life is better and we can manage draught situation.” ---

Women group



Forest - Plantation site

“BAIF has helped us to plant evergreen fodder trees like Oak, Faliyat, etc. and this is going to make us self sufficient in fodder and water as these trees retain water and help in percolation. Chirpine had come up everywhere and that resulted in water scarcity, forest fire and many other issues including non-availability of fodder grass. We are replacing Chirpine by these trees in our village forest area and our life will change for better after few years”—Village head

Figure 3: Meeting in Tyarshun village, 21st December 2020

Table 10: Villagers opinion regarding project interventions and benefit

Village	Comments of beneficiaries
<div data-bbox="289 321 889 877" style="border: 1px solid purple; height: 265px; width: 370px;"></div> <p data-bbox="256 884 672 911">Beneficiaries of village Suyalkhark</p>	<p data-bbox="948 384 1487 772"><i>“This project has transformed our life so much better. Polyhouse is the best intervention, very happy with it. We grow tomatoes, cauliflower, cabbage, palak, methi, capicum, etc. WE consume some and sell the rest. Along with good health, we are earning good money, have become self sufficient in many things. We grow at least three vegetables per year. We all have become efficient in the cultivation process. Earlier we could grow nothing due to climate stress.</i></p> <p data-bbox="948 806 1458 978"><i>We got polyhouse, fruit tree saplings and all have survived. We still have water problem as many of our houses are on top and we are getting piped connection through BAIF. That will make us happier.”</i></p>
 <p data-bbox="256 1650 683 1680">Mr. Naresh Chandra, Village Dingdai</p>	<p data-bbox="948 1016 1487 1619"><i>We are very happy with the interventions from BAIF. What makes them different are the way they work - day to day supervision, close contact with us, personal rapport, easy approach, etc. All these are helping us a lot. This has made the interventions permanent, effective and more productive as we take special care of the plants and instruments as we know that they can come anytime for supervision/inspection. This is what makes them different from government interventions. We can express our requirements before BAIF as we have confidence on them, get maximum benefit and are able to fight climate stress to a great extent. Government programs/interventions are one time affair as they never come to inspect, but its very much regular with BAIF.</i></p> <p data-bbox="948 1652 1487 1717"><i>Polyhouse is the best intervention, it's a blessing to our area, to us.</i></p>



Village Bhagana Bhandari beneficiaries

Our village has Check dam and around 90 families are being benefited because of it. We are able to do agriculture and grow many vegetables in the polyhouse. Polyhouse is the best gift. We have become self-sufficient in water, for next 10-12 years we are safe from climate change effect.

We have also got fodder and fruit trees, but check dam and polyhouse are the best for us. These two are enough to fight climate change.

We are very thankful to NABARD and BAIF.



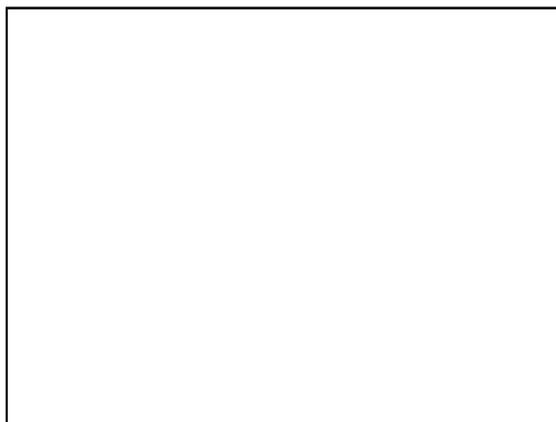
Mr. Satish Chandra Kharkwal, village Khalkandiya

Climate Change has changed the fruit tree pattern in our area. What we were growing in my young days are no longer possible due to change in feat pattern. Polyhouse is the best for us, we can grow vegetables and earn good health and income. However, only one polyhouse per family is not enough, we need more.

My son was working in Delhi, he came back during COVID lockdown in April 2020 and is busy at home now. As we have water available, he does not want to go back to city anymore. We have become self- sufficient and I thank interventions from BAIF.



Mrs. Bhagirathi Devi (Forest Mother), Village Manar



Committee members and beneficiaries of village Manar

“Life was so tough before ten years. I took initiative to develop our village forest, worked hard, then BAIF provided help. Good forest has transformed all our life, we have water, fodder, labour has reduced, and doggeries are much less. Don’t have to travel far for water, fodder and fuel. We are developing nursery, polyhouse is a blessing. We grow vegetables. Life is safe for next 10-15 years, sukh hi sukh”,---says Bhagirathi Devi

“After our forest have been restored our lives have improved so much. Polyhouses are blessings”, -- opinion of other women of Manar



Beneficiary, Village Tapnival

“The project is helping me to earn at least Rs.10000 as profit/benefit per season, I am saving money and improving my life. I will invest in more polyhouses in coming months”



Beneficiaries of Village Gosani

“We have developed seed bank to store indigenous varieties of lentils. But the best benefit to us is from intervention like water and polyhouse. Our village suffer the most from animal attack and whatever we are able to grow is due to polyhouses only.”

Such observations from the field clearly show people’s appreciation of the project and how some of the interventions have been helping them to cope with the climate stress.

5. Important learning and recommendations

5.1 Maintaining Equity and social justice

The village and household selection was done keeping in mind the equity, social justice and representativeness of the area in mind. So the model that is implemented under the project can be scaled up in similar regions in North Western Himalayas including parts of Uttarakhand, Himachal Pradesh and Jammu & Kashmir to reduce poverty and increase climate change adaptation of poor people. In the beneficiary household selection process, though preference is given to scheduled caste, poor, vulnerable families and women headed households, other features like availability of land, water and farmer's interest is also taken into account so that the farmer is able to take benefit from the project and the chances of failure is nil. The farmers also share the cost up to 20% of the activities to inculcate a sense of ownership in the project.

