



## ADAPTATION FUND

AFB/PPRC.15/9  
25 September 2014

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Adaptation Fund Board  
Project and Programme Review Committee  
Fifteenth meeting  
Bonn, Germany, 7-8 October 2014

Agenda Item 6 e)

### **PROPOSAL FOR INDIA (2)**

## Background

1. The Operational Policies and Guidelines (OPG) for Parties to Access Resources from the Adaptation Fund (the Fund), adopted by the Adaptation Fund Board (the Board), state in paragraph 45 that regular adaptation project and programme proposals, i.e. those that request funding exceeding US\$ 1 million, would undergo either a one-step, or a two-step approval process. In case of the one-step process, the proponent would directly submit a fully-developed project proposal. In the two-step process, the proponent would first submit a brief project concept, which would be reviewed by the Project and Programme Review Committee (PPRC) and would have to receive the endorsement of the Board. In the second step, the fully-developed project/programme document would be reviewed by the PPRC, and would ultimately require the Board's approval.

2. The Templates approved by the Board (OPG, Annex 4) do not include a separate template for project and programme concepts but provide that these are to be submitted using the project and programme proposal template. The section on Adaptation Fund Project Review Criteria states:

*For regular projects using the two-step approval process, only the first four criteria will be applied when reviewing the 1st step for regular project concept. In addition, the information provided in the 1st step approval process with respect to the review criteria for the regular project concept could be less detailed than the information in the request for approval template submitted at the 2nd step approval process. Furthermore, a final project document is required for regular projects for the 2nd step approval, in addition to the approval template.*

3. The first four criteria mentioned above are:

1. Country Eligibility,
2. Project Eligibility,
3. Resource Availability, and
4. Eligibility of NIE/MIE.

4. The fifth criterion, applied when reviewing a fully-developed project document, is:

5. Implementation Arrangements.

5. It is worth noting that since the twenty-second Board meeting, the Environmental and Social (E&S) Policy of the Fund was approved and consequently compliance with the Policy has been included in the review criteria both for concept documents and fully-developed project documents. The proposals template was revised as well, to include sections requesting demonstration of compliance of the project/programme with the E&S Policy.

6. In its seventeenth meeting, the Board decided (Decision B.17/7) to approve "Instructions for preparing a request for project or programme funding from the Adaptation Fund", which further outlines applicable review criteria for both concepts and fully-developed proposals. The latest version of this document was launched in conjunction with the revision of the Operational Policies and Guidelines in November 2013.

7. Based on the Board Decision B.9/2, the first call for project and programme proposals was issued and an invitation letter to eligible Parties to submit project and programme proposals to the Fund was sent out on 8 April 2010.

8. According to the Board Decision B.12/10, a project or programme proposal needs to be received by the secretariat no less than nine weeks before a Board meeting, in order to be considered by the Board in that meeting.

9. The following fully-developed project document titled “Climate Smart Actions and Strategies in North Western Himalayan Region for Sustainable Livelihoods of Agriculture-Dependent Hill Communities” was submitted by the National Bank for Agriculture and Rural Development (NABARD), which is the National Implementing Entity of the Adaptation Fund for India. This is the second submission of the proposal, using the one-step approval process. It was first submitted as a fully-developed project document to the twenty-third meeting of the Board, and the Board decided to:

*(a) Not approve the project document, as supplemented by the clarification response provided by National Bank for Agriculture and Rural Development (NABARD) to the request made by the technical review;*

*(b) Suggest that NABARD reformulate the proposal taking into account the observations in the review sheet annexed to the notification of the Board’s decision, as well as the following issues:*

- (i) The proposal should report the proposed components and activities consistently throughout the document and ensure that the budget provided aligns with the proposed activities;*
- (ii) The proposal should describe how synergies are sought with national initiatives such as the Mahatma Gandhi National Rural Employment Guarantee scheme as well as initiatives funded by multilateral and bilateral donors, such as the Himalayan Climate Change Adaptation Programme (HICAP) financed by the Ministry of Foreign Affairs of Norway and the Indian Himalayas Climate Adaptation Programme (IHCAP) financed by the Swiss Agency for Development and Cooperation;*
- (iii) The proposal should consider undertaking further consultation to ensure that all relevant stakeholder groups, particularly vulnerable communities, are consulted and that the targeted households are given the opportunity to make clear their priority needs with respect to climate change as well as participate in the choice of activities proposed through the project;*
- (iv) The proposal should provide further detail how the financial sustainability of project outcomes will be ensured beyond the project duration, including how government departments will be engaged in replicating successful initiatives, the potential sources of funding for doing so, and whether a role for sub-national institutions is envisaged in project execution;*
- (v) The proposal should present clear information on the implementation arrangements including NABARD’s oversight of the project and the mechanisms through which executing entities are expected to report to NABARD. Budgets on the implementing entity management fee, execution costs and monitoring and evaluation should be provided in the proposal document with justification for the requested amounts; and*

*(c) Request NABARD to transmit the observations referred to in paragraph (b) above to the Government of India.*

*(Decision B. 23/12)*

10. The current submission was received by the secretariat in time to be considered in the twenty-fourth Board meeting. The secretariat carried out a technical review of the project proposal, with the diary number IND/NIE/Agri/2014/2, and completed a review sheet. In accordance with a request to the secretariat made by the Board in its tenth meeting, the secretariat shared this review sheet with NABARD, and offered it the opportunity of providing responses before the review sheet was sent to the PPRC.

11. The secretariat is submitting to the PPRC the summary and, pursuant to Decision B.17/15, the final technical review of the project, both prepared by the secretariat, along with the final submission of the proposal in the following section.

## Project Summary

India – Climate smart actions and strategies in north western Himalayan region for sustainable livelihoods of agriculture-dependent hill communities

Implementing Entity: *NABARD*

Project/Programme Execution Cost: USD 78,477

Total Project/Programme Cost: USD 904,552

Implementing Fee: USD 76,500

Financing Requested: USD 981,052

### Programme Background and Context:

The proposed project seeks to improve the adaptive capacity of vulnerable communities in the North Western Himalayan hill region by introducing a combination of climate smart farming technologies covering crops, livestock and water resources, and by undertaking community strengthening processes and capacity building actions.

The specific objectives include: improving community mobilization to collectively plan and undertake climate change adaptation; building resilience through increased water availability and efficient water use in hill region; adopting of climate smart agriculture technologies and farm diversification options for climate resilient livelihoods; improving potential of livestock resources as an option for livelihood stabilization in hills; and generating knowledge based on field actions and wider dissemination to enhance awareness of hill communities and stakeholders as well as for better policy inputs.

Component 1: Community Mobilization and Organization (USD 24,667)

Key actions within this component include: strengthening community-based organizations (CBOs) in 10 villages; forming new CBOs in 10 villages; and preparing an annual adaptation plan for a cluster of 10 villages based on vulnerability assessment.

Component 2: Introduction of Water Resource Development and Climate Smart Farming Technology (USD 783,908)

This component would aim at building resilience through increased water availability and efficient water use in the hill region, through creation of water reserves in regions through rain water tapping interventions and adoption of efficient water use practices and technologies. It would also aim at adopting climate smart agriculture technologies and farm diversification options for climate resilient livelihoods, and improving potential of livestock resources as an option for livelihood stabilization. The latter would be achieved through introduction of improved breeding service at the door step of farmers with required management practices including fodder and feed management, and development of community level cadre as para-vet to provide required livestock services.

Component 3: Knowledge Management including knowledge creation and wider dissemination actions (USD 17,500)

The objective of this component is to support a robust programmatic approach, which can generate learnings, policy inputs and replication opportunities. Thus knowledge, data and

strategies developed during the course of implementation on climate change adaptation under the 'Hill Context' would be appropriately documented and disseminated.



ADAPTATION FUND

**ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW  
OF PROJECT/PROGRAMME PROPOSAL**

PROJECT/PROGRAMME CATEGORY: Small-sized Project

Country/Region: **India**  
 Project Title: **Actions to Improve Adaptive Capacity and Foster Resilience on Important Livelihood Resources for the Benefit of Vulnerable Communities in North Western Himalayan Region**  
 AF Project ID: **IND/NIE/Agri/2014/2**  
 IE Project ID: Requested Financing from Adaptation Fund (US Dollars): **981,052**  
 Reviewer and contact person: **Dr Dirk Lamberts** Co-reviewer(s): **Mikko Ollikainen**  
 IE Contact Person: **P. Radhakrishnan**

Review Criteria	Questions	Comments 25 Aug 2014	Comments 15 Sep 2014
Country Eligibility	1. Is the country party to the Kyoto Protocol?	Yes.	
	2. Is the country a developing country particularly vulnerable to the adverse effects of climate change?	Yes.	
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project/programme?	Yes (endorsement letter dated 14 August 2014), however, the name of the project in the endorsement letter does not correspond to the name on the project document (it reads "Climate Smart Actions and Strategies in North Western Himalayan Region for Sustainable Livelihoods of Agriculture Dependent Hill Communities") .	
	2. Does the project / programme support concrete adaptation actions to assist the country in addressing	Generally yes, the project is planned to support concrete adaptation actions to build adaptive capacity to the adverse	

	<p>adaptive capacity to the adverse effects of climate change and build in climate resilience?</p>	<p>effects of climate change.</p>	
	<p>3. Does the project / programme provide economic, social and environmental benefits, particularly to vulnerable communities, including gender considerations, while avoiding or mitigating negative impacts, in compliance with the Environmental and Social Policy of the Fund?</p>	<p>Potentially. While there is no information on the selection criteria of the beneficiary villages, these do appear to be vulnerable communities. If the project outcomes are realised, the project will provide economic, social and environmental benefits to these communities. However, the feasibility of a number of important project activities is unproven. <b>CR1:</b> Please explain how the activities leading to Outcomes 2.1, 2.2 and 2.3 can be successfully implemented considering the concerns related to their feasibility related to (i) ownership of the land on which they take place, and (ii) market demand and access to markets for project-supported produce (particularly milk and tomatoes). The risks of the project not achieving its objectives entail an economic and social risk to the beneficiaries as well. The potential for environmental and social negative impacts is denied.</p>	<p><b>CR1:</b> Partially addressed.</p> <p>The issue of land ownership is clarified for the spring sites but not for the land required for the other activities.</p> <p>The access to markets is clarified for the vegetables but important information on the marketing of milk is still lacking. Marketing of milk would depend on an external dairy cooperative but there is no information on an agreement with this cooperative to collect and market the milk produced by the project beneficiaries.</p>
	<p>4. Is the project / programme cost effective?</p>	<p>Much of the financial information provided in the proposal is questionable or lacks substantiation, and the project's</p>	



		<p>cost effectiveness is difficult to ascertain. <b>CR2:</b> Please clarify how the projected benefits to a household of acquiring improved breeding services for two cows at a (project) cost of 117 USD lead to an increase in annual household income from approx. 500 USD currently to 2,500 USD. <b>CR3:</b> Please clarify all the costs and benefits for the underground storage of roof water in large reservoirs.</p>	<p><b>CR2:</b> Not addressed. The additional information in the budget sheet shows a gross profit, assuming that a considerable number of external factors are favourable, of about 115 USD per year.</p> <p><b>CR3:</b> Addressed.</p>
	<p>5. Is the project / programme consistent with national or sub-national sustainable development strategies, national or sub-national development plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments?</p>	<p>Yes, the proposal provides an overview of consistency with other relevant instruments.</p>	
	<p>6. Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the Fund??</p>	<p>The relevant section provides an overview of compliance with relevant national standards but does not actually refer to standards but to policies, projects and missions instead. It is incomplete. <b>CR4:</b> Please clarify the technical standards for (i) the construction activities related to roof top rainwater harvesting, which entails the construction of 150 of 15 m<sup>3</sup> (elsewhere in the</p>	<p><b>CR4:</b> Addressed.</p>

		document 45 m <sup>3</sup> ) underground water storage facilities, (ii) the use of tracers and isotopes in groundwater and drinking water.	
	7. Is there duplication of project / programme with other funding sources?	No.	
	8. Does the project / programme have a learning and knowledge management component to capture and feedback lessons?	<p>Yes. Outcome 3 aims to generate knowledge based on field actions and disseminate this to other hill communities as well as for input in policy development. This includes the organisation of a national-level stakeholder consultation and the preparation of publications, including articles in peer-reviewed journals. Overall, the component is generic and not well aligned with the other project activities. E.g. publication of articles in peer-reviewed journals suggests that the project will generate new (scientific) knowledge on climate change adaptation, while such research is not reflected in the project activities.</p> <p><b>CR5:</b> Please specify the activities under Outcome 3 and include, where possible, quantified results. Please ensure that the activities and results of Outcome 3 are aligned well with the other project activities.</p> <p><b>CR6:</b> Please clarify how peer-reviewed articles will be</p>	<p><b>CR5:</b> Partially addressed.</p> <p>The activities for Output 3.3 have not been specified.</p> <p><b>CR6:</b> Addressed.</p>

		generated and, if retained, clarify how the publication of articles in peer-reviewed journals instrumentally contributes to the higher level goals of the project.	
	9. Has a consultative process taken place, and has it involved all key stakeholders, and vulnerable groups, including gender considerations?	<p>A summary of the consultative process is described in the proposal. Four consultation sessions were held, engaging a variety of stakeholders, including project beneficiaries. There is no information on consultation of vulnerable groups or the gender composition of the groups consulted.</p> <p><b>CR7:</b> Please elaborate on the consultation with vulnerable groups and inclusion of women in consultations, identifying all vulnerable groups and providing lists of stakeholders consulted. Please explain how the views of these groups have been taken into account in project design.</p>	<p><b>CR7:</b> Partially addressed.</p> <p>The information on vulnerable groups is not included. There is no explanation of how the views of the vulnerable groups consulted have been taken into account in project design.</p>
	10. Is the requested financing justified on the basis of full cost of adaptation reasoning?	<p>It appears that the full cost of adaptation is significantly higher than the funding requested. Several essential elements of full adaptation are not or insufficiently included in the requested project financing, e.g. the costs of marketing and processing, access to or ownership of land for growing fodder. <b>CR8:</b> Please consider including all the activities/costs to achieve full</p>	<p><b>CR8:</b> Addressed.</p>

		adaptation for each of the project activities and clarify how they will be funded, if necessary. Please justify if no additional activities/costs are required.	
	11. Is the project / program aligned with AF's results framework?	The activities broadly align with the AF's results framework.	
	12. Has the sustainability of the project/programme outcomes been taken into account when designing the project?	To varying extents. Some components require little sustained inputs (e.g. the roof water collection) while others require sustained inputs even beyond the project life. <b>CR9:</b> Please clarify which activities require sustained post-project inputs and how these will be funded. <b>CR10:</b> Please clarify the sustainability of the weather information service without project support as the subscription rates in the tiny communities and the related cash income seem overestimated. <b>CR11:</b> Marketing of supported products, in particular milk and perishable vegetables, seems a major constraint to sustainability. Please explain their sustainability.	<p><b>CR9:</b> Addressed.</p> <p><b>CR10:</b> Not addressed.</p> <p><b>CR11:</b> Partially addressed.</p> <p>The marketing component of the intervention remains to be strengthened to ensure viability of the project and its long-term sustainability.</p>
	13. Does the project / programme provide an overview of environmental and social impacts / risks identified?	Yes. The screening identified no environmental or social risks, and the project classified as a category C project. However, the review identified environmental and social risks related to the	