5.2 Benefits of group working

The project activities are introduced in group mode to enable farmers learn together as well as from each other. The meetings and farmer interactions are regularly organized to discuss all the project aspects with the village communities and this has minimized the failure. In all meetings, one could hear only success stories as farmers have learnt from each other's mistake and try to take corrective measures immediately.

5.3 Multiple organizations for risk sharing and capacity building

In the project villages, there are different forms of local level institutions and groups like Self Help Groups (SHGs), Livestock Keepers group, Village Climate Change Management Committee, Spring Rejuvenation group, Silvi Pasture Management Committee, Polyhouse Owners Committee, etc. Project focuses on building the capacities of all these user groups to ensure post project sustainability of actions and work. The Climate Change Adaptation Committee has a large understanding of the impact of climate change. The committee supervises the project work including the selection of farmers. Climate Change Committee will help in creating climate change adaptation for the farmers of their village in future. Thus, risk is perceived, discussed and shared by all. Proper capacity building of these committee members have ensured that the project work will continue after the project period.

5.4 Facilitating factors behind project success

Multiple factors seem to have helped the smooth function of the project. The notable ones are:

1. Participatory approach to program implementation
2. Bottom up planning
3. Need based interventions
4. Emphasis on capacity building and skill development of the primary stakeholders
5. Close monitoring including on location field visits
6. Interactions facilitated with Agriculture Extension Centre Scientists and other stakeholders for technology transfer and handholding Mobilization of stakeholders, KVK scientists, Banks, Private players to support the project implementation,
7. Close co-ordination among all players.

5.5 Limiting/challenging factors

The project also faced multiple challenges that needed extra effort. Some of these factors are:

1. Some households are located in remote areas and in difficult terrain and hence it was very difficult and costly to approach them for providing input materials.
2. The non-availability of material for construction purpose, rising costs of transportation of material were the constraints
3. Delay in fund release impacted timely implementation of some of the activities
4. Planting material for horticulture crops was not available in desired qualities and quantities.
5. Under the project, the provision made for management costs at 9.5 % was very less as compared to the need, due to communication, transportation and accessibility issues in view of difficult terrain. Required expenses for technically sound and qualified manpower could not be fully met.
6. In respect of some of the components, due to design modifications and change in cost of material, upward revision of costs were necessary.
7. Crop damage due to wild animals especially wild boars was a menace resulting in severe crop damage. Managing wild animal attack was a major challenge.

5.6 Whether project has increased climate adaptability of farmers?

1. Though, this question can be answered after a careful analysis of the farming practices of the farmers over time, first hand interaction with farmers give enough indication of increased adaptability to weather stress. Water availability, Polyhouses and fruit orchards have made them resilient to all type of weather stress like hailstorm, thick fog, low rainfall, etc. They are able to grow something inside the polyhouses.
2. Livestock interventions are helping households to have female calves and milk production has increased in the area. This is giving additional income and good health and these are also helping people to cope better.

6. Recommendations/Steps needed for timely and efficient completion of the project

1. Sizeable provision for covering all possible project execution cost is necessary for the project having multi sectoral interventions requiring lot of technical facilitation and considering that the project is long term in nature and to be implemented in a difficult terrain.
2. Landscape planning for managing wild animal attack of crops. Champawat used to be one of the largest potato producing district of India, but is a purchaser now as regular wild boars attack have disincentivized people to grow potatoes any longer. Though, polyhouses have given some relief from such attack, people fear that wild boars are quick learners and they may soon learn how to damage the polyhouses. Long term solution is possible through landscape planning and restoration of wild animals' food chain or artificial control of wild boar population. This needs to be addressed urgently.
3. Need for agro-processing and dairy farm units in the region. There is large scale production of citrous fruits and farmers are unable to get the due return as there are no storage facility or market network. With processing facility, such products can be shared with wider market. Market interventions are also necessary for making sure the project interventions include dairy sector promotion.

Table 2: Visit details to Climate Change Adaptation Project area, Champawat

S. N	Date	Time	Place	Purpose of visit & nature of interaction	Name of Farmers	Participants	
						Female	Male
	21.12.2020	10.00-11.00 AM	Project Office Khetikhan	Power point presentation on Project activities, progress and discussion with DDM NABARD and BAIF staff	NA	BAIF staff, office bearers	
2	21.12.2020	11.00-12.30 PM	Village Tyarshun	Interaction with participants of the project e.g. Polyhouse, Improved Breeding Services, Improved Horticultural Plantation and Silviculture (Fodder) Development	-	42	06
3	21.12.2020	12.30-1.30 PM	Spring Rejuvenation Site and Van Panchayat of Village Tyarshun	Spring Rejuvenation and Fodder (Silviculture) Development plantation	-	10	02
4	21.12.2020	1.30-2.00 PM	Goshani	Interaction with Unnati Chara Samhooh (Silviculture Group) and visited Van Panchayat	-	15	05
6	21.12.2020	2.30- 2.45 PM	Goshani	Protected Vegetable Cultivation (Low Cost Bamboo Based Polyhouse)	Mr. Prakash Chandra Oli		
7	21.12.2020	2.45-3.00 PM	Goshani	Protected Vegetable Cultivation (Low Cost Bamboo Based Polyhouse)	Mrs. Mohini Devi		
8	21.12.2020	3.00-5.00 PM	Goshani	Interaction with participants of Village Climate Committee, Polyhouse, Improved Horticulture, Community Based Organization (CBOs) of different interventions	-	27	8
9	22.12.2020	9.30-9.45 AM	Project Office Khetikhan	Demonstration of Wild Boar Fencing Machine at Project Office			
10	22.12.2020	9.45-10.00 AM	Cattle Development Centre Khetikhan	Visited Cattle Development Centre (CDC) Khetikhan and took information regarding programme.			
11	22.12.2020	10.00-10.15 AM	Village Manar	Interaction with Roof Top Rain Water Harvesting Tank (RWH) participant at village Manar	Mrs. Maya Devi		
12	22.12.2020	10.20-10.50 AM	Village Banj Gaon	Interaction with participants of Polyhouse, Improved Horticulture, Village Climate Committee and Rain Water Harvesting Tank		06	05
13	22.12.2020	11.00-11.20 AM	Village Tapnival	Interaction with participant of Polyhouse, Horticultural Plantation and Improved Breeding Services.	Mr. Ravish Chandra		
14	22.12.2020	11.25-11.35 PM	Village Tapnival	Interaction with Improved Horticulture participant.	Mr. Balwant Singh Bohra		