		<p>following principles of the ESP: - <i>Access and Equity, Vulnerable and marginalised groups, and Gender and women's empowerment</i>: the selection of the beneficiary villages and of the households that the project will engage with is not described, and the proposal should demonstrate that this selection process is equitable and fair, does not generate disproportionate negative impacts for certain groups and provides gender-neutral access to project benefits. <b>CR12:</b> Please describe the selection of beneficiary villages and households, and demonstrate how the process has been equitable and fair and the project does not generate disproportionate negative impacts for certain groups and provides gender-neutral access to project benefits. - <i>Core labour rights</i>: involves more than paying legal minimum wages <b>CR13:</b> Please clarify how the project will avoid forced or compulsory labour as well as child labour. - <i>Resettlement</i>: should consider individual households rather than communities <b>CR14:</b> Please provide information on possible resettlement of individuals or</p>	<p><b>CR12:</b> Not addressed.</p> <p><b>CR13:</b> Addressed. The proposal contains now the commitment to comply.</p> <p><b>CR14:</b> Addressed.</p>
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		<p>households for physical or economic reasons.</p> <ul style="list-style-type: none"><li>- <i>Pollution and resource efficiency</i>: reference is made to the promotion of organic farming as the key to preventing pollution but promotion of organic farming is not mentioned as a project activity.</li></ul> <p><b>CR15:</b> Please explain whether the project is indeed planning to support organic farming. If yes, please provide substantial details of the activities and rationale.</p> <p><b>CR16:</b> Please explain how the project will prevent pollution during the construction activities of underground rainwater storage.</p> <ul style="list-style-type: none"><li>- <i>Soils</i>: erosion is already mentioned as a major issue in the project area, and promoting roaming cattle constitutes a clear risk.</li></ul> <p><b>CR17:</b> Please explain how the project activities will reduce the risk of soil erosion and not exacerbate the existing problems. Given the apparent risks and impacts involved, it is unclear why the project would be classified as C rather than B. Reference is made to the M&amp;E section which states 'the requirements of the environmental and social assessment and management frameworks', while elsewhere in the proposal the project is</p>	<p><b>CR15:</b> Addressed.</p> <p><b>CR16:</b> Addressed.</p> <p><b>CR17:</b> Addressed.</p>
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		categorised as C, without environmental or social risks. <b>CR18:</b> After addressing the above risk-related clarification requests, please reconsider the classification in light of the AF environmental and social policy. If the project requires a classification as B, please prepare an environmental and social management plan.	<b>CR18:</b> Addressed, but inadequate.  The C categorisation is argued based on the absence of any environmental and social risk for the project, which is not substantiated. A risk assessment and management plan commensurate with the risks identified should be prepared to meet ESP requirements.
Resource Availability	1. Is the requested project / programme funding within the cap of the country?	Yes.	
	2. Is the Implementing Entity Management Fee at or below 8.5 per cent of the total project/programme budget before the fee?	Yes, at 8.46%.	
	3. Are the Project/Programme Execution Costs at or below 9.5 per cent of the total project/programme budget (including the fee)?	Yes, at 9.50%.	
Eligibility of IE	4. Is the project/programme submitted through an eligible Implementing Entity that has been accredited by the Board?	Yes, the project is submitted through the Board-accredited NIE National Bank for Agriculture and Rural Development (NABARD)	
Implementation Arrangements	1. Is there adequate arrangement for project / programme management?	Potentially. The information provided on implementation arrangements is rather convoluted. The Responsibility	

		matrix (Table 13) mixes institutions and activities and other elements of a work plan, as does the diagram of project implementation structure (fig. 14). The role of the IE is explained. <b>CR19:</b> Please clarify the Responsibility matrix to clearly identify institutions involved, as well as roles and responsibilities.	<b>CR19:</b> Addressed.
	2. Are there measures for financial and project/programme risk management?	Yes.	
	3. Are there measures in place for the management of for environmental and social risks, in line with the Environmental and Social Policy of the Fund?	The proposal is inconsistent. Table 12 concludes that there are no environmental or social risks <i>sensu ESP</i> associated with the project, while Table 15 identifies a number of low-level environmental and social risks somewhat similar to the ESP principles, together with mitigation. Please refer to the above CRs. The proposal does not contain measures for management of environmental and social risks other than “care will be taken while operationalization to cause minimum impact / adverse effect to environment.” (p. 74)	Not addressed.
	4. Is a budget on the Implementing Entity Management Fee use included?	Yes, p. 94, with detailed notes.	



	5. Is an explanation and a breakdown of the execution costs included?	Yes and no. A breakdown of the execution costs is included but no explanation.	
	6. Is a detailed budget including budget notes included?	Yes, the proposal contains a detailed budget and budget notes. A number of errors and inconsistencies have been identified in the budget compared to the description of the project activities elsewhere in the document. E.g. the number of CBOs that the project will help establish is described as 3 per village, for ten villages, but the budget lists 50 CBOs. Other examples are the total amount for Water use efficiency techniques and Fodder plantation. <b>CAR1:</b> Please check and revise the detailed budget (p. 89) as required to ensure consistency with the described project activities and to correct errors.	<b>CAR1:</b> Addressed.
	7. Are arrangements for monitoring and evaluation clearly defined, including budgeted M&E plans and sex-disaggregated data, targets and indicators?	Arrangements for M&E of project implementation progress are described, and a budgeted M&E plan is included, albeit that it is incomplete. The section on M&E does not specify the indicators that will be used; project progress indicators are included in the Results Framework. None of these indicators are disaggregated by gender.  The M&E section is inconsistent	Addressed.  The M&E section has been revised accordingly.

		with respect to monitoring and evaluation of ESP compliance. Please refer to CR18.	
	8. Does the M&E Framework include a break-down of how implementing entity IE fees will be utilized in the supervision of the M&E function?	No.	
	9. Does the project/programme's results framework align with the AF's results framework? Does it include at least one core outcome indicator from the Fund's results framework?	The project has shown how it aligns with the AF results framework. However, it has not included at least one core indicator from the Fund's results framework. <b>CR20:</b> Please include at least one core indicator from the Fund's results framework.	<b>CR20:</b> Partially addressed.  The table showing overall alignment with the AF results framework is updated.  A core outcome indicator from the Fund's results framework is still lacking.
	10. Is a disbursement schedule with time-bound milestones included?	Yes.	

<p><b>Technical Summary</b></p>	<p>The initial technical review found that the stated objective of the project is to improve adaptive capacity and create climate change resilience for 800 households in 10 villages in the north-western Himalayan region. It intends to achieve this by improving community mobilisation, increasing water storage and promoting efficient water use, promoting 'climate-smart' agriculture technologies and farm diversification, improving livestock resources and productivity through training of para-vets and increased production of fodder, and collating and disseminating relevant knowledge gathered.</p> <p>The following <b><u>corrective action request (CAR)</u></b> was made:</p> <p><b>CAR1:</b> Please check and revise the detailed budget (p. 89) as required to ensure consistency with the described project activities and to correct errors.</p> <p>In addition, the following <b><u>20 clarification requests (CRs)</u></b> were made:</p>
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- CR1:** Please explain how the activities leading to Outcomes 2.1, 2.2 and 2.3 can be successfully implemented considering the concerns related to their feasibility related to (i) ownership of the land on which they take place, and (ii) market demand and access to markets for project-supported produce (particularly milk and tomatoes). The risks of the project not achieving its objectives entail an economic and social risk to the beneficiaries as well. The potential for environmental and social negative impacts is denied.
- CR2:** Please clarify how the projected benefits to a household of acquiring improved breeding services for two cows at a (project) cost of 117 USD lead to an increase in annual household income from approx. 500 USD currently to 2,500 USD.
- CR3:** Please clarify all the costs and benefits for the underground storage of roof water in large reservoirs.
- CR4:** Please clarify the technical standards for (i) the construction activities related to roof top rainwater harvesting, which entails the construction of 150 of 15 m<sup>3</sup> (elsewhere in the document 45 m<sup>3</sup>) underground water storage facilities, (ii) the use of tracers and isotopes in groundwater and drinking water.
- CR5:** Please specify the activities under Outcome 3 and include, where possible, quantified results. Please ensure that the activities and results of Outcome 3 are aligned well with the other project activities.
- CR6:** Please clarify how peer-reviewed articles will be generated and, if retained, clarify how the publication of articles in peer-reviewed journals instrumentally contributes to the higher level goals of the project.
- CR7:** Please elaborate on the consultation with vulnerable groups and inclusion of women in consultations, identifying all vulnerable groups and providing lists of stakeholders consulted. Please explain how the views of these groups have been taken into account in project design.
- CR8:** Please consider including all the activities/costs to achieve full adaptation for each of the project activities and clarify how they will be funded, if necessary. Please justify if no additional activities/costs are required.
- CR9:** Please clarify which activities require sustained post-project inputs and how these will be funded.
- CR10:** Please clarify the sustainability of the weather information service without project support as the subscription rates in the tiny communities and the related cash income seem overestimated.
- CR11:** Marketing of supported products, in particular milk and perishable vegetables, seems a major constraint to sustainability. Please explain their sustainability.
- CR12:** Please describe the selection of beneficiary villages and households, and demonstrate how the process has been equitable and fair and the project does not generate disproportionate negative impacts for certain groups and provides gender-neutral access to project benefits.
- CR13:** Please clarify how the project will avoid forced or compulsory labour as well as child labour.
- CR14:** Please provide information on possible resettlement of individuals or households for physical or economic reasons.
- CR15:** Please explain whether the project is indeed planning to support organic farming. If yes, please provide substantial details of the activities and rationale.
- CR16:** Please explain how the project will prevent pollution during the construction activities of underground rainwater storage.

	<p><b>CR17:</b> Please explain how the project activities will reduce the risk of soil erosion and not exacerbate the existing problems.</p> <p><b>CR18:</b> After addressing the above risk-related clarification requests, please reconsider the classification in light of the AF environmental and social policy. If the project requires a classification as B, please prepare an environmental and social management plan.</p> <p><b>CR19:</b> Please clarify the Responsibility matrix to clearly identify institutions involved, as well as roles and responsibilities.</p> <p><b>CR20:</b> Please include at least one core indicator from the Fund’s results framework. Please see AF document “Methodology for Reporting Adaptation Fund Core Impact Indicators”: <a href="https://adaptation-fund.org/sites/default/files/AF%20Core%20Indicator%20Methodologies.pdf">https://adaptation-fund.org/sites/default/files/AF%20Core%20Indicator%20Methodologies.pdf</a></p> <p>The final technical review finds that the request for corrective action and most of the requests for clarification have been addressed and responded to in an positive manner. Access to markets has been clarified but remains a risk factor for sustainability. Information on the selection and consultation of beneficiaries may still be improved. The ESP risk assessment would need strengthening for access and equity, and marginalized and vulnerable groups.</p> <p>The following observations are made:</p> <ul style="list-style-type: none"> <li>i. The project should include at least one core output indicator from the Fund’s results framework.</li> <li>ii. The project should elaborate on the marketing arrangements for the supported produce and demonstrate their sustainability.</li> <li>iii. The project should improve the cost-effectiveness analysis.</li> <li>iv. The project should reflect in its design the views of vulnerable groups.</li> <li>v. The project should reconsider its finding that environmental and social risks as defined in the Adaptation Fund Environmental and Social Policy (ESP) are absent and prepare, if required, an Environmental and Social Management Plan (ESMP) commensurate with the risks identified and in accordance with the project ESP categorisation.</li> </ul>
Date:	15 September 2014



## **REQUEST FOR PROJECT/PROGRAMME FUNDING FROM ADAPTATION FUND**

The annexed form should be completed and transmitted to the Adaptation Fund Board Secretariat by email or fax.

Please type in the responses using the template provided. The instructions attached to the form provide guidance to filling out the template.

Please note that a project/programme must be fully prepared (i.e., fully appraised for feasibility) when the request is submitted. The final project/programme document resulting from the appraisal process should be attached to this request for funding.

Complete documentation should be sent to  
The Adaptation Fund Board Secretariat  
1818 H Street NW  
MSN G6-602  
Washington, DC. 20433  
U.S.A  
Fax: +1 (202) 522-3240/5  
Email: [secretariat@adaptation-fund.org](mailto:secretariat@adaptation-fund.org)



## PROJECT/PROGRAMME PROPOSAL



### PART I: PROJECT/PROGRAMME INFORMATION

**PROJECT/PROGRAMME CATEGORY:** SMALL - SIZED PROJECT

**COUNTRY:** INDIA

**TITLE OF PROJECT/PROGRAMME:** CLIMATE SMART ACTIONS AND STRATEGIES IN NORTH WESTERN HIMALAYAN REGION FOR SUSTAINABLE LIVELIHOODS OF AGRICULTURE-DEPENDENT HILL COMMUNITIES

**TYPE OF IMPLEMENTING ENTITY:** NIE

**IMPLEMENTING ENTITY:** NATIONAL BANK FOR AGRICULTURE AND RURAL DEVELOPMENT (NABARD)

**EXECUTING ENTITY/IES:** BAIF DEVELOPMENT RESEARCH FOUNDATION

**AMOUNT OF FINANCING REQUESTED:** \$ 981,052 (IN U.S DOLLARS EQUIVALENT)

## PROJECT BACKGROUND AND CONTEXT

*Provide brief information on the problem the proposed project/programme is aiming to solve. Outline the economic social, development and environmental context in which the project would operate.*

### CLIMATE CHANGE AND INDIA

Global records indicate that earth has warmed by 0.74°C during the last hundred years. Long-term drying trends have been observed in precipitation over the Sahel, Mediterranean, southern Africa, parts of South Asia and other regions. The records also show that intense and longer droughts over wider areas since the 1970s in the tropics and sub tropics have increased in frequency. Mountain ecosystems are especially vulnerable to the loss of glaciers and more extreme events. The global changes in climate have led to changes in atmospheric circulation, intensity and variability patterns, and changes in hydrological cycles and seasonal patterns.

India's mean temperature showed warming trends of 0.51°C per hundred years during 1901-2007<sup>1</sup>. The Indian Network for Climate Change Assessment<sup>2</sup> has observed accelerated warming during 1979-2007 in the winter and post monsoon seasons that have increased by 0.80°C and 0.82°C, respectively, in the last century. The mean temperature has increased by 0.20°C per decade during 1971-2007, with much steeper increase in the minimum temperature than the maximum temperature.

Maximum temperatures in India have shown an increase of 0.71°C per hundred years and the mean minimum temperature has increased by 0.27°C per hundred years. The frequency of hot days show a gradual increasing trend and frequency of cold days show a significant decreasing trend during the pre-monsoon season. The INCCA assessment also reports an increased precipitation trend over the country. The mean rainfall has been calculated at 848 mm with a standard deviation of 83 mm. This implies increased uncertainty in prediction of rain due to its increased variability, a trend that is reflected in the fact that 43 out of 139 years were either in excess or deficient in rainfall for the country as a whole.

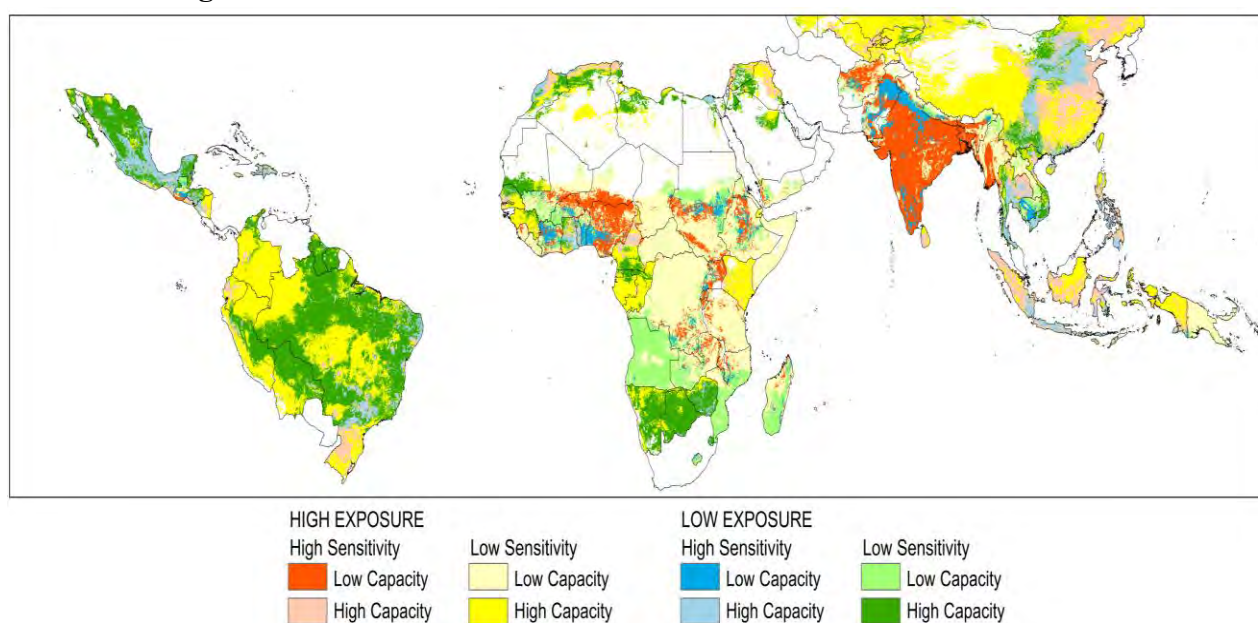
Climate change in India is a major issue to be addressed as the country has a high exposure and high sensitivity to the risks of climate change, yet has a low capacity to adapt to the constraints and issues involved. See Figure 1.