15	22.12.2020	11.40-12.00 PM	Village Tapnival	Interaction with participant of Improved Horticulture	Mr. Bharat Singh Bohra		
16	22.12.2020	12.00-12.30 PM	Village Tapnival	Meeting with participants of Improved Horticulture, Improved Breeding and Polyhouses	-	-	8
17	22.12.2020	12.45-1.00 PM	Village Manar	Interaction with Roof Top Rain Water Harvesting Tank, Polyhouse and Improved Horticulture Participant at village Manar	Mrs. Lata Devi		
18	22.12.2020	1.00-1.15 PM	BAIF Apple Mini Tree Farm (Manar)	Visited Apple Mini Tree Farm at village Manar and took project information.	-		
19	22.12.2020	1.25-2.00 PM	Village Manar	Interaction with participants of Silviculture Group, Improved Horticulture, Polyhouse and Spring Rejuvenation Group.	-	12	5
20	22.12.2020	2.05-2.35 PM	Village Narsinghda	Interaction with members of Spring Rejuvenation Groups (Jal Samittee), Polyhouse, Improved Horticulture and Roof Top Rain Water Harvesting Tank.	-	15	7
21	22.12.2020	2.40-3.15 PM	Village Khalkandiya	Interaction with participant of Polyhouse, Improved Horticulture and Rain Water Harvesting Tank.	Mr. Satish Chandra Kharkwal		
22	22.12.2020	3.20-3.30 PM	Village Khalkandiya	Interaction with participant of Polyhouse and Improved Horticulture Plantation.	Mr. Ashok Kharkwal		
23	22.12.2020	3.35-4.00 PM	Village Bhagana Bhandari	Interaction with members of Polyhouse, Indigenous Food Crop Conservation, Rain Water Harvesting Tank, Improved Horticulture and Silviculture Group.	-	15	08
24	22.12.2020	4.05-4.20 PM	Village Dingdai	Interaction with participant of Improved Horticulture and Polyhouse	Mr. Naresh Chandra		
25	22.12.2020	4.20-4.40PM	Village Dingdai	Meeting with members of Improved Breeding Services, Polyhouses and Improved Horticulture.		-	07
26	22.12.2020	4.55-5.10PM	Village Suyalkhark	Interaction with participant of Polyhouse	Mr. Rajendra Singh Taragi		
27	22.12.2020	5.20-6.00PM	Village Suyalkhark	Interaction with members of Polyhouse, Improved Breeding Services. Improved Horticulture and Silviculture Group		12	7

Table 3: Village Wise Result Tracker

S. No.	VILLAGE	BLOCK	Total no of HHs	No of direct beneficiaries HHs	Whether has a Village Committee	Ratio of women in Village Committee (W/Total)	Year when Intervention started	Women participation in meeting (%)	Type of Intervention (use code from below)	PRESENT status of intervention (%completed)
1	KhalKariya	Champawat	83	49	Yes	4/ 12	2016	100%	1,2,3,4,5,6,7,8,9,10,11,12 and 13	77%
2	SuyalKhark	Champawat	89	58	Yes	3/12	2016	100%	1,2,3,4,5,6,7,8,9,10,11,12 and 13	85%
3	Digdai	Champawat	78	42	Yes	1/ 12	2016	95%	1,2,3,4,5,6,7,8,9,10,11,12 and 13	77%
4	Bhageena Bhandari	Champawat	137	104	Yes	2/ 12	2016	100%	1,2,3,4,5,6,7,8,9,10,11,12 and 13	77%
5	Narsingh Danda	Champawat	152	92	Yes	8/ 16	2016	95%	1,2,3,4,5,6,7,8,9,10,11,12 and 13	77%
6	Tapnipal	Pati	84	78	Yes	2/ 13	2016	98%	1,2,3,4,5,6,7,8,9,10,11,12 and 13	77%
7	Goshani	Pati	294	193	Yes	9/ 14	2016	99%	1,2,3,4,5,6,7,8,9,10,11,12 and 13	85%
8	Tyarshun	Pati	97	68	Yes	4/ 11	2016	95%	1,2,3,4,5,6,7,8,9,10,11,12 and 13	85%
9	Manar Malla	Pati	138	78	Yes	9/ 12	2016	95%	1,2,3,4,5,6,7,8,9,10,11,12 and 13	85%
10	Bangaon	Patti	129	94	Yes	5/ 12	2016	95%	1,2,3,4,5,6,7,8,9,10,11,12 and 13	85%

Note: In all villages activities 1 to 6 are 100% complete. Completion is 75-85% for activities 7 and 12 and 85-95% for activity 8.