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<sup>1</sup>Kothawale D.R. (2010), *Recent Trends in Pre-monsoon, Daily Temperatures, Extremes over India*, IITM, Pune, Maharashtra, India

<sup>2</sup> INCCA report, 2010

**Figure 1: India: Food Insecure and Highly Vulnerable to the Likely Impacts of Future Climate Change**



Source: CCAFS report<sup>3</sup> No.5.Copenhagen, Denmark

India has many reasons to be concerned about the impacts of climate change. Its large rural population depends for its livelihoods on climate-sensitive sectors like agriculture, forestry and animal husbandry. Indian agriculture is particularly sensitive to climate change and variability. Agriculture in India makes up 17.4per cent of GDP and provides nearly 52per cent of employment (as compared to 1percent of GDP and 2percent of employment for the USA), with the majority of agricultural workers drawn from the poorer segments of the population<sup>4</sup>. India is considered highly vulnerable to climate change, not only because of high physical exposure to climate-related disasters (65 percent of India is drought prone, 12 percent flood prone, and 8 percent is susceptible to cyclones), but also because of the dependency of its economy and majority of population on climate-sensitive sectors (e.g. agriculture, forests, tourism, animal husbandry and fisheries). The negative impact of climate change on agriculture is also likely to have a serious impact on poverty within India, especially the most vulnerable: the small and marginal land holders. Such farmers have meager resources to buffer them from the new risks that climate change poses.**The major impact of climate change will be on rain fed**

<sup>3</sup>Erickson, P., P. Thornton, A. Notenbaert, L. Cramer, P. Jones, M. Herrero. 2011. *Mapping Hotspots of Climate Change and Food Insecurity in the Global Tropics*. CCAFS Report no. 5. Copenhagen, Denmark

<sup>4</sup>FAO, 2011 “*Climate-Smart Agriculture – Policies, Practices and Financing for Food Security, Adaptation and Mitigation*” Food and Agriculture Organization, Rome



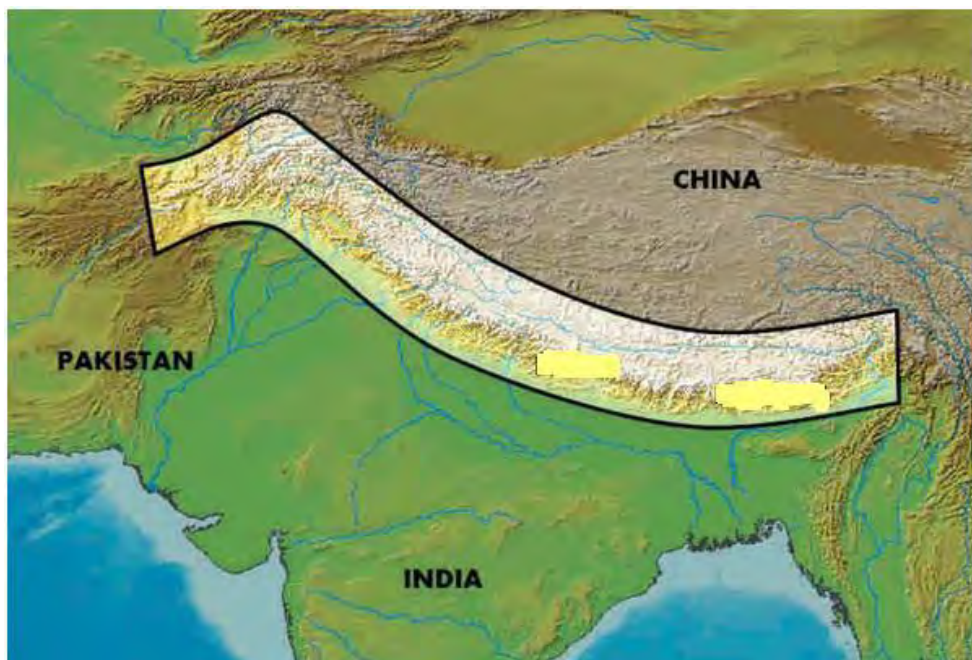
**agriculture, which is practiced in nearly 60 % of the total agricultural area, and is dominated by very poor farmers.**

The adaptation to climate change in India is vital not only from the point of view of supporting livelihoods or sustaining the production and productivity in agriculture, but it is equally important from the view point of ensuring required food security for the people of India.

### **INDIAN HIMALAYAN REGION (IHR)**

The Indian Himalayan Region (IHR) is an arc of 2,500 km that traverses 11 states of India. This region is inhabited by more than 50 million people, about 5% of India's population, and covers 18% of the geographical area of the country.

**Figure 2: Indian Himalayan Region**



*Sources: Annual Report, HIMMOTHAN*

The IHR region covers vast areas, with about 17 percent of the region being under permanent snow cover and glaciers, and about 30-40 percent under seasonal snow cover, forming a unique water reservoir that feeds important perennial rivers that provide water for drinking and irrigation in the Northern part of India. It is among the most fragile and vulnerable ecosystems in the world, exerting considerable influence on weather patterns throughout South Asia and its influences extend into some South East Asian countries and island areas as well. It has 69% of India's freshwater resources and is recognized as one of the world's key global Biodiversity Hotspots.

The livelihoods of the rural communities are mostly dependent on agriculture and natural resource - based activities as other economic activities are limited. Agriculture is mostly practiced on sloping land and small parcels of terraced land and relies entirely on seasonal rainfall. Owing to the very small land holdings, families rely heavily on natural fodder resources including the forest areas to feed their livestock. This economically stressed situation has been further aggravated in recent times by the effects of climate change in the region. The economy of the IHR is predominantly rural and highly dependent on climate sensitive sectors like agricultural and livestock sectors. Here, for example, increasing variation in precipitation (both rainfall and snow), and temperature can change soil moisture availability, plant phenology and their viable altitudinal range, and pest susceptibility.

From an agro-climatic perspective, the Indian Himalayas fall into two zones. Zone-I, covering all or part of the states of Jammu and Kashmir, Himachal Pradesh and Uttarakhand, and Zone-II covering the north eastern states of India. Zone-I has a low-altitude and sub-tropical region in the south; a mid to high temperate region in the center and a cold arid region in the north. Annual rainfall in Zone I range from 1,000 to 1,800 mm. From west to east, the Indian Himalayan region also has distinctive socio-cultural regions and sub-regions.

The Himalayas are highly vulnerable due to geology, stress caused by exploitation of natural resources, and increased population pressure, and other related challenges. These effects are likely to be exacerbated due to the impact of climate change, which may adversely impact the Himalayan ecosystem through increased temperature, altered precipitation patterns, episodes of drought, and biotic influences. According to the Intergovernmental Panel on Climate Change (IPCC), impacts are expected to range from reduced genetic diversity of species to glacial melt in the Himalayas leading to increased flooding that will affect water resources within the next few decades. Uttarakhand is most vulnerable to climate-mediated risks.

#### **GEOGRAPHICAL AND SOCIO-ECONOMIC CONTEXT OF UTTARAKHAND**

Uttarakhand is one of the hilly states in the Indian Himalayas. It lies in the Northern part of India between the latitudes 28°43'-31°27' N and longitudes 77°34'- 81°02'E having a maximum dimension of east - west 310 km and 255 km north - south covering an area of 53,484 km<sup>2</sup> with the elevation ranging from 210 to 7817 meters from sea level. (See figure 3)

The state has two distinct climatic regions: the predominant hilly terrain and the small plain region. The climatic condition of Uttarakhand varies greatly due to variation in altitude and proximity towards Himalayan ranges. The spatial distribution of the rainfall varies depending upon the geographical location; and slope and aspect of the place. The amount of rainfall is generally high in low mountainous regions like Nainital and Dehradun and it gradually decrease with increasing height.

**Figure 3: Uttarakhand State in IHR**



Given the terrain of the state and favorable climatic conditions, agriculture continues to be the major source of income for more than three-fourths of the state's population. Agriculture and allied activities with a share of about 13 percent (at constant 2004-05 prices) during 2009-10, is a significant contributor to the state domestic product as against the national average of 14.6 percent<sup>5</sup>.

Agriculture is based on traditional land use practices in Uttarakhand. A considerable area is under settled agriculture (terrace farming), which is dependent on natural resources like water and soil. Soil in the valley bottoms is more fertile than that found on the ridge top due to the presence of a large quantity of humus; mineral nutrients, moisture and suitable soil depth. This natural resource is depleting gradually, day by day, as soil erosion in the area is increasing with the increase in runoff caused by deforestation and overall land degradation. The main crops grown are rice, finger millet, wheat, potato, tomato, peas, pulses, peach & plums. The net sown area for the region is approximately 13.29 percent of the total reported area, although there are wide variations in this percentage from district to district. The state can be characterized by low productivity, shortage of inputs, and lack of marketing that has confined many villages to produce only for self-subsistence farming.

<sup>5</sup> SAPCC, Uttarakhand Report, 2012

In most of the Himalayan region, the pace of economic growth is low. Communities here try to create livelihood opportunities in the difficult terrain with a dwindling resource base. In spite of inhabiting this originally resource-rich area, the socio-economic progress of its people is minimal. The role of women in agricultural activities in hill communities is crucial. An estimated 20 percent of rural households are de facto female headed due to widowhood, desertion or migration of the male member leading to feminization of agricultural work and labor in the Himalayan hills. As a result of this, the women in hills have been identified as being more vulnerable to the effects of climate change.

**Livestock rearing is another important source of livelihoods for the hill community.** Almost each household rears cattle or small ruminants for enhancing their income and ensuring food security. These animals are also the backbone of the organic farming in the areas. Major hurdles in transforming livestock rearing as main source of livelihood for small holders are lack of fodder (about 40 percent), poor management practices and low genetic potential. Besides that limited avenues for market & value addition are also some causes for lower return from the livestock sector.

### **Climate change in the context of Project Area**

The INCCA report has identified that communities inhabiting mountain ecosystems are particularly vulnerable to extreme weather conditions such as high temperatures, altering rainfall patterns, receding glaciers and permafrost thawing. According to the State Action Plan for Climate Change, 2012 for Uttarakhand, climate change induced changes are already being experienced which include: receding glaciers and upwardly moving snowline, erratic rainfall, irregular winter rains, reduction in snow in winter, rise in temperature, increasing intensity and frequency of flash floods. It is predicted that there would be an upward shift in various climatic zones including IHR with slight rise in temperature. The variation in temperature and rainfall conditions along the ridge and the valley areas is very prominent. The slope aspect also plays an important role in determining the climate, as north-facing slopes are much cooler and damp as compared to south facing slopes due to the insulation affect.

**Table 1: Projected Changes in Climate Parameters in 2030s with respect to 1970s**

<b>Parameter</b>	<b>Trend</b>	<b>1970-2030</b>
Annual Temperature	Increase	0.9 ± 0.6 °C to 0.6 ± 0.7 °C
Net Increase in Temperature	Increase	1.7 to 2.2 °C
Winter Temperature	Decrease	2.6°C
Temperature Extremes	Increase	1 to 4°C
Annual Rainfall (mm)	Increase	60 mm to 206 mm (5-13%)
Winter Rains	Increase	5 mm
Extreme Precipitation		2-12 %

Among the states with the highest climatic vulnerability in IHR is Uttarakhand. The state has experienced frequent occurrence of extreme events such as cloud bursts and flash floods that have had devastating effects on communities. The nature of devastation is such that normalcy cannot return within a short time. Recent studies indicate that the devastation to livelihood support systems is likely to continue with increased frequency of such events. According to the State Action Plan for Climate Change (SAPCC) for Uttarakhand, climate change is likely to escalate the already existing social, ecological, economic and cultural vulnerabilities. (Refer Table 1 above)

The International Centre for Integrated Mountain Development (ICIMOD) and International Fund for Agricultural Development (IFAD) have carried out a study and documented people's perceptions of how climate change has impacted their immediate surroundings and livelihoods. The observations are summarized in following table:

**Table 2: Adverse Effects due to Specific Climate Change in IHR**

Specific climate changes	Specific adverse effects
<p>Rising temperature</p> <p>The region has experienced an increase in maximum temperature up to 1 degree Centigrade</p>	<ul style="list-style-type: none"> <li>▪ Apple orchards shifting towards higher altitude seeking lesser temperatures</li> <li>▪ Increased vulnerability of agri-horti sectors and absence of any other livelihood options leading to migration of productive labor.</li> <li>▪ Upward shift in various climatic zones with slight rise in temperature</li> <li>▪ Altered cropping patterns</li> <li>▪ Day-to-day and medium-term planning of farm operations is becoming more difficult</li> <li>▪ Greater losses in winter crop as compared to rainy season crop</li> <li>▪ Changes in phenology/composition of species</li> <li>▪ Increase in pests and diseases</li> <li>▪ Decline in the production of wheat and potato and consequent adverse impact on food security</li> <li>▪ Degradation of soil and declining soil moisture due to increased heat stress and early snow melting</li> <li>▪ Decline in availability of fodder and its adverse impact on animal</li> </ul>

<sup>6</sup>Uttarakhand State Action Plan for Climate Change – Transforming crisis in to Opportunity, Government of Uttarakhand, 2012 (supported by UNDP) : 4 X 4 Assessment by Ministry of Environment and Forest- The projection/forecast of climate change on Himalayan Region

Specific climate changes	Specific adverse effects	
	husbandry <ul style="list-style-type: none"> <li>▪ Reduction in local crop diversity.</li> </ul>	
<p>Changed precipitation conditions</p> <p>Winter precipitation in the form of snow fall has declined over the years</p> <p>Warmer and shorter winters with less snowfall</p> <p>Delayed onset of rains during monsoon</p> <p>Decrease in scattered light rainfall that was useful for percolation and an increase in intense rainfall, but which destroys crops and speeds up runs off.</p> <p>Overall less and more erratic rainfall.</p> <p>Less or absent winter rains</p> <p>Increased frequency of intense rainfall events</p>	<ul style="list-style-type: none"> <li>▪ Decrease in water availability in the streams and rivers in summer due to decreased snow fall</li> <li>▪ Increased run-off, less infiltration and loss of surface soil on steeper mountain slopes which would accelerate the rates of siltation and flash floods</li> <li>▪ Increased run-off coupled with removal of forest cover, have already started showing signs of depleted hill aquifer regime</li> <li>▪ Overall decreased water availability</li> <li>▪ Streams and springs are drying up that used to act as the lifeline of the mountain communities by providing much needed water for drinking and agriculture during dry spells</li> <li>▪ Decline in soil moisture hampering crop cultivation</li> </ul>	<p>Animal husbandry turning unproductive and less remunerative due to scarcity of fodder</p> <p>Water availability becoming crucial issue posing challenge to agriculture and livestock</p> <p>Drinking water sources are getting reduced thus adding to drudgery of women</p>
<p>Extreme weather events</p>	<ul style="list-style-type: none"> <li>▪ Intense rainfall coupled with deforestation, sloping terrain and loose soil leading to soil erosion and loss of fertile soil, thereby making agriculture impossible</li> </ul>	

Specific climate changes	Specific adverse effects
	<ul style="list-style-type: none"> <li>▪ Land degradation and loosening of soil</li> </ul>
Sudden events leading to total loss of crops and property	<ul style="list-style-type: none"> <li>▪ Sudden weather events like hail storm in 2009 and resultant crop losses</li> <li>▪ Cloud burst in June 2013, resulting in major devastation</li> <li>▪ Increased instances of landslides compared to the past</li> </ul>
Land and soil degradation due to intense rains temperature variations	<ul style="list-style-type: none"> <li>▪ Increase in human-animal conflicts</li> <li>▪ Increased pressure on forests resulting into decline of biodiversity</li> <li>▪ Proliferation of invasive species</li> <li>▪ Increased requirement for feed supplements for livestock</li> <li>▪ Fodder scarcity and resultant drudgery for women due to less fodder</li> </ul>

### Sectoral implications of climate change:

i. **Agriculture:** Apple production in Himachal Pradesh, one of the IHR states, has decreased between 1982 and 2005 as an increase in maximum temperature has led to a reduction in total chilling hours in the region—a decline of more than 9.1 units per year in the last 23 years has taken place<sup>7</sup>. With increasing temperatures, it is anticipated that there may be an **all-round decrease in apple production in the Himalayan region**, and the line of production may shift to higher altitudes. The variation in maximum and minimum temperature in the area due to climate change is not very conducive for growth and development of plants, as increasing night temperature is leading to increase the loss of food material. Other than that, **changing climate has also resulted in changing cropping patterns in the region**. Cultivation of hill food crops such as local millets, buckwheat, soybean and barley are in decline. Time and amount of precipitation have major impact on crops both in rain-fed and irrigated areas. In rain-fed areas sowing time, crop duration and productivity is directly linked to the quantum and distribution of rainfall, while in irrigated areas distribution of rainfall affects germination and harvesting of crops. Main issue and challenges in agriculture in Uttarakhand can be summarized as:

- Majority of small, marginal and fragmented land holdings,
- Predominance of rain-fed agriculture,
- Soil erosion, as the terrain is hilly,
- Higher cost of production in hills
- Low (and often unavailability of timely) inputs and
- Access to last mile connectivity for extension services in agriculture

<sup>7</sup> 4\*4 Assessment report, MoEF, GoI

- ii. **Livestock:** According to the most recent Livestock Census (2007), the districts constituting the state of Uttarakhand had: 2.24 million cattle, 1.22 million buffalo, 1.34 million goats, 0.29 million sheep and over 2.60 million poultry. **Large populations and low productivity is the hallmark of livestock in Uttarakhand**, across all species. Majority of this population is nondescript and low in productivity, across all species. Over 80 per cent of rural households own livestock and earn a part of their living from livestock. Livestock production is the endeavor of the small holders (marginal, small and land less) and over 80 per cent of all species of livestock and almost 100 per cent of *desi*poultry in Uttarakhand are owned by them. Livestock sector in Uttarakhand is therefore extremely livelihood intensive and investment in livestock development is critical to rural prosperity.