CODE NO	INTERVENTIONS
1	Awareness Generation Meetings
2	Baseline survey and Vulnerability Assessment for Annual Adaptation Plan
3	Mobilization and formation of CBOs
4	Training on suggested technologies for participants
5	Exposure visits
6	Natural spring rejuvenation
7	Roof Top rainwater harvesting
8	Drip Irrigation
9	Introduction of Climate resilient horticulture (Include activities like preparation of pit, filling manure, planting of trees like walnut, peach, lemon, malta, etc, pruning, weeding, all after care supervision for 3 years).
10	Farming under protected cultivation with irrigation facility (Providing low cost bamboo poly houses of 30X20X10X5X1 dimension, training to grow crops, crop rotation, weeding, adding manure, watering, etc. in the poly house; providing tank or drip irrigation facility)
11	Conservation of agro-bio diversity & revival of traditional useful agriculture practices
12	Livestock Management practices (Providing services like four artificial insemination facility per family, deworming, mineral mixture food packet for one year, vaccination, cattle shed modification (floor and roof), door step service at call, sex sorted semen insemination to get female calf as male calves are of no use in the project area).

13	Fodder Plantation (Facilitating plantation of fodder grass like Napier, fodder trees like Oak, Faliyat, etc. and provide same facilities as done for horticulture trees and provide after care for 4 years)
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Table 4: Aggregate Outcome Tracker

OUTCOME/ OUTPUT	EXPECTED FINAL OUTCOMES	ACHIEVEMENT TILL NOVEMBER- 2020	
		PATTI	CHAMPAWAT
Outcome 1.1: Improved community mobilization to collectively plan and undertake climate change adaptation	At least 60% (of people of which 50% are women) are aware about climate change and adaptive measures	80% people are aware about climate change and adaptive measures	80% people are aware about climate change and adaptive measures
Output 1.1.1: Local level awareness generation and mobilization of the community for climate related hazards	1. At least 50-% of vulnerable and marginalized groups represented	Conducted 17 awareness camps, 311 participated (M-167 & F-144) 47 % women	Conducted 20 awareness camps, 417 participated (M-175 & F-242) 58 % women
	2. At least 80% of the targeted families adopting Climate Resilient practices	Target Achieved (80%)	Target achieved (80%)
	3. Annual Adaptation Plan for 10 Villages /gram panchayats	05 GP vulnerability and adaptation plans prepared	05 GP vulnerability and adaptation plans prepared
Output 1.1.2: Strengthening of CBOs/POs for adaptation to climatic vulnerability	At least 5 CBOs formed in each village (at least one is of hill women)	54 CBOs formed in 5 villages.	37 CBOs formed in 5 villages.
Outcome 2.1: Building resilience through increased water availability and efficient water use in hill region	10-11 months water availability in targeted project sites	Water availability improved as compared to baseline	Water availability improved as compared to baseline
Output 2.1.1: Creation of water reserves in regions through rain water tapping interventions	1. 15 springs rejuvenated	6 Spring rejuvenated	9 Spring rejuvenated
	2. 300 families benefitted	239 Family benefitted	326 Family benefitted
	3. 150 Rain water Harvesting Structures created	63 Roof Rain water harvesting tanks constructed	17 Roof top rain water harvesting tank constructed
Output 2.1.2: Adoption of efficient water use practices and technologies	20,000 m ² areas will be covered by water use efficiency techniques.	4020 m ² area covered	1920 m ² area covered
Outcome 2.2: Adoption of climate smart agriculture technologies and farm diversification options for climate resilient livelihoods	800 families adopted climate smart farm practices	(1) Total 511 Families have been covered through various interventions (2) 112 Family adopted Polyhouse, 67 Family Drip irrigation, 63 Roof top tank and 396 Family Improved horticulture activity	Total 345 families covered through various interventions 90 Family adopted Polyhouse, 32 Drip irrigation, 17 Roof top tank and 204 Family improved horticulture activity
Output 2.2.1: Introduction to climate smart farming technologies with hill specificity	1. No. Of Training: 20, No. Of Exposure Visits: 10, No. Of Low-cost poly house: 200, Fruit Trees Plantation: 600 families	Conducted 22 different Trainings and 10 Exposure visits. Constructed 112 Polyhouse and 396 Families fruit plantation	Covered 90 Families under protected vegetable cultivation (Polyhouse) activity and 204 Families under the fruit tree plantation

	2. Agro-biodiversity conservation focusing Niche hill crops: establishment of 1 seed bank (2 crops conserved and multiplied)	Establishment of 1 seed bank and 4 crops conserved and multiplied in 3 villages. Total 28 diverse landraces and crop cultivars have been conserved	4 Crops conserved and multiplied in two villages.
Outcome 2.3: Improved potential of livestock resources as an option for livelihood	Increasing income through improved breeding and management of cattle for 800 families	429 Families covered through various program interventions (363 Cattle shed modification)	371 Families covered through various program interventions (182 Cattle shed modification)
Output 2.3.1: Introduction of improved breeding service at door step of farmers with required management practices including fodder and feed management	1. No. of Training: 10, No. of Exposure visits organized: 5, Improved Breeding Services: 800 families adopted	No. of trainings: 3 Exposure visits organized: 5 Improved breeding services adopted: 429 families	371 Families adopted improved breeding services
	2. Artificial Insemination Introduction of improved livestock management practices: 800 families	429 Families covered	371 Families covered
	3. Area Covered under fodder development: 100 Ha	62 Ha area covered under fodder development	74 Ha area covered under fodder development
	4. Livestock Insurance advisory: 1600 cattle	921 made aware	716 made aware
Outcome 3: Knowledge generation based on field actions and wider dissemination to enhance awareness of hill communities and stakeholders as well as for better policy inputs	1. Pamphlets/fact sheets/dossiers/best practice notes: 10	8 Nos best practice notes	4 Nos best practice note
	2. Baseline/Vulnerability Report: 1	5 No Baseline/ Vulnerability report documents	5 No Baseline/ Vulnerability report documents
	3. Process Documentation/Audio visual reports: 3	03 case studies , 1 process document	02 case studies
Output 3.1.1: Knowledge generation through field action component	At least 5 technical report published, 1 audio visual Documentary films	02 process document and case studies ready and also under plan	02 process documents
Output 3.1.2: Wider dissemination of acquired knowledge	Organize one National Workshop and publish proceedings	Being discussed . Would be planned in April 2021 now	