**Livestock resources have been affected due to a shortage of nutritive fodder, even in the monsoon season.** Due to this shortage, cattle have been released into forests this year. Crop and livestock based production systems being rain fed and climate sensitive, have been heavily affected in region. Main issue and challenges in livestock can be summarized as:

- Limited land under fodder crops in hills, mostly rain-fed.
- More than 62 per cent land under reserve forest hence grazing & harvesting of fodder from these areas restricted
- Remote & geographically difficult terrain & limited road connectivity increases the transportation cost of fodder from plains
- Majority of the cattle & buffalo populations are non-descript and low yielding leading to low productivity per animal
- Poor infrastructure facilities at Veterinary Hospitals, Dispensaries & Production Support Institutions
- Limited Mobility due to difficult terrain
- Animal Husbandry practiced as an ancillary activity

- iii. **Water:** Uttarakhand has two distinct hydro-geological regimes viz. the Gangetic alluvial plain and the Himalayan mountain belt. The state being predominantly hilly, offers much less potential for large-scale development of ground water. Ground water in the hilly region occurs mostly in fissures/fractures and emerges as springs. The springs are amenable to small-scale development of ground water resources in the State. **Deforestation, grazing and trampling by livestock, erosion of top fertile soil, forest fires and development activities (e.g. road-widening, mining, building construction, etc.) cause reduction in the infiltration rate and sponge action of the land and thus the failure of the watershed**, which results in unchecked flow of water during the monsoon to cause a sudden swelling of streams and rivers, so that there are floods in the foothills and even in the plains, and droughts in the villages located on the slope of the mountains. In terms of overall impact on communities, it is thus realized that **climate change has also**



**accelerated the process of degradation of the natural resource base. This is also causing damage to biodiversity and is resulting in the marginalization of the hill communities.**

It is evident that the communities whose livelihoods are closely linked to natural resources are facing greater uncertainty than ever before. **The effects of climate change may be even more severe on women and poor marginalized groups residing in hill areas.** These communities do not have the knowledge of coping mechanisms as well as access to finance and other resources to find solutions on their own. Often the tendency is for men to migrate in search of employment elsewhere, leaving the women to shoulder greater responsibilities at home. This leads to further degradation of farm resources, as they cannot be maintained satisfactorily.

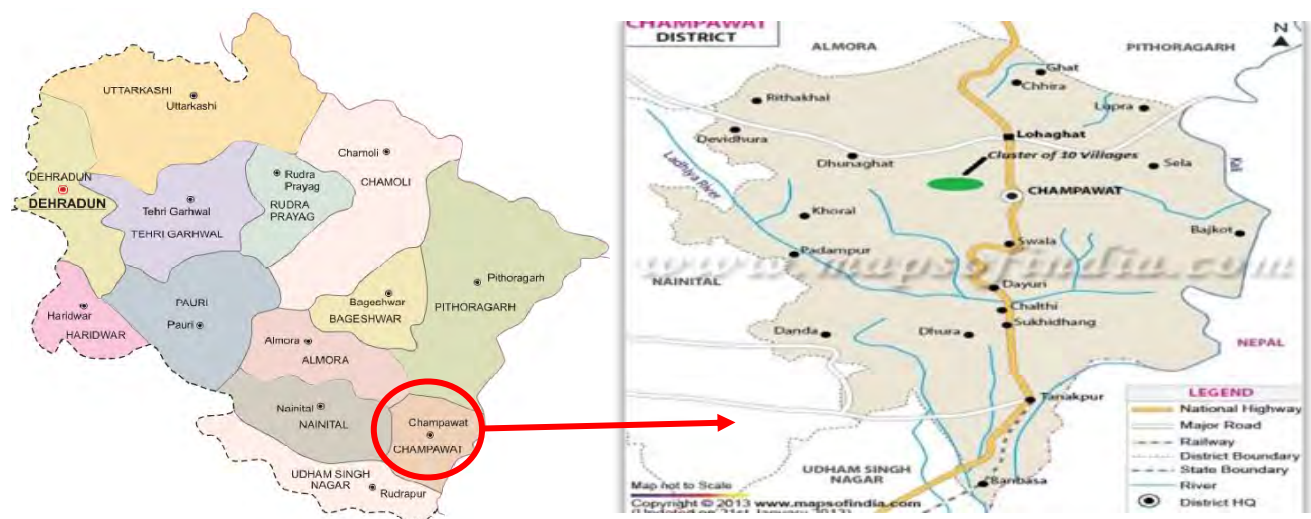
Reversal of this situation will require addressing climate change vulnerabilities through resource use optimization, while creating livelihood opportunities with sustainable technological options. Therefore, it is proposed to introduce a mixture of climate smart technologies, coupled together with capacity building of communities.

**The above backdrop highlights the need for quick response and urgent actions, which will result in building resilience of poor hill communities and their livelihood resources.**

## PROJECT LOCATION:

Champawat is the most backward hill district of Uttarakhand and has the maximum area under hilly terrain (refer figure 4). Only 8% of the net cultivated area is irrigated. Small and scattered land holdings are making agriculture economically nonviable. More than 70% of the land holdings are less than one hectare in size and the average land holding is about 0.91 hectare. Agriculture, including fruits and vegetables, is the main economic activity. The land holdings are small and scattered thereby enhancing the vulnerability. Due to poor soil health and soil erosion, caused by heavy rainfall and landslides, productivity is affected.

**Figure 4: Champawat district in Uttarakhand State**



For the project, a representative vulnerable cluster consisting of **10 villages** (refer figure 5) that are vulnerable to the impacts of climate change has been selected. These villages form part of the hilly areas of Champawat district in Uttarakhand state of India. Champawat is part of Zone A, having altitude of 1000m above the sea level and is categorized as part of rain fed lower hills.

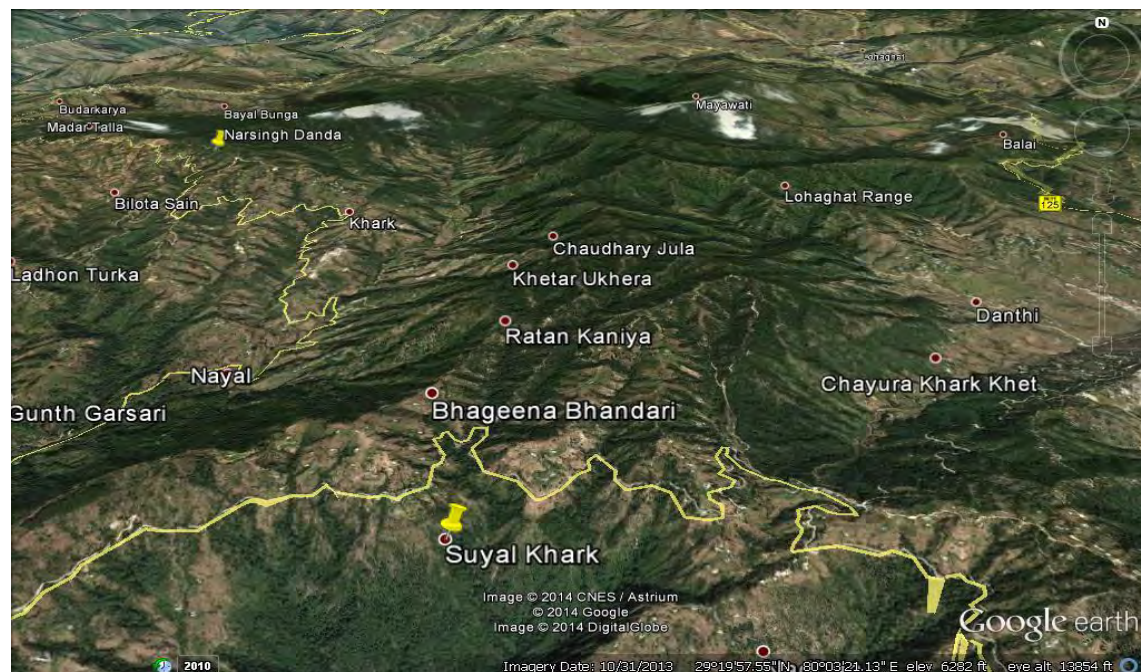
## Project Participants

The project participants would include 800 vulnerable small and marginal farming families whose livelihoods are dependent on primary sectors such as agriculture and livestock. Selection criteria will include:

- Families having dependence on agriculture / primary sectors for livelihoods
- Families staying in remote hill areas
- Women headed families (Where productive men have migrated to cities and thus females are taking care of farming activities)
- Poor and most vulnerable families

- Families that are willing to be part of this adaptation project and are thus ready to adopt Climate Smart Agriculture Technologies

**Figure 5: Google Image Indicating 10 Hilly Villages in Champawat District**



The participants will be selected by BAIF’s field teams in consultation with Gram Sabhas/village councils, the representative body of local villagers.

## **PROJECT / PROGRAMME OBJECTIVES:**

*List the main objectives of the project/programme.*

The main objective of this project is to improve the adaptive capacity of vulnerable communities in the North Western Himalayan hill region by introducing a combination of Climate Smart farming technologies covering crops, livestock and water resources, and by undertaking community strengthening processes and capacity building actions. The main five outcomes, as shown in the Project Results Framework (refer Table no.: 17) are as follows:

The project will deliver this objective through achieving five 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

## PROJECT / PROGRAMME COMPONENTS AND FINANCING:

Fill in the table presenting the relationships among project components, activities, expected concrete outputs, and the corresponding budgets. If necessary, please refer to the attached instructions for a detailed description of each term.

For the case of a programme, individual components are likely to refer to specific sub-sets of stakeholders, regions and/or sectors that can be addressed through a set of well-defined interventions / projects.

Project Components	Expected Concrete Outputs	Expected Outcomes	Amount (US\$)
<b>Component 1:</b> Community Mobilization and Organization	<b>Output 1.1:</b> CBOs strengthened in 10 villages	<b>Outcome 1:</b> Improved community mobilization to collectively plan and undertake Climate Change Adaptation	<b>24,667</b>
	<b>Output 1.2:</b> New CBOs formed in 10 villages		
	<b>Output 1.3:</b> Preparation of Annual Adaptation Plan for a cluster of 10 villages based on vulnerability assessment		
<b>Component 2:</b> Introduction of Water Resource Development and Climate Smart Farming Technology	<b>Output 2.1.1</b> Creation of water reserves in regions through rain water tapping interventions	<b>Outcome 2.1:</b> Building resilience through increased water availability and efficient water use in hill region	<b>783,908</b>
	<b>Output 2.1.2</b> Adoption of efficient water use practices and technologies		
	<b>Output 2.2</b> Introduction to climate smart farming technologies with hill specificity	<b>Outcome 2.2:</b> Adoption of Climate Smart agriculture technologies and farm diversification options for climate resilient livelihoods	
	<b>Output 2.3.1</b> Introduction of improved breeding service at door step of	<b>Outcome 2.3:</b> Improved potential of livestock resources as an	

Project Components	Expected Concrete Outputs	Expected Outcomes	Amount (US\$)
	farmers with required management practices including fodder and feed management	option for livelihood stabilization in hills	
	<b>Output 2.3.2</b> Community level cadre developed as Para-vet to provide required livestock services		
<b>Component 3:</b> Knowledge Management including knowledge creation and wider dissemination actions	<b>Output 3.1:</b> Knowledge generation through field action component	<b>Outcome 3:</b> Knowledge generation based on field actions and wider dissemination to enhance awareness of hill communities and stakeholders as well as for better policy inputs	<b>17,500</b>
	<b>Output 3.2:</b> Knowledge generation through consultation		
	<b>Output 3.3:</b> Wider dissemination of acquired knowledge		
Project/Programme Execution cost			<b>78,477</b>
Total Project/Programme Cost			<b>904,552</b>
Project/Programme Cycle Management Fee charged by the Implementing Entity			<b>76,500</b>
<b>Amount of Financing Requested</b>			<b>981,052</b>

**PROJECTED CALENDAR:**

*Indicate the dates of the following milestones for the proposed project/programme*

MILESTONES	EXPECTED DATES
Start of Project/Programme Implementation	Oct 2014
Mid-term Review (if planned)	June 2016
Project/Programme Closing	September 2018
Terminal Evaluation	July 2018

## **PART II: PROJECT JUSTIFICATION**

*A. Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience.*

### **Component 1: Community Mobilization and Organization**

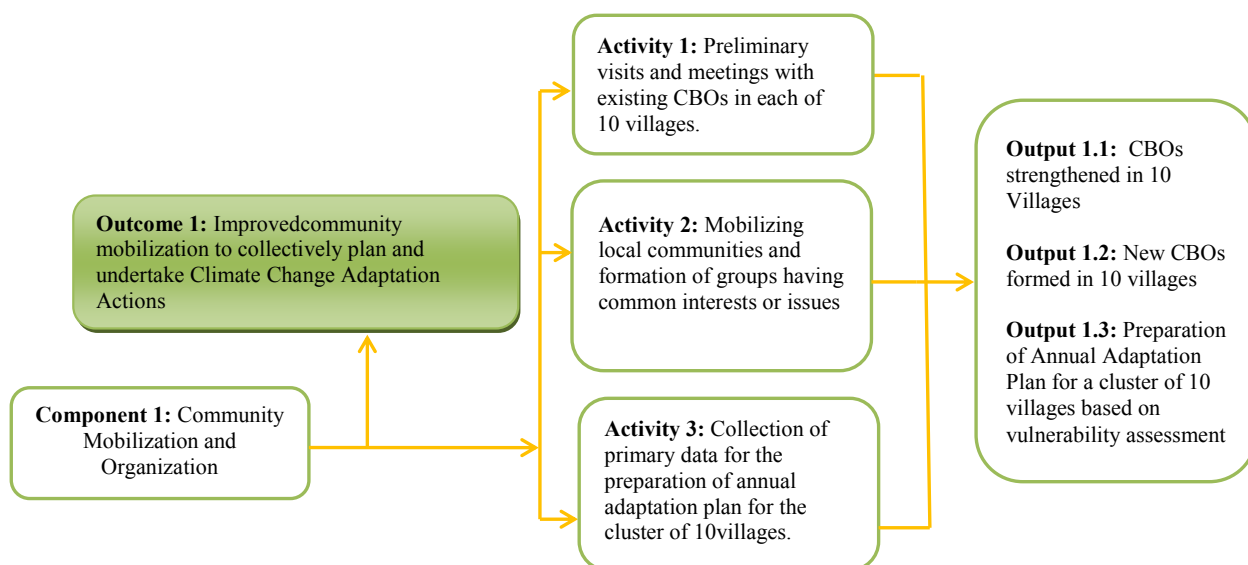
#### ***Outcome 1: Improved community mobilization to collectively plan and undertake Climate Change Adaptation***

It is seen that communities in the Hilly region are not currently organized to tackle the climate change issue leading to increased vulnerability. There are limited efforts to organize them and plan a collective response. For improved adaptive capacities of communities as well as for improved community response mechanism it is thus necessary to take efforts in the form of required social engineering processes in these project villages. It is proposed to take up actions to build rapport with the communities and existing Community Based Organizations (CBOs) in all 10 selected villages. Thereafter the actions are planned to be introduced to strengthened existing local level institutions (Self Help Groups, Farmer's Clubs, Commodity Interest Groups, Village councils etc.) through mobilization and involvement of the CBOs in participatory vulnerability assessment exercises, planning awareness events for enhancing their knowledge on various Climate Smart Technologies that can be adopted to cope up with the changing climatic context, to build their capacities and skills after understanding the nature of climate risks, it's sectoral implications and required coping strategies. The efforts are expected to result in to improved collective actions, formation of local institutions to take climate smart actions, better understanding on nature of climate related risks in a given context and improved adaption planning in a cluster.

As a part of project interventions processes are planned to be adopted to form and strengthen diverse user groups and commodity interest groups of vegetable growers, women SHGs for milk collection, water user's associations, Poly house farmers etc around the activities proposed. These groups will be strengthened to handle post production agri produce including vegetable produce (tomatoes, capsicum and even surplus milk). There are many market players including traders, aggregators and dairy networks in region. The commodity interest groups (CIGs) will be linked with these marketing channels. In the process their capacities would be built in such a manner that they are able to negotiate in a better way.

Following schematic diagram depicts the activities involved in achieving the desired outcome under component 1:

**Figure 1: Schematic Diagram of Activities and Outputs of Outcome 1**



### **Output 1.1: CBOs strengthened in 10 Villages**

*Activity 1: Preliminary visits and meetings with existing CBOs in each of 10 villages*

- The CBOs in the target village comprise of: Self Help Groups, Commodity Interest Groups, Village Panchayat, Van Panchayat, Dairy Co-operative, and Farmers' Clubs etc
- Project staff composed of 3 to 4 members will meet on an average the representatives of 100 HH per village. Three meetings will be conducted within a month in each village
- This will result in clear identification of existing CBOs and proposed future actions
- The proposed outreach activities will be finalized involving CBOs
- Project staff will discuss with villagers climate smart technology options available to fulfill their needs and reduce their vulnerability
- Project team will also identify training needs and will plan for training and exposure to improved techniques and methods

### **Output 1.2: New CBOs formed in 10 villages**

*Activity 2: Mobilizing local communities and formation of groups having common interests or issues*

- Mobilizing local communities and formation of groups through meetings, Focus Group Discussions, sensitization events etc., a team of 4 members will be involved in this work.



This activity will be initiated in the 1<sup>st</sup> year of the project cycle and will continue as per the requirement of the project activities.

- Discuss climate smart technology options available to fulfill their needs and reduce their vulnerability
- Identification of training needs and planning for trainings and exposure.
- Finalization of operational framework of the CBOs formed for smooth functioning.

### **Output 1.3: Preparation of Annual Adaptation Plan for a cluster of 10 villages based on vulnerability assessment**

*Activity 3: Collection of primary data for the preparation of annual adaptation plans for the cluster of 10 villages.*

- Reliable database is needed to have a clear picture of the area under planning so as to design potential strategies for the development of the adaptation plan. In-depth assessment of climate threats and vulnerability mapping is proposed in selected villages.
- Field level assessment of climatic conditions, hazards, prioritization, sectoral effects, type of vulnerability in selected villages and people's perceptions on required measures will help in devising effective and need based adaptation response measures. Using the participatory tool e.g. CRiSTAL Tool<sup>8</sup> and other available methods would be undertaken to assess the cluster's vulnerability to climate change, understand community perceptions, etc.
- Each village would require 8 days to complete such participatory field assessment work. This will facilitate participatory assessment of what type of vulnerability exist -- major climate hazards, sectoral effects and required adaptation strategies. For each village, one Vulnerability Impact Assessment (VIA) Report will be prepared
- To understand the exact nature of risks in the hills, inputs would be sought from Scientific and Research institutes and Subject Matter Specialists
- Based on the analysis, a participatory Annual Adaptation Plan will be prepared at the cluster level indicating required preparedness, early warning systems, zoning, land use planning, and final strategies for each important livelihood support system

### **Component 2: Introduction of Water Resource Development and Climate Smart Farming Technology**

The main purpose of this component is to foster climate change adaptation by small and marginal farmers by facilitating introduction of combination of Climate Smart Farming Technologies having mountain specificity and development of water resources. Realizing that increased frequency of sudden climate events is likely to affect communities' livelihood

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<sup>8</sup>CRiSTAL Tool: **Community Based Risk Screening Tool – Adaptation & Livelihoods**. A decision support tool for assessing and enhancing project impacts on local adaptive capacity to climate variability and climate change by IUCN-IISD –SEIUS

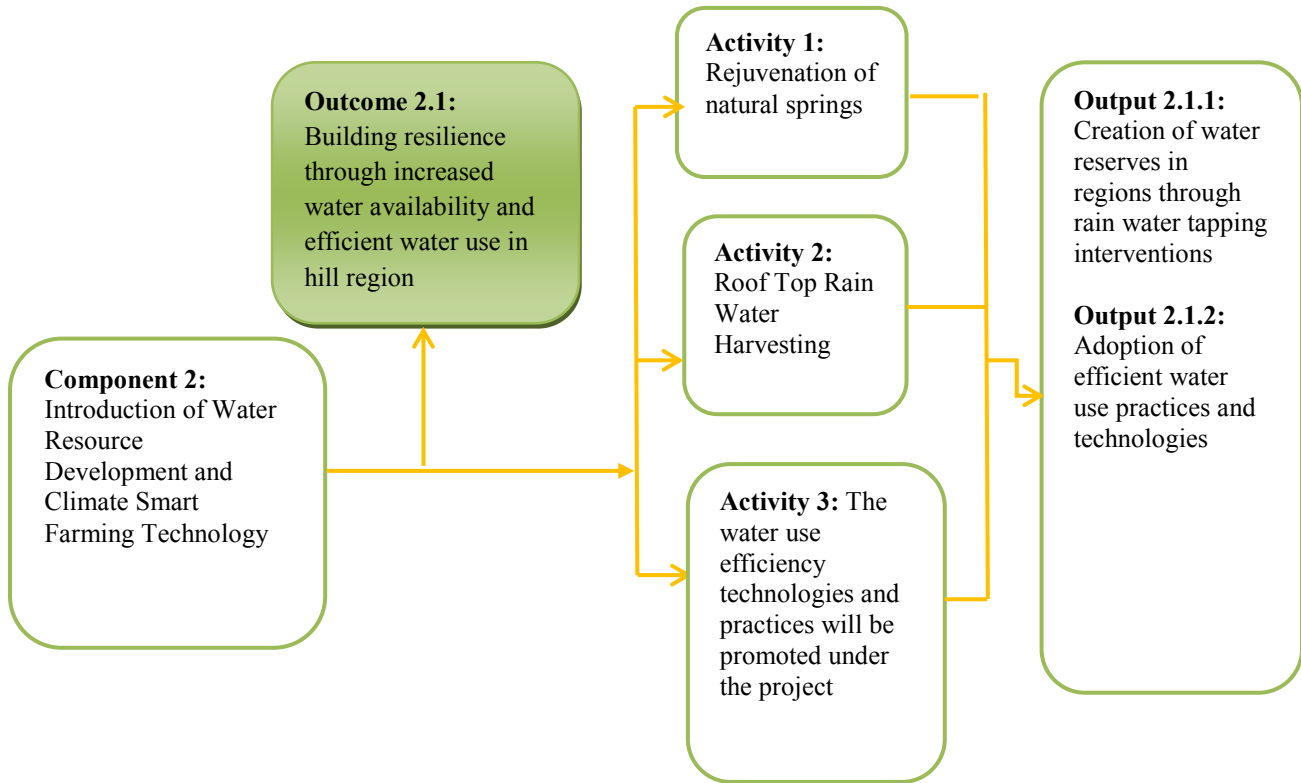
adversely, two types of activities are proposed here, a) Interventions to develop water resource in a region for safeguarding agriculture and other livelihood activities b) Interventions in the form of Climate Smart Farming Technologies having Hill specificity.

Most of these interventions are planned at the level of individual participant families' Technical handholding and skill building of participants will help these families in improved management of their livelihood support resources. The activities will be introduced by family members, who are already involved in agriculture and livestock related operations on day to day basis. The work thus proposes enhanced skills, participation of family workforce for building long term productive assets and improved use of productive labour force without getting displaced for supporting climate smart livelihoods. Thus there is no threat of forced or compulsory labour or an issue of resettlement.

***Outcome 2.1: Building resilience through increased water availability and efficient water use in hill region***

In the proposed project area, there is sufficient amount of rainfall although there is problem of water scarcity and drying of springs because of water run-off and lesser retention and storage capacity of water. So, for building the resilience of the local community to changing climatic impact, water resource development as well as efficient use of water by the community is proposed. Following is the schematic diagram representing the activities involved and output:

**Figure 6: Schematic Diagram of Activities and Outputs of Outcome 2.1**



**Output 2.1.1: Creation of water reserves in regions through rain water tapping interventions**

*Activity 1: Rejuvenation of Natural Springs*

- Natural springs are very important sources of water in the hill areas. Springs have become dry/near to dry due to improper management of natural resources in the recharging area.
- To address this issue requires introducing a combination of traditional knowledge and advanced technologies, such as planting saplings and grasses as well as building recharge pits, using tracers and iso-tope technology to save the springs.
- Activities will include saving aquifers by keeping the recharge zones covered, planning and introduction of suitable measures for soil and water conservation *in situ*, planning vegetative and taking mechanical measures leading to better support the infiltration of rainwater, etc.
- Identification of sites for natural springs for interventions:
  - Participatory short listing of sites, demarcation of each spring’s catchment area
  - Site specific surveys to assess the threats and specific measures in recharge zone
  - Measuring of water discharge
  - Identification of treatment zones using iso-tope technology (through BARC (Bhabha Atomic Research Centre) associated with nuclear energy research has developed a hydro

geo chemical technique and environmental isotope techniques to trace the recharge areas of springs and have helped recharging 16 underground aquifers in Rudraprayag district of Uttarakhand. These facilities have also been developed in HESCO, which will be accessed for technology transfer.

- Under taking mechanical and biological treatments for soil and water erosion control in water recharge zones

All this will result into better infiltration of rain-water, aquifer recharge and increased availability of water at community sources benefitting around 300 farmers in 10 villages. The rejuvenation of springs would also help reduce drudgery of women in hills while also enhancing the scope of second crop and provision of life saving irrigation.

### *Activity 2: Roof Top Rain Water Harvesting*

This is one of the most tested and feasible technology for collection and distribution of rainwater. In Uttarakhand average rainfall is of 1,523 mm spread over 100 days (approx.) in a year. Crisis period for water is generally during March 15 to June 15 every year. With the help of this technology people may harvest the water, store it and use in this period for drinking/household related activities and irrigation. This will be introduced at the level of 150 Families that have concrete houses and roof top to collect and channelize the rainwater. (It is proposed to collect water from an area of 100 sq m with proper slopes and water channelization with pipes of 150 m. the water thus collected is proposed to be stored in storage tank having capacity of 15000 lit) The average water that can be collected per household will be around 15000lit. This will be used mainly for life saving irrigation and household use. The purpose here is to provide access to water near household when other sources of water are not available and thereby reduce the hardship of women. This is proposed as decentralized intervention for effective rainwater collection, storage and distribution. Each of these structures including storage tank is estimated to cost US\$679. The break up cost includes US\$83 for preparation of roof top, US\$63 for installation of collection pipes, US\$25 for gravel filter and US\$508 for construction of underground water storage tank. The dimensions of underground tank will be approximately 4mX2.5mX1.5m. The structure is covered with Tin Shed.

Selection of participants and sites through participatory approach on the basis of available resources and need

- Technical training to participants for judicious use of water resource.
- Establishment of the roof top water harvesting and storage structure.
- Working out water budget per participant family and planning optimum collection and use of rainwater

### **Output 2.1.2: Adoption of efficient water use practices and technologies**

*Activity 3: The efficient water use practices and technologies will be promoted under the project to reduce water scarcity and to enable judicious use of water.*

In the project area, the water resources are under threat due to various natural and man-made environmental problems. Despite being endowed with adequate rainfall, most parts of the IHR are considered water-stressed for both agricultural and domestic purposes. This further causes immense stress on agriculture and women who are responsible for fetching of water.

- The indicative activities would include site specific measures for better harvesting of waste flowing water in hill terrain, drip irrigation system, gravity based irrigation measures, conservation of seepage water in storage tanks which would otherwise not been used.
- Re-use of water at household level, Optimum irrigation for crops as per the need of crop, water advice and calculation based on weather conditions, etc.

The project villages have 5-7 natural spring sites and feasible sites would be selected for spring rejuvenation. Traditionally most of these sites are owned by the community and hence no conflicts in development and sharing of the benefits are anticipated. Since the land belongs to the community, issue of purchase of land / land acquisition does not arise. The intervention was discussed with community and local Panchayats during stakeholder consultations.

### ***Outcome 2.2: Adoption of Climate Smart agriculture technologies and farm diversification options for climate resilient livelihoods***

Here the main purpose is to diversifying livelihood and production system by integrating various subsystems e.g. vegetable crops, fruit tree, indigenous crops, livestock etc. There are three types of interventions that are proposed here at the level of households with the objective to stabilize their income and ensuring climate resilient livelihoods. These interventions are planned to be introduced in combination at the level of hill families who are mainly dependent on farming and livestock sectors. The activities will ensure better productivity, sustained yield, minimum losses and risks of crop failure despite changing climatic condition. (Refer figure 8)

### **Output 2.2: Introduction to climate smart farming technologies with hill specificity**

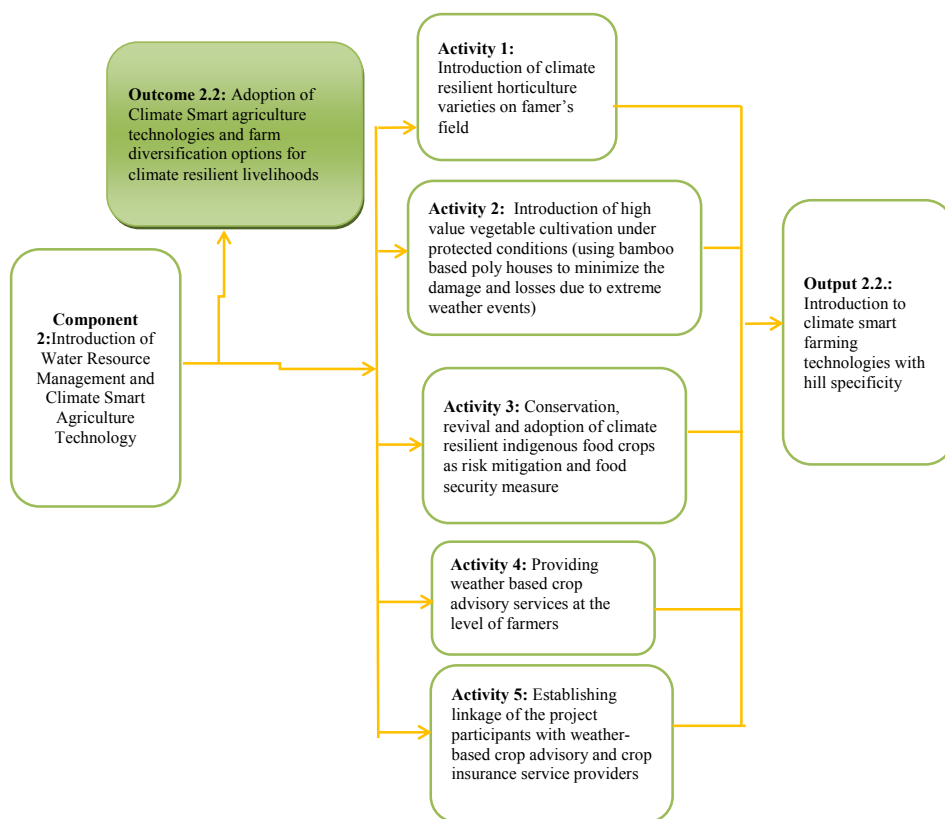
*Activity 1: Introduction of climate resilient horticulture varieties on farmer's field*

Hill conditions and diversity of bio- geographic zones, altitudinal variations provides favorable conditions for growth of many horticulture crops including temperate and sub-tropical fruits like Pear, Plum, Peach, Walnut, Kiwi, Malta, Strawberry etc. The changed climate is reported to be conducive for growth of fruits requiring low chilling conditions such as, Walnut, Peach and Grafted Pear. It is proposed to introduce such high quality grafts on farmer's field with required agro technique and support for management and aftercare.

The support will be extended to 600 families in a phased manner spread over the life of the project. Cost of establishing fruit plantation for a family is \$ 168 in the inception year of the establishment. The total cost includes all types of costs such as that of: grafts, plant nutrition & after care, neem cakes, pesticides, plant protection material, and labor. This cost is applicable only in year-1.

Returns from the fruit plantation to the family will begin only after 4 years of the plantation. Farmer and his family will reap the benefits from the plantation beginning 4<sup>th</sup> year from the year it was planted till the next 15 years. Based on the available market and demand supply scenario the calculated returns from the harvested fruits come out to be cumulatively for 11 years \$4590 from 4<sup>th</sup> year onwards till the 15<sup>th</sup> year.

**Figure 1: Schematic Diagram of Activities and Outputs of Outcome 2.2**



*Activity 2: Introduction of high value vegetable cultivation under protected conditions (using bamboo based poly houses to minimize the damage and losses due to extreme weather events)*

- Due to growing uncertainties of climatic forces and extreme weather events, it becomes imperative to practice agriculture under protected conditions ex:-Low cost bamboo based poly house

- Farming of seasonal vegetables under poly house conditions is suggested as one option for the adoption of low volume and high value cropping
- The poly house technology also offers scope for off season production of vegetables
- Crops such as tomato, capsicum, brinjal and cauliflower will be introduced to take advantage of the conducive climate in the hills as compared to plains during summer

These horticulture interventions will help optimum use of available land (as per capita land availability is very less in hills), making the agriculture viable under changing context and will also help achieving objective of income and risk diversification. Support is planned for initial investment in construction of low cost bamboo based poly houses, technical guidance and capacity building for technology adoption by participating farmers.