Table 5: Indicators of Outcome/Output and present status

COMPONENTS	OUTCOME/OUTPUT	INDICATORS	BASELINE	PRESENT STATUS
1: Community Mobilization and Organization	Outcome 1.1: Improved community mobilization to collectively plan and undertake climate change adaptation	1. % of farmers using climate risk information to adjust their livelihood behavior	No information regarding Climate Change and related adaptation is shared with villagers	67 % farmers are adopted the new technologies.
	Output 1.1.1: Local level awareness generation and mobilization of the community for climate related hazards	1. No. of participants attending the meeting (M:F) 2. % Participation of village level representatives of vulnerable and marginalized groups 3. No. of villagers aware about climate change, its impact 4. No. of annual Adaptation Plan prepared 5. No. of women heading families adopting climate resilient strategy as per Annual Adaptation Plan	1. Very few meetings held Limited participation of villagers 2. No Adaptation Plan for 10 villages/gram panchayats	1. Conducted 37 awareness generation meeting and 728 farmers are participated in this meeting 2. Prepare the adaptation plan by villagers 3. Total 832 Farmers aware about climate change, its impact. 4. Prepare the adaptation for 10 GP. 5. Total 542 women heading families adopting climate resilient strategy
	Output 1.1.2: Strengthening of CBOs/POs for adaptation to climatic vulnerability	1. No. of new CBOs formed (at least 1 for women) & at least 50 CBOs to be formed.	1. No new CBOs formed during last 1 year	Formed 91 CBOs total members are 932 and total saving is Rs 2371341.00
2: Introduction of Water Resource Development and Climate Smart Farming Technology	Outcome 2.1: Building resilience through increased water availability and efficient water use in hill region	1. No. of days of water availability 2. Saving of number of hours of hill women for water collection	1. Only 8-9 months water Availability	1. Water availability in 11-12 Month 2. Saving the 120 to 160 hours in case of each women' from participant households
	Output 2.1.1: Creation of water reserves in regions through rain water tapping interventions	1. No. of natural springs rejuvenated 2. No. of Rain-water harvesting structures created 3. Number of women having access to water post project (ascompared to baseline)	1. Dried up Natural Springs 2. No Rain water harvesting facility	1. Total no. of 14 spring has been rejuvenated 2. Total 90 roof top rain water harvesting tanks constructed. 3. Total 300 women having access water.
	Output 2.1.2: Adoption of efficient water use practices and technologies	1. No. of families adopting water efficient technologies and practices 2. No. of families adopted the skill of water saving 3. Saving of number of hours of hill women for water collection	1. Limited awareness but no resources for accessing Water Smart Technology	1.80 Farmers adopted the water efficient technologies. 2.170 Farmers adopted the skill of water saving 3. Saving the approx 120 to 180 hours of each hill woman for water collection.

	<p>Outcome 2.2: Adoption of climate smart agriculture technologies and farm diversification options for climate resilient livelihoods</p>	<p>1. No. of families adopting climate friendly livelihood options (Number of women headed households)</p>	<p>1. People are clueless about Climate friendly livelihoods and required technologies</p>	<p>1. Conducted 31 Training</p> <p>2. 202 Polyhouse installation completed</p> <p>3. Covered 600 Family under improved Horticulture activity</p> <p>4. Conserve the 5 Crops 27 landraces in various project villages.</p>
	<p>Output 2.2.1: Introduction to climate smart farming technologies with hill specificity</p>	<p>No. of families which:</p> <p>1. acquired knowledge and skills on climate smart farming technologies for hills</p> <p>2. adopted high value vegetable cultivation under protected conditions</p> <p>3. adopted high value and climate resilient fruit trees as an option to diversify production system</p> <p>4. participated in conservation, multiplication and revival of sturdy, nutritious and indigenous food crops and local biodiversity</p>	<p>1. No training efforts have been made on this issue</p> <p>2. Limited awareness on suggested climate smart technologies</p>	
	<p>Outcome 2.3: Improved potential of livestock resources as an option for livelihood</p>	<p>1. Quantity of milk per participant family</p> <p>2. Income from livestock per family</p>	<p>1. The full potential of livestock is not exploited in the region resulting in low productivity</p>	<p>1. Improved the potential of livestock through artificial insemination and introduces the scientific practices to farmers</p> <p>2. Income from livestock per family Rs 30000- 40000 per year.</p>
	<p>Output 2.3.1: Introduction of improved breeding service at door step of farmers with required management practices including fodder and feed management</p>	<p>1. No of families made aware and acquired required skills for cattle resource management</p> <p>2. No. of families adopted the improved breeds of cattle and management practices</p> <p>3. No. of families linked with better cattle management services including insurance</p> <p>4. No. of families having access to fodder trees and grasses</p>	<p>1. Low productivity in cattle</p> <p>2. Less awareness about livestock management practices</p> <p>3. Limited access to livestock related services</p> <p>4. Scarcity of green fodder</p>	<p>1.900 Families made aware regarding cattle management.</p> <p>2.792 Family adopted improved breeds services.</p> <p>3. 455 Families provided better cattle management.</p> <p>4. 735 Families having access fodder tree and grasses.</p>
<p>3: Knowledge Management including knowledge creation and wider dissemination actions</p>	<p>Outcome 3: Knowledge generation based on field actions and wider dissemination to enhance awareness of hill communities and stakeholders as well as for better policy inputs</p>	<p>1. No. of adaptation techniques for vulnerable areas identified.</p> <p>2. No. of publications covering vulnerability status prepared.</p> <p>3. No. of knowledge Notes on adaptation measures prepared</p>	<p>1. Limited data on Climate Change Strategies, approaches and climate smart technologies in Hill Context</p> <p>2. Lack of awareness at</p>	<p>1. Communities in this part are now well aware about the emerging effects of climate change and variability on their life and livelihoods.</p> <p>2. Communities are also aware about various stakeholders that are helping them to better</p>

		4. No. of Stakeholder Workshops organized for cross learning and sharing on best Practices	policy levels leading to low allocation in State Budget for Climate change and adaptation	adapt with the changing context
	Output 3.1.1: Knowledge generation through field action component	1. No. of Technical Report published 2. No. of Pamphlets published and distributed in the nearby villages	1. Village is not having any technical report at village level	3. The communities are aware about ongoing government schemes which are relevant 4. Best practice notes (Few on Vanpanchayat, Polyhouses have been prepared) 5. Project Brochure (Prepared) 6. Project Film (Done by NABARD HO)
	Output 3.1.2: Wider dissemination of acquired knowledge	1. No. of Stakeholders Approached	1. Lack of awareness at policy levels leading to low allocation in State Budget for Climate change and adaptation	7. Process notes (A 30 pages document with case studies is prepared by BAIF) 8. Regular project reports for sharing with the stakeholders 9. A knowledge workshop/ multi stakeholder consultation is also planned in April 2021 10. The Model along with best practices was shared in the Resilient Mountain Initiative partner's meet held last year by ICIMOD -Nepal 11. News coverage (Many press coverage is achieved)

Table 6: Result tracker of interventions

INTERVENTIONS (if there are interventions other than the following, please mention)	HOW MANY EXECUTED (till 30 th December 2020)	PRESENT STATUS (4= completed, 3= Deterioration, 2 = No improvement, 1= Some improvement)
1. Awareness generation meetings	37	4
2. Formation of village committee and climate adaptation group	10	4
3. Baseline survey and vulnerability assessment	10	4
4. Preparation of Annual Adaptation Plan	10 GP	4
5. Preparation of Vulnerability Impact Assessment (VIA) Report	10 GP	4
6. Preparation of cluster level participatory Annual Adaptation Plan	10 GP	4
7. Mobilization of 50 CBOs and formation of 50 new CBOs	92	4
8. Training of staff and participants on suggested technologies	32	4
9. 15 exposure visits for participants and staff	14	4
10. 15 natural spring rejuvenation	15	4
11. Roof top rain water harvesting by 150 families	90	1
12. Drip irrigation in 20,000 m² area	4800 Sqm.	1
13. High quality grafts of Walnut, Peach, Grafted Pear, malta and lemon provided to 600 families	600	4
14. Collective Marketing Group formed		1
15. Protected cultivation of high value vegetables by 200 families	202	4

16. Revival and adoption of indigenous food crops and agriculture practices	0.5 ha	1
17. Door-step breeding services to 800 families	800	4
18. Women's dairy cooperative formed		
19. Development of vanpanchayats into community pasture lands	136 ha	4
20. Silvi-pasture Management Committees (SMC) formed	13	4
21. Preparation of Technical reports		4
22. National level multi stakeholder's meeting		Not done yet

Table 7: Risk Assessment & Steps Taken

S.No.	IDENTIFIED RISK	Steps taken till PPR2	CURRENT STATUS	ANY NEW Risk?	STEPS TAKEN TO REDUCE RISK
1.	Neglecting the principles such as access and equity.	A well laid down procedure has been operationalized to ensure access and equity.	Project implementation is equitable. Beneficiaries are inclusive of marginal households	NO	The project participant selection processes is planned in such a way that principles of access and equity are being observed. Before identifying the participant families, project orientation meetings have been conducted involving men, women and youth from the project villages as well as members of local self-government. These orientation meetings have helped the community to understand the objectives and approach of the project and facilitate developing rapport with the community members. The project is mainly providing access to three types of vulnerable/disadvantaged populations i.e.: Small and Marginal Farmers, Women headed households and Scheduled Caste households. The processes have been adopted to ensure access and equity to all marginalized and vulnerable groups. The outcome of this is being monitored regularly both by the Executing Entity and the National Implementing Entity. Project teams thus undertake a regular assessment of the Access and Equity in respect of marginalized and vulnerable groups during the implementation stage through a consultative exercise with the communities.
2.	Project neglects marginalized and vulnerable Groups/deny gains.	Identification of beneficiary families through a consultative and transparent process.	Taken care of.	NO	The project is basically aimed at providing alternate climate resilient livelihood options and income to marginalized/vulnerable communities. These include mainly small & marginal farmers, women headed households and Scheduled Caste/Schedules Tribe families. The selection of these beneficiaries is done through a well laid down consultative and transparent process.
3.	Project does not guarantee Gender Equity / Gender Empowerment	Women are the major beneficiaries of the project activities	Taken care of in most of the villages.	NO	In hills, women bear the main responsibility for agriculture and allied activities. Therefore, all the major activities of the project like horticulture, fodder plantation, spring rejuvenation, livestock management, etc. directly/indirectly supports/benefits the women farmer. Further, the project envisages formation of multiple Community based Organizations (CBOs) the members of which are primarily women.
4.	Project activities are not environmentally	All actions are climate smart and	Taken care of.	NO	The proposed project activities are being implemented on the principle of environmental sustainability. The interventions are planned to achieve resource efficiency and optimum use