Under this intervention a group of 200 vulnerable families will be extended the support of cultivating high-value commercial crops under protected conditions. The estimated cost of establishing the polyhouse and all the agri-input required for the cultivation of the vegetables including the cost of labor comes to \$ 316 for a family in the first year of its inception.

As per the market demand and supply the project proposes to plant tomato under the protected and controlled conditions. This crop will be able to fetch approx. \$ 934 to a family from 200 saplings with an average yield per plant 5kgs and sold at a price of \$ 0.25/kg. The structure will be used for high value vegetable cultivation for the period of 15 years approximately, thus giving assured income as compared to cultivation in open conditions.

It is proposed to take up tomato and capsicum cultivation under poly house structures. The produces would be ready for marketing during July –September, when similar produces from the plain areas are not available in market and hence fetch better prices. These vegetables cater to requirements of not only local market in Lohaghat and Dehardun markets but also big markets like New Delhi. Hence no problems in marketing of the vegetables grown under polyhouse conditions are anticipated.

*Activity 3: Conservation, revival and adoption of climate resilient indigenous food crops as risk mitigation and food security measure*

The objective is to promote conservation and revival of diverse, native and sturdy crop cultivars with relevance to local foods and nutrition security.

- There are a number of native crops which can tolerate stress and have adapted well to unique climatic conditions in fragile hill areas. As suggested by the communities during field level assessments, it is proposed to focus on diverse traditional food crops mainly *Mandua* (finger millets), *ramdana/chua* (amaranthus), *rajma* (common kidney beans), *ogal* (buckwheat), urad (green gram), *moong* (black gram), *naurangi* (mix of pulses), *gahath* (horsegram), *bhat*

(soybean), *lobiya* (French beans), *kheera* (cucumber), and other niche crops where hilly terrain adds a comparative advantage

- Generation of cluster specific database on existing local cultivars in prescribed format
- Documenting local claims on indigenous food crops and planning its scientific validation
- Crop type wise mapping the availability in each of the identified cluster
- Participatory selection and distribution of few “worthy” cultivars.
- Identification of crops, species and practices for further long term systematic research involving community
- Identification and involvement of local institution and farmers for long term conservation and management efforts in a cluster
- Development of crop specific agro techniques for optimizing the yields, productivity and resistance level
- Maintaining community seed banks of niche indigenous crops

*Activity 4: Providing weather based crop advisory services at the level of farmers*

- Provision of weather information and crop advisories can play a crucial role in disaster risk reduction induced by climatic changes and sudden climatic events, It will help farmers in taking critical farming decisions for efficient crop management practices during sudden events/ climate risks
- Under this project it is proposed to set up 1 local weather station to document local weather information including rainfall, maximum-minimum temperature, atmospheric pressure, wind direction and speed, etc.
- There is currently no weather station available in the region as the nearest one is 250 kilometers from project site.
- During field level assessment, communities expressed the need to have an accurate early warning system available as a part of their adaptation strategy.

*Activity 5: Establishing linkage of the project participants with weather-based crop advisory and crop insurance service providers (see figure 9)*

- It is proposed to set up an automated weather station which will be managed by local CBO in a cluster
- Likeminded research and scientific institutes/ Agri University / Krishi Vigyan Kendras will provide technical support to the station from time to time
- Also, the required technical help will be sought from government depts. and private companies which will extend the services of weather based crop advisory to farmers, for e.g.: possible linkages of the weather station with Indian Meteorology Department (Govt.), SKYMET (private service provider) or with any other existing private players etc.
- Strategy will be worked out for storing of weather data and sending it to central location and for analysis by expert group like Agriculture scientists and advisory based private service

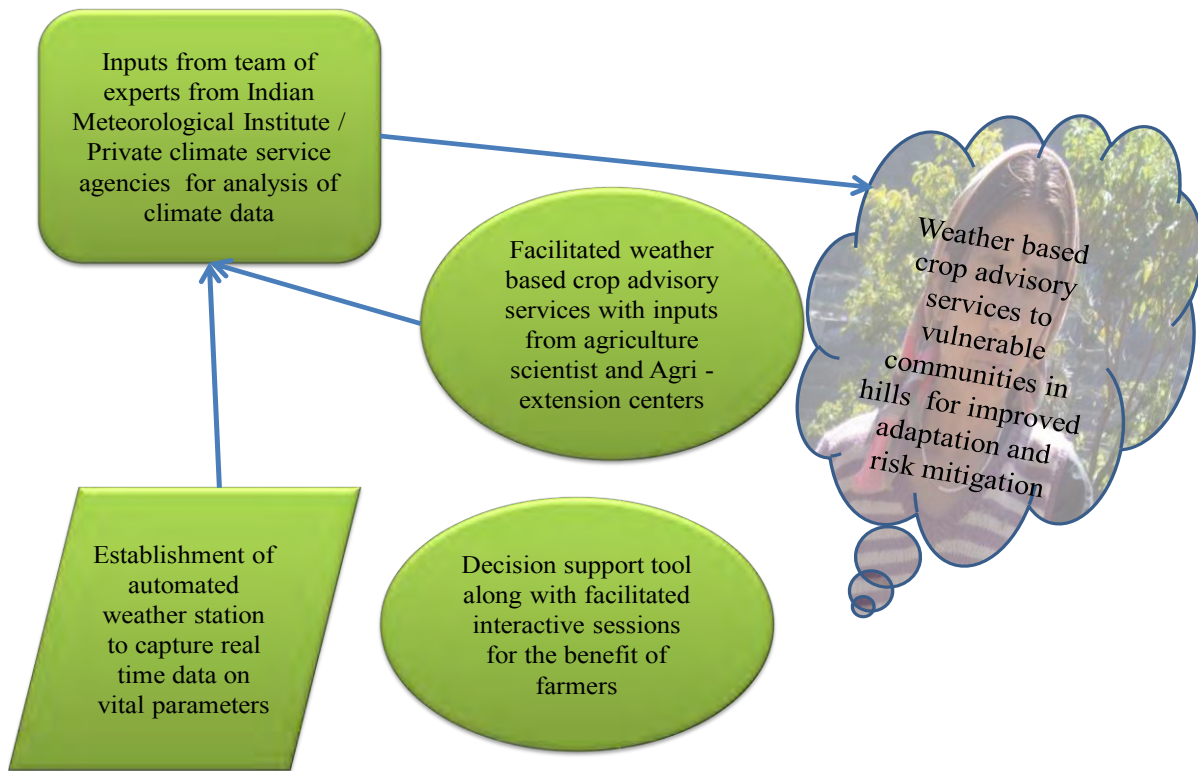


providers for forecasting and web based automated SMS service to the registered project participants.

- Initial registration charges for **800 project participants** are proposed to be covered by the project.

The main objective of this intervention is to establish system of weather advisory to plan timely and advance safeguard measures for agriculture crops. Majority of the farmers have expressed need to have such service as uncertainty of climatic events is emerging as major threat in the region. These services if proved useful can be continued even at cost during post project phase by the farmers as agriculture losses in the absence of any such service are likely to be quite huge. The initial registration charges are proposed to be covered to orient and link farmers to these services and allow them to get experience of its utility.

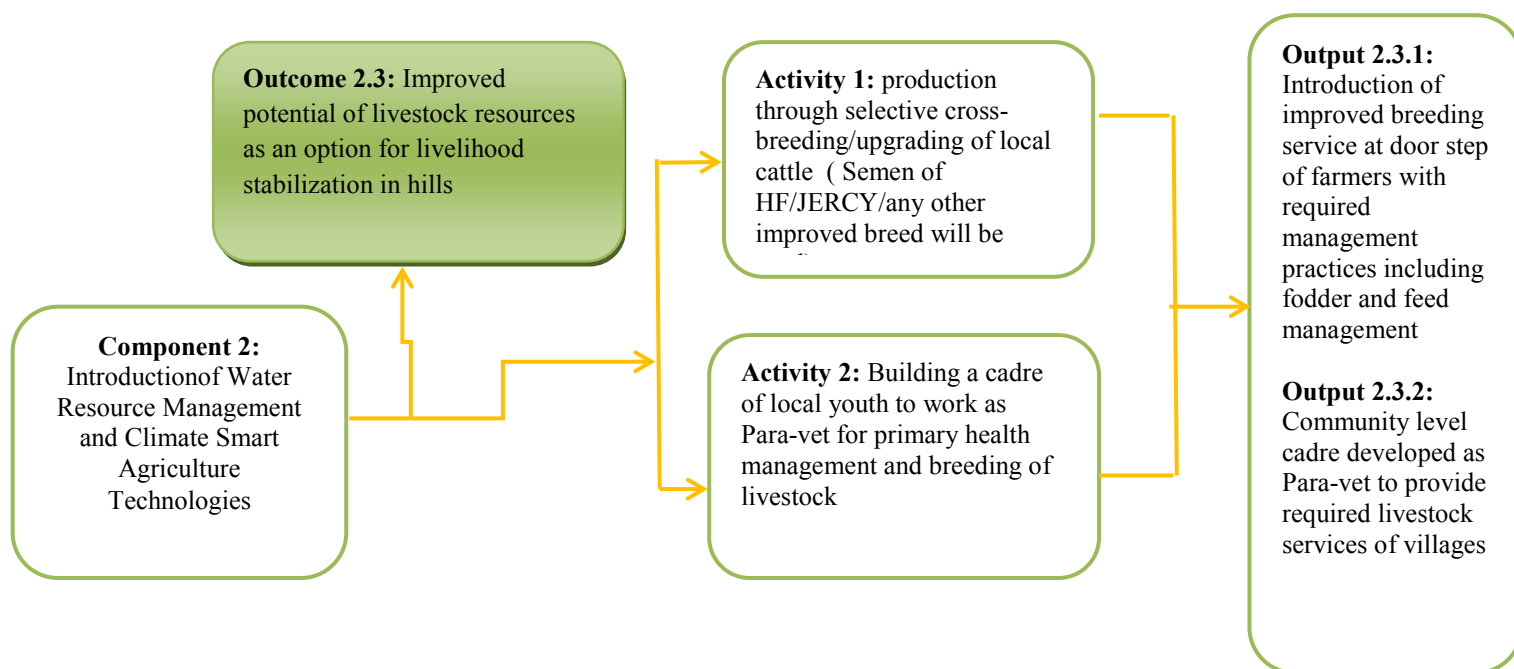
**Figure 7: Provision of weather based crop advisory service to vulnerable hill communities**



***Outcome 2.3.: Improved potential of livestock resources as an option for livelihood stabilization in hills***

Realizing that Himalayan region has ideal climatic conditions for exotic cattle breeds and their crosses, interventions are proposed on these. The intervention is proposed in the form of a comprehensive programme to improve local breeds of cattle, introduction of suitable fodder, grass species and fodder trees as well as treatment on available fodder resources at household level. Further the thrust is to be laid on building capacity of participants' mainly local youth, small and marginal farmers and hill women to manage these resources optimally by practicing scientific rearing, de worming, vaccination, insurance etc. so as to increase yield and income of the family. Following is schematic diagram of activities taken under outcome 2.3:

**Figure 8: Schematic Diagram of Activities and Outputs of Outcome 2.3**



**Output 2.3.1 Introduction of improved breeding service with required management practices including fodder and feed management**

*Activity 1: Increase in the productive capacity of livestock through improved breeding & scientific management of cattle.*

- Providing improved breeding services ( H.F./JERCY/Any other improved breed of cow) at the door step of hill families along with practices of improved livestock management
- During the consultation it was seen that livestock resource is affected equally due to shortage of nutritive fodder and scarcity of water. However, critical prerequisites at a village-cluster level are:
  - Centers to provide AI services
  - Trained manpower to provide basic services like vaccination and de worming, and guidance on balanced feeding and animal care,
  - An increase of 25-50% in availability of both dry and green fodder

All the three prerequisites will be made available to the households falling under the selected project area and also which are part of the project

### **Output 2.3.2 Community level cadre developed as Para-vet to provide required livestock services**

*Activity 2: Building a cadre of local youth to work as Para-vet for primary health management and breeding of livestock as well as to encourage practices of De-worming, Mineral mixture, Vaccination*

- It is proposed to cover the cost of breeding services for 800 families through project .The linkages will be developed with BAIF's (Executing Agency) Cattle Breeding Centers, which are already existent in a region.
- Training of local Para-vets and participant families on management of livestock is proposed including need based primary treatment, fodder and feed preparation, establishment of climate smart housing for cattle along with promotion of other practices such as deworming, vaccination, insurance etc. The expertise of BAIF will be used for introducing these actions
- The project will also strive to promote fodder cultivation in private and wastelands to address an issue of scarcity of fodder and resulting drudgery of women in hills .BAIF's expertise on fodder research, promotion, nutritional analysis facilities will be used in this.
- Efforts would also be made to sensitize farmers about cattle insurance services

Livestock management services will be extended to 800 families under the project.

It is generally seen that the milk is scarce in remote hilly villages. Thus additional milk generated through project intervention will be used to fulfill local demand first. There is also a good network of Anchal Dairy, which is a cooperative dairy unit, in the project villages. It is proposed to organize hill women as Self Help Groups (SHGs), who can be trained in activities of milk collection at the level of villages. These collection points will in turn be linked to Anchal Dairy, thereby ensuring adequate marketing arrangements for the milk product from the project interventions.

The estimated cost of these services comes to \$ 117 for a family for a period of 4 years. The returns from the cattle to a family will be beyond the tenure of the project. Benefits will start coming from year 4<sup>th</sup> on-ward from enhanced milk and sale of calf bull from Cross bred cows. With the improved livestock management services the yield of the cattle will increase and the increased fat content in the cattle will fetch more monetary benefits to the family in the years to come.

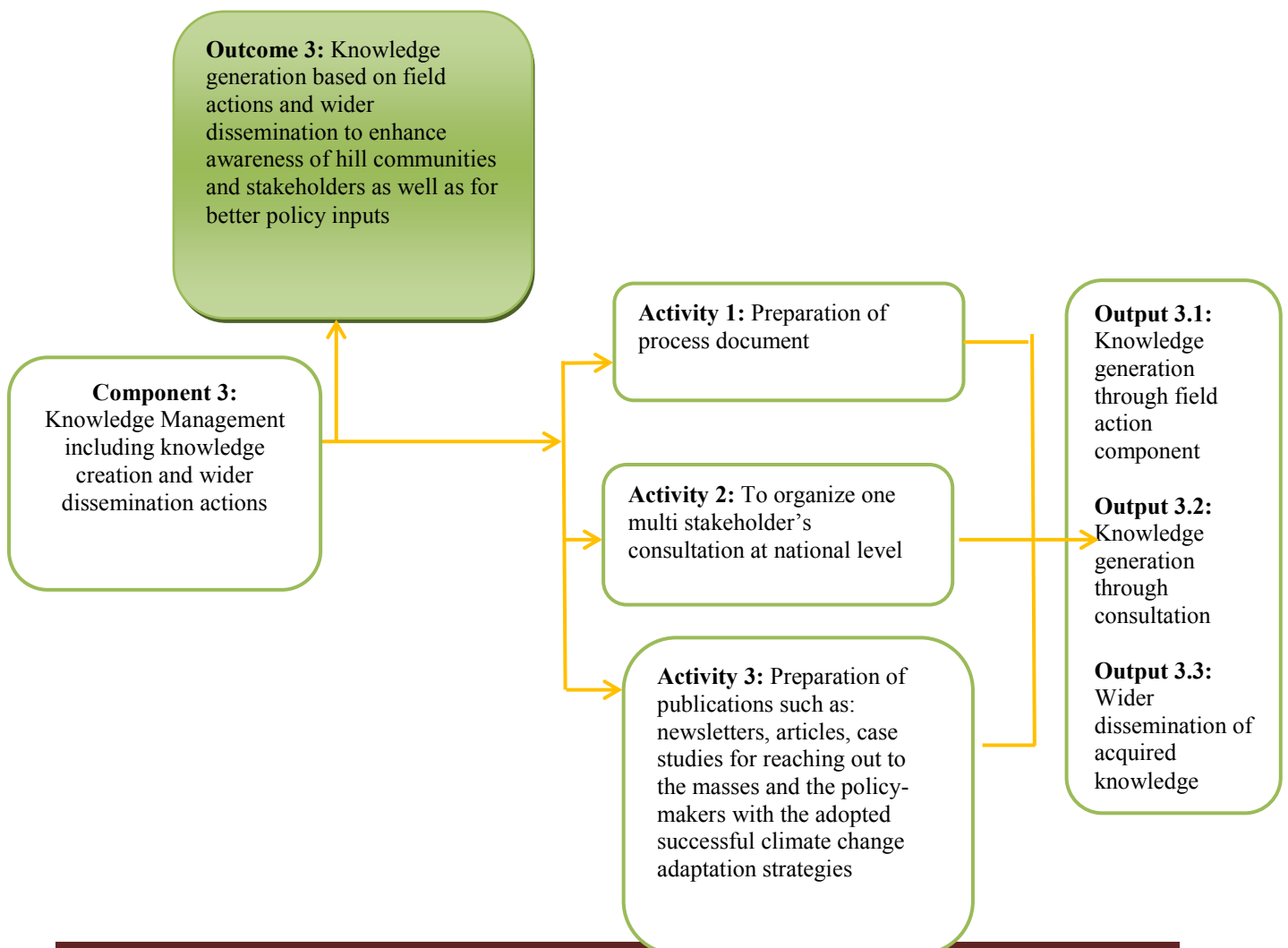
While the local cows produce 1-2 liters of milk per day, the local buffaloes produce 2-2.5 liters of milk in a day. The newly born crossbred can produce 8-10 liters of milk in a day from year 4 after Artificial Insemination. This will result in increased income to the farmers. With two crossbred cows a typical household in a hill is able to earn a gross profit of \$ 1152 in ten years and this will continue even after ten years. (Details are provided in C/B table in the document)