	sound/ not climate smart	environmentally sound.			of available resources and as such would reverse further degradation of natural resources. Further, most of the activities are being introduced in a decentralized manner. All the proposed activities are climate smart in nature and will help communities to adopt climate resilient livelihoods. During execution of the proposed interventions, adherence to applicable standards is being ensured by the Project Team and the same is monitored by the NIE regularly.
5.	Involuntary Settlement	No involuntary settlement under the project	Taken care of.	NO	Majority of the activities planned under the project are proposed on individual lands. In case of structures in community land, such as spring rejuvenation, specific care is being taken for selection of sites which would not result in physical as well as livelihood resettlement. The selection of sites for individual interventions is also being done in such a manner to avoid any possibility or likelihood of involuntary resettlement due to project activities.
6.	Project violates human rights	No violation of Human Rights.	Taken care of.	NO	All efforts are being taken to ensure/protect human rights in project implementation. In all labour oriented activities prohibition of child labour and payment of minimum wages as guaranteed by the Centre/State governments is being ensured.
7.	Project poses threat to existing biodiversity in agriculture	All the project activities help in conserving and reviving the ecological biodiversity.	Taken care of.	NO	No project activity poses threat to existing biodiversity in agriculture. In fact, few activities like spring rejuvenation, fodder plantation, etc. help sustain ecological biodiversity. Efforts are also undergoing for maintaining seed bank of native diverse crops at village level. The project also supports integration of climate smart options for disease and pest control in agriculture. Conservation and promotion of native fodder species in situ, through regeneration of degraded community pastoral lands /natural habitats is under process.
8.	Project does not protect natural habitats / alters landscapes and natural heritages	Protection and conservation of natural habitats, spring rejuvenation is cornerstone of the project.	Taken care of.	NO	The sites for project interventions such as spring rejuvenation have been identified in consultation with the local villagers. There is no plan for any alteration to physical and cultural heritage in this project. The project activities indeed include conserving and protecting natural habitats like vanpanchayats / community pastoral lands.
9.	Project does not comply with social & environmental law and commitments of country and region.	All activities being implemented as per the extant social & environment laws of the land.	Taken care of.	NO	All project activities are planned keeping in view the various social/environmental laws of the land. Further, this is being monitored by district and state level committee who have representatives from the government and relevant stakeholders.
10.	Project neglects indigenous people and leads to displacement.	None		NO	The project area does not have indigenous population.
11.	Rational/Administrative: Coordination of activities with other agencies; large timeliness of technical inputs and their proper scheduling, Issues	All actions as planned are being taken up	Taken care of.	NO	<ul style="list-style-type: none"> • The Executing Entity (E.E) has ensured proper co-ordination of activities with all the relevant stakeholders. This involves various stakeholders viz. State/district government departments, research institutes, training institutes, media, etc. • The E.E is a national level organization with sufficient manpower to ensure technical parameters and proper scheduling of activities/events.

	related to planned intervention in desired outcome due to unavailability of timely inputs .number of on-going projects/programme				<ul style="list-style-type: none"> • Advance planning is done to take care of availability of timely and quality inputs for proposed project activities.
12.	Financial: Cost escalation leading to increased costs for goods and services	None	Taken care of including COVID related issues.	NO	The cost escalation aspect was incorporated in the project document for sanction. Accordingly, the sanctioned amount for various activities is expected to take care of cost inflation, if any.
13.	Environmental: Natural Hazards (flood, drought, storm surges, and storms) may hamper project implementation.	None observed so far.		NO	The programme is seeking to reduce the effect of natural hazards through capacity building and awareness creation among the farmers. However, certain activities may be at risk due to the hilly topography of the region.
14.	Participation of stakeholders and required cooperation from government, private and technical institutes.	All relevant stakeholders as envisaged in the project document are being involved.	Taken care of.	NO	All the relevant stakeholders have a substantial participation in the project activities. The State/District Government have representatives at the state/district level committees. Various research/training institutes are also the members of these committees. Research Institutes like Krishi Vigyan Kendra (KVK), VPKAS – Almora, CITH – Mukteshwar, etc are also training the farmers. HESCO/BARC services are being utilized for identification of spring rejuvenation sites. International Centre for Integrated Mountain Development (ICIMOD), Nepal has visited the project area for information exchange and learning. The E.E is also utilizing the services of State Bank of India (SBI) for the project activities. The NIE regularly monitors the project implementation.
15.	Technical Risk ineffectiveness of recharge measures	Services of competent technical resource persons are being utilized to minimize any technical risk ineffectiveness	Taken care of.	NO	Use of Modern technologies viz. use of isotopes to execute area specific water recharges measures. This is tested and proven technology in hills. This is introduced with the help of scientific organization called BARC. This is now ready for replication and thus risks associated with this will be minimum.
16.	Delay in aquifer recharge leading to partial achievement of project results	Aquifer recharges activity ongoing as per phasing.	Taken care of.	NO	The spring rejuvenation activity is being implemented as per the phasing schedule.
17.	Project benefits captured by Elite group	A well defined criteria in place for participant selection	Taken care of.	NO	As highlighted earlier, the identification of beneficiary families is being done through a consultative, participatory and transparent process.