### Component 3: Knowledge Management including knowledge creation and wider dissemination actions

Access of learning outcomes in the targeted villages as well as public domain will be ensured through this project. The specific actions would include knowledge management, documentation and dissemination for further replication, facilitated policy inputs and for mainstreaming of climate smart model having mountain specificities

*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 (see figure 11)*

**Figure 9: Schematic Diagram of Activities and Outputs of Outcome 3**



### **Output 3.1: Knowledge generation through field action component**

*Activity 1: Preparation of process document. Process documentation will cover field level data, experiences, approaches, technologies tested and best practices*

- Baseline report on site specific climate risks and hazard mapping ( 1 per village and overall 1 for cluster )
- Process Documentation/Audio visual reports: ( at least 3 )
  - Steps and required participatory approaches for building local level adaptive capacities (steps)
  - Technology fact sheets covering climate smart sectoral interventions
  - Report covering local agro biodiversity of project villages
- Synthesis products on methodologies used for improving adaptive capacity of hill communities
- Pamphlets/ technology fact sheets/dossiers/best practice notes: ( at least 10 )

### **Output 3.2: Knowledge generation through consultation**

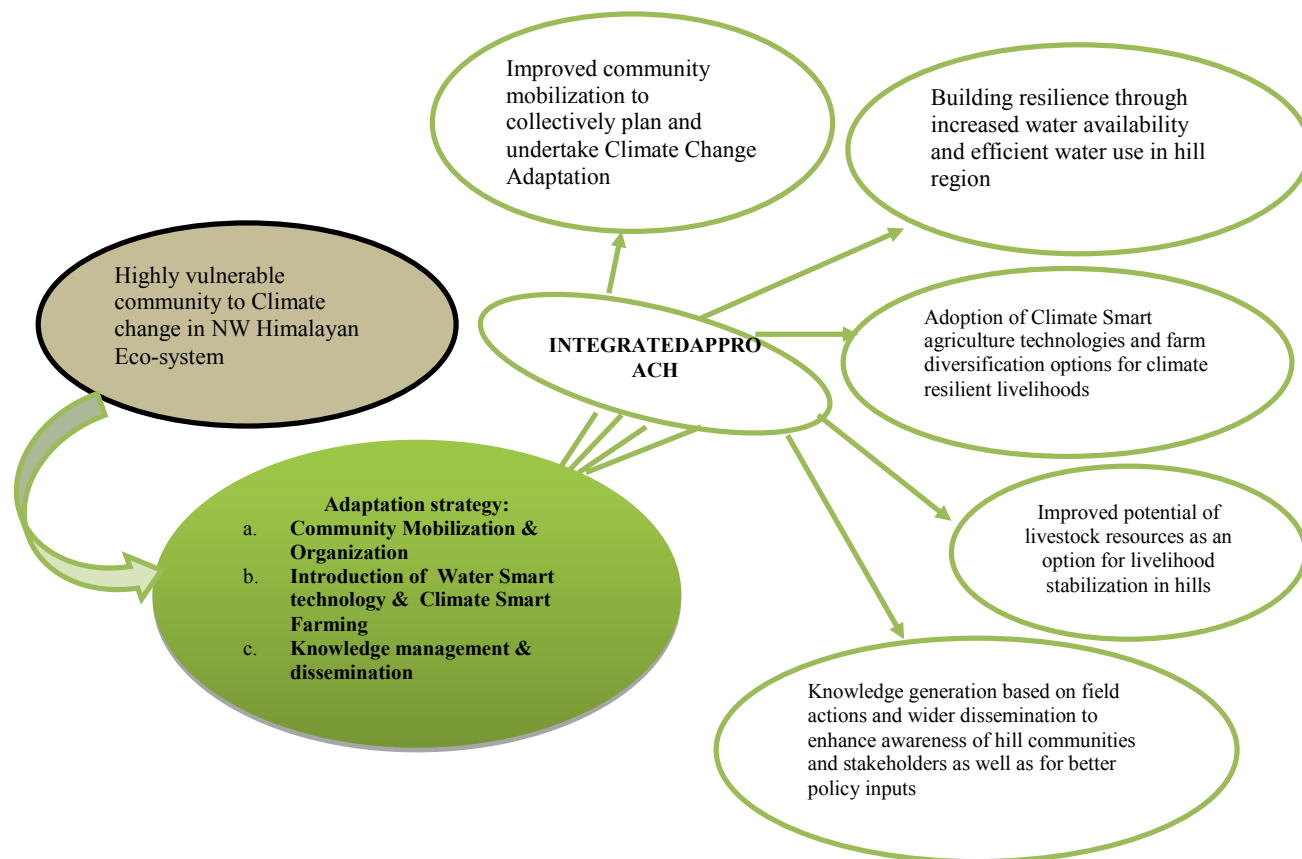
*Activity 2: To organize one multi stakeholder's consultation at national level*

- Multi stakeholder's consultation at national level to facilitate exchange and cross learning of proven and tested strategies for climate change adaptation under hill context.
- This will generate learning's at the level of development agencies concerned with the climate change issue as well as will result in to better policy inputs and replication opportunities.

### **Output 3.3: Wider dissemination of acquired knowledge**

*Activity 3: Preparation of publications such as: newsletters, articles, case studies for reaching out to the masses and the policy-makers with the adopted successful climate change adaptation strategies. This together with concept appreciation visits and consultations by various stakeholders will facilitate policy inputs, sharing of best practices and shared understanding on climate adaptation actions in Hill context.*

**Figure 10: Summarize format of Adaptation Strategies Proposed to Achieve the Desired Outcome through the Project**



The activities proposed above will be achieved through integrated approach through seeking support from different stakeholder and by establishing and linkages with Govt. and non-government organization working in Hilly area, for building resilience of the vulnerable communities of North Western Himalayas. Following table is detailed description of suggested technology solution and proposed institutional linkages:

**Table 3: Intervention Plan with Technical Partners**

<b>Problem Category</b>	<b>Major Issues</b>	<b>Effects</b>	<b>Suggested Technology Solutions</b>	<b>Proposed Institutional Linkages</b>
Growing scarcity of water (surface and sub-surface) for drinking and irrigation	<ul style="list-style-type: none"> <li>▪ Drying up of springs</li> <li>▪ Abundance of water in most of the area in rainy season which is followed by</li> </ul>	<ul style="list-style-type: none"> <li>▪ Agriculture becoming gamble</li> <li>▪ Possibility of second crop is less</li> <li>▪ Manual</li> </ul>	<ul style="list-style-type: none"> <li>▪ Recharging of Natural Springs- through site specific mechanical and vegetative measures</li> </ul>	CSWTRI – Dehradun

Problem Category	Major Issues	Effects	Suggested Technology Solutions	Proposed Institutional Linkages
purpose due to unseasonal , irregular, less consistent, unpredictable rains in hills	<p>long dry season leading to acute scarcity</p> <ul style="list-style-type: none"> <li>▪ Non- creation long term water reserves and lack of efforts in diverting water from upper reaches to lower reaches</li> <li>▪ Erosion of traditional techniques and wisdom related to water conservation</li> </ul>	<p>watering for existing plantations</p> <ul style="list-style-type: none"> <li>▪ Scarcity of crops and fodder</li> <li>▪ Adverse effects on animal husbandry</li> </ul>	<ul style="list-style-type: none"> <li>▪ Innovative rain water storage – In situ water conservation techniques</li> <li>▪ Roof top rain water harvesting.</li> <li>▪ Innovative water use efficiency demonstrations</li> </ul>	<p>IIT –Roorkee</p> <p>HESCO – Dehradun</p>
Growing scarcity of fodder resources in hills	<ul style="list-style-type: none"> <li>▪ Fodder promotion (both trees and grasses) has not received much attention in spite of livestock as important livelihood.</li> <li>▪ Lack of good quality fodder germplasm</li> <li>▪ Lack of altitude wise model of year round fodder production (combining</li> </ul>	<ul style="list-style-type: none"> <li>▪ Less than optimum production of cattle</li> <li>▪ Growing hardship of hill women and loss of productive labor</li> <li>▪ Increase in cost of production due to purchase of fodder from outside</li> </ul>	<ul style="list-style-type: none"> <li>▪ Fodder promotion on private and community lands</li> <li>▪ Vegetative propagation and household level nurseries of local fodder trees such as, Oak (Quercusleucotric hophora), Phalyant (Quercusglauca), Khadik (Celtisaustralis), Bheemal (Greviaoptiva)</li> <li>▪ Community level nursery to</li> </ul>	<p>BAIF –CRS- Scientist</p> <p>Scientists from Livestock Development Board – Uttarakhand</p>



<b>Problem Category</b>	<b>Major Issues</b>	<b>Effects</b>	<b>Suggested Technology Solutions</b>	<b>Proposed Institutional Linkages</b>
	<p>trees and grasses )</p> <ul style="list-style-type: none"> <li>▪ Lack of knowledge and skills for scientific management and preparation of fodder and feed at household level</li> </ul>		<p>produce quality seedlings of fodder trees &amp; grasses like Napier, Red clover, White clover, Gucchi, Cox foot etc.</p> <ul style="list-style-type: none"> <li>▪ Fodder and feed preparation using innovative techniques</li> </ul>	
Absence of optimum development of horticulture as a source of livelihood in spite of favorable conditions	<ul style="list-style-type: none"> <li>▪ Lack of quality germplasm, seeds and other planting material for temperate horticulture (mainly fruits and vegetables and flowers )</li> <li>▪ Lack of timely availability of planting material</li> <li>▪ Lack of knowledge about after care and management under open and protected conditions</li> </ul>	<ul style="list-style-type: none"> <li>▪ Underutilized livelihood potential of horticulture sector</li> </ul>	<ul style="list-style-type: none"> <li>▪ Promotion of horticulture under protected conditions (low cost bamboo based small poly houses). Main crop to be promoted under the protective cultivation will be vegetables (Tomato, Capsicum, and Cucumber) and Flower (mainly Carnation).</li> </ul>	<p>VPKAS- Almora</p> <p>CITH – Mukteshwar</p> <p>University of Horticulture and forestry, Solan</p> <p>Pantnagar university – KVK Champawat</p> <p>CSK –HP – Palampur</p> <p>NABARD for crop/activity financial viability</p>
Eroding base of	<ul style="list-style-type: none"> <li>▪ Gradual erosion</li> </ul>	<ul style="list-style-type: none"> <li>▪ Growing</li> </ul>	<ul style="list-style-type: none"> <li>▪ Participatory</li> </ul>	BAIF –Pune

Problem Category	Major Issues	Effects	Suggested Technology Solutions	Proposed Institutional Linkages
agro biodiversity and diverse landraces (mainly, niche crops and sturdy and nutritious millets of hills)	<p>and loss of local diverse cultivars from Himalayas</p> <ul style="list-style-type: none"> <li>▪ Growing threat of food insecurity in the light of climate change phenomena</li> <li>▪ Growing vulnerability of hill community due to mono cropping/ adoption of improved crops which are sourced from outside</li> <li>▪ Loosing opportunity on bio prospecting from niche crops and millets.</li> </ul>	vulnerability and losing opportunity to develop	<p>conservation and characterization of indigenous pulses &amp; millets ( native varieties)</p> <ul style="list-style-type: none"> <li>▪ Establishing community seed banks for conservation and multiplication</li> <li>▪ Live trials for production enhancement, multiplication and pure seed production</li> </ul>	scientist and breeders from its research centers and ongoing field programs

**B.** Describe how the project / programme provide economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund.

This project proposes to introduce the suggested activities for the benefit of agriculture dependent communities in fragile hill regions of North Western Himalayas. Out of total 1,337

households, the project activities will be introduced to 800 households. While selecting the vulnerable participants, following criteria will be used (refer table 4):

- Families having dependence on agriculture / primary sectors for livelihoods
- Families staying in remote hill areas
- Women headed families
- Poor and most vulnerable
- Small and marginal farmers having limited resource base to sustain
- Families willing to adopt suggested Climate Smart Agriculture Technologies

The communities in the selected cluster suffer from socio-economic marginality, inaccessibility, and lack of livelihood opportunities. The region has a scattered population, fragmented lands, highly terraced farming with small plot size (average land holdings of selected participants is less than 1 hectare). Majority of the communities are rural and agrarian. It is evident from the table below that main livelihood activity for project participants is agriculture and livestock rearing.

Further, the region also has seen increased feminization of agricultural work and labor as productive men out migrates for better income opportunities and thus it is women who work extensively in farming operations focusing production of crops and rearing of livestock. Women also augment family resources through tasks such as collection of fuel, fodder, drinking water. Owing to sloppy and high gradient land, the hardship is more. Climate change has resulted in increased work pressure on women and loss of their productive labor. In project villages, women are actively involved in farming operations. Despite having livestock as main livelihood support activity, there are limited efforts made for fodder development. The community managed pastoral lands/vanpanchayats are in degraded state.

In view of this, the project actions are proposed with the aim of facilitating processes of community mobilization and for introduction of mix of climate smart farming technologies (covering important livelihood resources e.g. water, livestock and vegetation and crop resources) in a participatory manner and after understanding hill specificity which is described in table 5.