Table 8: Role of Stakeholders, Involvement and change

COMPONENTS	OUTCOME	OUTPUT	INTERVENTIONS	STAKEHOLDERS	Specify the role of each stakeholder	Aany change in their role? (Y/N), If Y, specify
1: Community Mobilization and Organization	1.1: Improved community mobilization to collectively plan and undertake climate change adaptation	1.1.1: Local level awareness generation and mobilization of the community for climate related hazards	<p>1. Awareness Generation Meetings in all 10 villages for climate related hazards.</p> <p>2. Formation of a village committee and a Climate Adaptation Group for proper functioning of project activities</p> <p>3. Baseline Survey and Vulnerability assessment of all 10 villages and preparation of Annual Adaptation Plan</p> <p>4. Based on vulnerability assessment, 10 Vulnerability Impact Assessment (VIA) Report will be prepared(one for each village)</p> <p>5. a panel of Subject Matter Specialists will be formed for technical/crop based advisory.</p> <p>6. A cluster level participatory Annual Adaptation Plan will be prepared</p>	BAIF team Uttarakhand, Pune TAC, State Steering Committee, Local Community Cadre , KVKs ,Local Panchayats , Local CBOs	<p>1. BAIF Pune Provides the experts monitoring of the programme.</p> <p>2. BAIF Dehradun team supervises the activity and participates as an expert.</p> <p>3. Cluster level team handles field actions on the day to day basis</p> <p>4. Technical handholding is done by the scientists at KVKs.</p> <p>5.The required platform is given by the Local Panchayats , Local CBOs</p>	NO
		1.1.2: Strengthening of CBOs/POs for adaptation to climatic vulnerability	<p>1. Mobilization of 50 existing CBOS and formation of 50 new CBOS (climate adaptation group, fruit and vegetable marketing group, milk marketing group and water users group in all 10 villages)</p> <p>2. Training on suggested technologies for participants and staff</p> <p>3. Total 15 exposure visits on suggested technologies for participants and staff (2 persons from each village who will act as resource person for that technology in future)</p>			

2: Introduction of Water Resource Development and Climate Smart Farming Technology	2.1: Building resilience through increased water availability and efficient water use in hill region	2.1.1 Creation of water reserves in regions through rain water tapping interventions	1. 15 Natural Spring Rejuvenation in collaboration with HESCO-Dehradun and BARC 2. Roof Top Rain water Harvesting System by 150 families	1. BAIF, PUNE Thematic Experts NRM + Agriculture 2. BAIF Team Uttarakhand 3. TAC Members 4. Experts institutions like HESCO , ACWADA M, VIPKAS – Almora, GB Pant Institute Of Himalayan Environment and 5. Development, Garhwal; Dr. Y.S. Parmar University Of Horticulture & Forestry- Solan; Central 6. Soil Conservation Research and Training 7. Institute (CSWTRI), National Remote Sensing Centre (NRSC)	1. BAIF Pune Provide the experts monitoring of the awareness programme. 2. BAIF Dehradun's team supervises the activity and participates as an expert. 3. Experts VPKAS Almora, GBPHED Almora, HESCO,CSWT RI, All these institutions gave their services as experts to the staff and farmers.	NO
		2.1.2 Adoption of efficient water use practices and technologies	Efficient use of Water through Drip Irrigation in 20,000 m ² area			
	2.2: Adoption of climate smart agriculture technologies and farm diversification options for climate resilient livelihoods	2.2.1 Introduction to climate smart farming technologies(horticulture) with hill specificity	1. High quality grafts of Walnut, Peach , Grafted Pear, malta and lemon provided to 600 families 2. Collective Marketing Group formed to collect and sell farmers/ produce in nearest markets 3. Introduction of high value vegetable cultivation(tomato, capsicum and cucumber) under protected conditions using bamboo based poly houses to 200 families 4. Conservation, revival and adoption of climate resilient indigenous food crops & revival of traditional agriculture practices			
2.3: Improved potential of livestock resources as an option for livelihood	2.3.1: Introduction of improved breeding service at door step of farmers with required management practices including fodder and feed management	1. Improved breeding services (for cows) with required health care and management services to 800 small and marginal farmers at their door-step. 2. A Women's Dairy Cooperative formed to link beneficiaries of livestock management intervention to the main regional milk chain 3. Development of vanpanchayats into community pasture lands following the principle of silvi-pasture through people's participation. 4. Silvi-pasture Management Committees (SMC) will be formed in each village to look after	BAIF Livestock Experts at Central Research Station -Pune , State level Livestock Experts TAC members ULDB- State animal husbandry department	Over all strategy planning for the livestock based livelihood development. Ensuring last mile reach of improved breeding services, services of fodder, feed , nutrition, climate smart housing , scientific management, supply of AI , feed, dewormer, vaccination, Linkages with government functionaries Insurance		

			the activities under vanpanchayats	BAIF Cattle Development Centers	Linkages for forward milk marketing and milk collection	
3: Knowledge Management including knowledge creation and wider dissemination actions	3: Knowledge generation based on field actions and wider dissemination to enhance awareness of hill communities and stakeholders as well as for better policy inputs	3.1.1: Knowledge generation through field action component	Preparation of Technical reports which will cover field level data, experiences, approaches, technologies tested and best practices along with dossiers and documentary	<ul style="list-style-type: none"> • BAIF, PUNE • TAC member s • State Steering Committee Members • NABARD • Team Uttarakhand - 	Planning various kinds of documentation , forms, types, products Planning various program popularization efforts and knowledge dissemination efforts	NO
		3.1.2: Wider dissemination of acquired knowledge	To organize one multi stakeholder’s consultation at national level			