**Table 4: Demographic Detail of 10 proposed villages**

Particulars	Name of Villages										Total
	Suyalkhark	Bhaganabhandari	Khark	Haripur (Narsinghkhada)	Dingdai	Gosni	Manar	Tapnipa	BanjGaon	Tyarso	
Population	600	1,022	800	1,100	856	1,824	579	460	628	467	8,336
Male( No)	293	516	379	542	432	917	283	232	311	243	4,148
Female ( No)	307	506	421	558	424	907	296	228	317	224	4,188
Household (HH)	86	162	123	170	132	282	104	71	116	91	1,337
BPL (HH)	64	150	95	128	80	117	40	35	59	21	789
Small & marginal Farmers( No.)	86	162	123	170	132	282	104	71	116	91	1,337
Average Land holding (Ha)	0.48	0.7	2.39	0.88	0.94	0.84	0.93	1.97	1.04	0.95	
Land under cultivation (Ha)	42	113.4	295	150	124.5	237.7	97.08	140.27	121.5	86.5	1,407.9
Land under irrigation ( Ha)	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Schedule Caste Population ( No)	Nil	1022	Nil	1100	Nil	118	Nil	Nil	Nil	109	2,349
Female headed (HH)	26	79	32	96	46	68	28	19	24	19	437
Per HH Income per annum (in INR)	25,000	22,000	26,000	24,000	24,000	34,000	31,000	35,000	33,000	32,000	
% of cattle owner families(%)	100	100	100	100	100	100	100	100	100	100	100
Van panchayat /Community pasture land (Ha)	56	323	50	50	1602	228	81	170	208	50	2,818

**Table 5: Detailed Socio-economic and Environmental Benefits in the project area**

Type of Benefit	Benefits	Baseline
<p><b>Social</b></p>	<ul style="list-style-type: none"> <li>▪ The program will facilitate building cohesive groups of villagers to respond positively to climate change.</li> <li>▪ The activities are planned to address at the vulnerabilities of hill families, leading to better adaptation in their own setting without having to migrate to other cities</li> <li>▪ Hill women will be the focus of most of the field initiatives. The project activities are planned to enable reduction of hardships of hill women</li> <li>▪ The perceptions as expressed by hill communities during preliminary consultation has formed base for project activities thus care is taken to respect and care local knowledge</li> <li>▪ The program will lead to revival of some of the useful traditions of hill communities with regards to hill crops, water tapping systems etc. which are getting lost with changing times</li> <li>▪ The project processes will lead to empowerment of communities through training and awareness building. Thrust will be laid on building local cadre in the form of community resource persons</li> <li>▪ Project will take care of local food security, nutrition and risk mitigation needs of communities by focusing on conservation of</li> </ul>	<ul style="list-style-type: none"> <li>▪ Currently there is absence of any collective local actions to combat climate change risks. There is a general lack of local level institutional base to address climate change issues</li> <li>▪ Women in the hills are facing increased burden due to degradation of natural resources due to climate change</li> <li>▪ There is lack of local resource person to provide required climate resilient technologies and on field support for transfer of such technologies</li> <li>▪ Apart from the eroding base of agro biodiversity, the community's knowledge associated with this is also inadequate</li> </ul>

	<p>diverse landraces</p> <ul style="list-style-type: none"> <li>▪ Project will help improving capacities of local communities and thereby improving their collective response capacity</li> </ul>	
<b>Economic</b>	<ul style="list-style-type: none"> <li>▪ The focus of project activities is to ensure sustained income for hill farmers in their own settings under changing climate change context by focusing on regenerative capacities of resources</li> <li>▪ Adoption of useful technologies will contribute to enhanced yield and income from agriculture, horticulture and livestock and off-farm sectors</li> <li>▪ The project will create alternate options for livelihood for hill families by adoption of income diversification methods in their own setting as mentioned in project</li> <li>▪ The steps for disaster preparedness and climate change related planning and coping will reduce the likely damages to resources and this in turn will minimize economic loss due to sudden hazards</li> <li>▪ The project activities suggest better integration of climate change perspectives in to sector specific development actions, thus sectors like agriculture, livestock, forest and fodder will continue to provide economic gains to communities</li> <li>▪ Skill enhancement of communities will further open up better income earning opportunities for local youth</li> </ul>	<ul style="list-style-type: none"> <li>▪ Owing to marginality, inaccessibility, remoteness in general there are limited avenues for income generation for communities in Himalayan Mountain</li> <li>▪ Once rich in the natural resources , are getting degraded due to climate change, posing serious threat to the very existence of life in hills</li> <li>▪ The regions agriculture , horticulture and livestock potential remains to be exploited fully due to absence of required technologies and processes</li> <li>▪ The current returns from horticulture to the small &amp; marginal farmers from 0.1 acre of land area is \$ 33.33. Farmers are able to take only one crop for 4 months during the year due to the unavailability of irrigation water.</li> <li>▪ From livestock farmers are able to fetch \$ 375 per annum from indigenous cows which yields 800-900 liters of milk per annum and the farmers sell it at the rate of \$ 0.42/liter</li> <li>▪ The fruit trees owned by farmers such as apple, pear, and peach are either has reached a non-fruiting stage, or the variety being harvested has no takers in the market, hence farmers do not sell these fruits and let them rot.</li> </ul>

		<ul style="list-style-type: none"> <li>▪ The out migration of able bodied and productive men force is adopted as a coping mechanism making the hill economy as money order economy</li> <li>▪ Current development efforts are sectoral rather than integrated /holistic one thus limiting the scope for End to End livelihood generation approach</li> </ul>
<b>Environmental</b>	<ul style="list-style-type: none"> <li>▪ The entire project activities are planned by considering the mountain specificities and thus will be implemented in harmony with its ecosystems</li> <li>▪ The activities are planned in a manner that it will result into creation of long term reserves of important resources such as water, fodder, biomass, food in project villages ,this will act as insurance against future threats</li> <li>▪ Most of the activities proposed are based on principle of environmentally sound development and principles of Restore, Reuse and Recycle.</li> <li>▪ The project will result into evolution of robust model to adapt with climate change in hills of IHR thereby ensuring co- existence of communities and healthy mountain ecosystems</li> </ul>	<ul style="list-style-type: none"> <li>▪ The region is known to be fragile ,having unique and rare biodiversity and providing various ecosystem services to people in Asia</li> <li>▪ The region is faced with maximum exposure to climate change phenomena leading to vulnerability of the communities</li> <li>▪ Once rich in the natural resource base the region is under threat due to development activities</li> <li>▪ The faulty development models which do not consider the mountain specificity have resulted in to creating development backlog</li> </ul>

*C. Describe or provide an analysis of the cost-effectiveness of the proposed project /programme.*

The proposed interventions through application of innovative techniques and activities are highly cost effective compared to available alternatives in enabling the community to adapt to the climate change in the project area. The activity-wise details of cost effectiveness is presented in the below given tables.

**Table 6:Cost-effectiveness analysis of the proposed project**

Activity proposed	Alternatives	Benefits
<p>Natural Spring Rejuvenation</p> <p>Cost per site is \$ 14167 for project period</p>	<p>There are limited technologies available to rejuvenate springs successfully</p>	<p>Technology and recharge measures proposed will be very useful for rejuvenating springs. It will help in identifying exact recharge zones and due to which, the success rate will be much higher compared to traditional methods.</p> <p>Over all water availability will increase per site at each of the 15 sites proposed. This will ensure sustained water supply for around 300 villagers.</p> <p>Importantly this will enhance access to community water resource and thereby reducing the drudgery of women.</p>
<p>Rain water harvesting</p> <p>Cost per unit is \$679</p> <p>This is estimated as cost towards establishment of unit at the level of individual household including 100 sq ft of concrete roof with channelization pipes, storage tank. The</p>	<p>The alternative is to depend on other water sources which are drying up and are located quite far and down the slope from households, thereby adding to the hardship of hill women</p>	<p>One of the most tested technologies for collection of water. The system will ensure 15000 liter of water for irrigation annually per participant family. The stored water will be used in summer/autumn, period when there is scarcity of water for crops. This will ensure supply of life saving irrigation to seasonal and annual crops as well as will ensure availability of water near household.</p>



Activity proposed	Alternatives	Benefits
<p>dimensions of underground tank will be approximately 4mX2.5mX1.5m. The structure is covered with Tin Shed.</p>		<p>The main purpose of this intervention is to create permanent source of water near household and minimize risk of crop failure due to sudden dry spells</p>
<p>Water use efficiency techniques demonstration</p> <p>Cost per sqm is \$ 2.5</p>	<p>There is no alternative to this intervention. Adoption of water saving techniques will help in optimizing the use of scarcer resource</p>	<p>Efficient irrigation will increase the irrigated surface; reduce water losses, as well as labor. The cost of production will be decreased by 20% at least. It will provide resilience to crops.</p>
<p>Promotion of hi value /off season vegetable cultivation under bamboo based poly houses</p> <p>Cost per unit is \$ 500</p>	<p>There is no alternative. Looking at the nature of extreme climatic events this is necessary intervention. Other measures are not so effective and are prone to climate change risks and thus leads to damages</p>	<p>It will increase the crop productivity by 60% compared to conventional farming on the same unit of land. This will also ensure low incidences of disease &amp; pests</p> <p>As per the market demand and supply the project proposes to plant tomato under the protected and controlled conditions. This crop will be able to fetch approx. \$ 934 to a family from 200 saplings with an average yield per plant 5kgs and sold at a price of \$ 0.25/kg. The structure will be used for high value vegetable cultivation for the period of 15 years approximately, thus giving assured income as compared to cultivation in open conditions.</p> <p>As all the farmers are part of formal groups, the project team will encourage them to get involved in collective marketing of the harvested produce. Project team will also put in efforts to establish linkages of farmers' groups with institutional</p>

Activity proposed	Alternatives	Benefits
		buyers existing in and out of the region
<p>Fruit tree plantation</p> <p>Cost per unit is \$168</p>	<p>The changing climatic conditions necessitate diversifying the income and livelihood options.</p> <p>Traditionally communities in hills used to get income from Apple orchards, with changes in temperature, the area does not get required chilling conditions and apple orchards are turning less productive.</p>	<p>This intervention is necessary as hill climate is suitable for growth of fruit trees. Efforts would be made to promote fruits which would be high value and resilient to climate change.</p> <p>Once these fruit plants are established, communities will get sustained income from fruit trees as an additional option for traditional agriculture</p> <p>Cost of establishing fruit plantation for a family is \$ 168 in the inception year of the establishment. The total cost includes all types of costs such as that of: grafts, plant nutrition &amp; after care, neem cakes, pesticides, plant protection material, and labor. This cost is applicable only in year-1.</p> <p>Returns from the fruit plantation to the family will begin only after 4 years of the plantation. Farmer and his family will reap the benefits from the plantation beginning 4<sup>th</sup> year from the year it was planted till the next 15 years. Based on the available market and demand supply scenario the calculated returns from the harvested fruits come out to be cumulatively for 11 years \$4590 from 4<sup>th</sup> year onwards till the 15<sup>th</sup> year.</p>
<p>Conservation of agro-bio diversity &amp; revival of traditional useful agriculture practices</p>	<p>There is no alternative available. If this action is not taken the rich and indigenous resource base will get eroded gradually.</p>	<p>Compare to cost proposed the benefits would be good. This intervention will help reviving the base of indigenous, nutritious and sturdy food crops that are available in</p>

Activity proposed	Alternatives	Benefits
<p>Cost is \$6,667</p>		<p>hill conditions. These will prove useful source of food security</p> <p>Some of these crops are niche crops which are high in demand for their nutritional traits thus may help attracting premium prices in future and thereby benefiting the communities</p>
<p>Improved breeding services ( Artificial Insemination using semen of HF/Jersey cow) and scientific management of livestock resources</p> <p>\$ 117/ family during four years</p>	<p>The livestock although forms important source of livelihoods, is not managed scientifically and thus returns from this are suboptimal.</p>	<p>The estimated cost of these services comes to \$ 117 for a family for a period of 4 years. The returns from the cattle to a family will be during as well as beyond the tenure of the project. Benefits will start coming from year 4<sup>th</sup> on-ward from enhanced milk and sale of calf bull from Cross bred cows. With the improved livestock management services the yield of the cattle will increase and the increased fat content in the cattle will fetch more monetary benefits to the family in the years to come.</p> <p>While the local cows produce 1-2 liters of milk per day, the local buffaloes produce 2-2.5 liters of milk in a day. The newly born crossbred can produce 8-10 liters of milk in a day from year 4 after Artificial Insemination. This will result in increased income to the farmers. With two crossbred cows a typical household in a hill is able to earn a gross profit of \$ 1152 in ten years and this will continue even after ten years.</p>

**Table 7: Detailed Explanation of intervention and Estimated Return**

Type of Intervention	Unit Cost/Project Support	Estimated Return
Plantation of fruit trees at the level of individual households ( 50 grafts consisting of 20 Peach , 15 Walnut, 10 Malta And 5 Lemon	\$ 168 /Family for the project period including cost of grafts, after care, cost of land preparation and establishment of orchard.	<p>The income from these fruit trees will start forth year onwards till year 10 and will go on up to 15 years .</p> <p>The fruit yield per tree will start from 5 kg and will go on up to 20 kg per tree.</p> <p>Average price per kg of fruits is \$ .42 for peach, \$ 1.33 for walnut, \$ 0.17 for Malta and \$ 0.33 for lemon</p> <p>The total estimated income from this fruit orchard is expected to be \$ 88 in year 4<sup>th</sup> to \$ 583 in 15<sup>th</sup> year annually</p>
Promotion of High Value Vegetables under low cost bamboo based poly house structure ( Around 55 Sq. M. of poly house each)	\$ 315 /unit for the project period including material ,labour and establishment cost	The benefit will start from first year itself. Around 200 seedlings can be planted in each poly house structure which will provide at least 5kg yield of tomatoes/ seedling .Thus in year 1 <sup>st</sup> itself total yield will be 1000 kg @ Rs 15/kg will generate income of 15000/ annum from first year onwards to fifth year and so on
Livestock improved breeding services And scientific management	\$ 117/ family during four years	<p>The estimated cost of these services comes to \$ 117 for a family for a period of 4 years. The returns from the cattle to a family will be beyond the tenure of the project. Benefits will start coming from year 4<sup>th</sup> onward from enhanced milk and sale of calf bull from Cross bred cows. With the improved livestock management services the yield of the cattle will increase and the increased fat content in the cattle will fetch more monetary benefits to the family in the years to come.</p> <p>While the local cows produce 1-2 liters of milk per day, the local buffaloes produce 2-2.5 liters of milk in a day. The newly born crossbred can produce 8-10 liters of milk in a day from year 4 after Artificial Insemination. This will result in increased income to the farmers. With two crossbred cows a typical household in a hill is able to earn a gross profit of \$ 1152 in ten years and this will continue even after ten years</p>

Details are attached in excel files indicating details of C-B analysis.

**Table 8: Summary of Cost Benefit Analysis of the Proposed Project Interventions**

#	Intervention	Benefits (in \$)		Cost/Household (in \$)	Remark
		Without AF	With AF		
1	Fruit Tree Plantation	Nil	4,590	\$ 168	<ul style="list-style-type: none"> <li>▪ Cost is for four years for one household</li> <li>▪ Benefit shown here is for one household and it is cumulative benefit of 15 years beginning 4th year onwards</li> <li>▪ Cost of wadi will be applicable only for year 1 but the project participant will fetch its benefit for the next 15 years beginning from year-4 and benefits will continue even after the completion of the project</li> </ul>
2	Vegetable cultivation under poly house structure	Nil	729	\$ 500	<ul style="list-style-type: none"> <li>▪ Cost is for four years for one household</li> <li>▪ Benefit mentioned in the table is for one household in four years beginning first year onwards</li> <li>▪ Life of the polyhouse and the suggested water tank in this proposed intervention is of 5 years &amp; 15 years respectively</li> </ul>
3	Livestock		25486	117	<p>The estimated cost of these services comes to \$ 117 for a family for a period of 4 years. The returns from the cattle to a family will be beyond the tenure of the project. Benefits will start coming from year 4<sup>th</sup> on-ward from enhanced milk and sale of calf bull from Cross bred cows. With the improved livestock management services the yield of the cattle will increase and the increased fat content in the cattle will fetch more monetary benefits to the family in the years to come.</p>
		Details of per family support			
		Breed Improvement	6.67		
		Deworming	6.67		
		Mineral Mixture	20.00		
		Vaccination	0.67		
		Modification	83.		

#	Intervention	Benefits (in \$)		Cost/Household (in \$)		Remark																											
		Without AF	With AF																														
				ion in cattle housing	33	<p>While the local cows produce 1-2 liters of milk per day, the local buffaloes produce 2-2.5 liters of milk in a day. The newly born crossbred can produce 8-10 liters of milk in a day from year 4 after Artificial Insemination. This will result in increased income to the farmers. With two crossbred cows a typical household in a hill is able to earn a gross profit of \$ 1152 in ten years and this will continue even after ten years</p> <table border="1"> <thead> <tr> <th colspan="2">Benefit to Farmers (in 10 years)</th> <th>Amount (in \$)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Farmer's expense on two cows for 10 years</td> <td>24333.33</td> </tr> <tr> <td>2</td> <td>Farmer's income from the sale of milk for 10 years</td> <td>24695.64</td> </tr> <tr> <td>3</td> <td>Income to farmer from the sales of a desi cow</td> <td>166.67</td> </tr> <tr> <td>4</td> <td>Income to farmer from the sale of a calf bull</td> <td>6.67</td> </tr> <tr> <td>5</td> <td>Income to a farmer from sale of crossbred cow</td> <td>416.67</td> </tr> <tr> <td>6</td> <td>Income from Cow Dung</td> <td>200.40</td> </tr> <tr> <td colspan="2"><b>Total Income to Farmer in 10 years</b></td> <td><b>25486.04</b></td> </tr> <tr> <td colspan="2"><b>Gross Profit</b></td> <td><b>1152.71</b></td> </tr> </tbody> </table>	Benefit to Farmers (in 10 years)		Amount (in \$)	1	Farmer's expense on two cows for 10 years	24333.33	2	Farmer's income from the sale of milk for 10 years	24695.64	3	Income to farmer from the sales of a desi cow	166.67	4	Income to farmer from the sale of a calf bull	6.67	5	Income to a farmer from sale of crossbred cow	416.67	6	Income from Cow Dung	200.40	<b>Total Income to Farmer in 10 years</b>		<b>25486.04</b>	<b>Gross Profit</b>		<b>1152.71</b>
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**D.** Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

The proposed project activities are in line with many national and sub national goals and policy framework as described below and in table 8:

- The actions proposed are in line with National Action Plan for Climate Change and various Missions proposed under it.
- The interventions proposed aimed at increased adaptation for agriculture dependent hill communities of North Western Himalayan region. It is also spelt out as an important thrust area in the IPCC document and the State Action Plan of Climate Change in Uttarakhand, 2012
- The actions proposed are part and parcel of India’s commitment under Kyoto Protocol. The proposed activities are also in line with objectives mentioned under India’s Biological Diversity Act 2002, which aims at conservation of biodiversity.
- The proposed project actions will fulfill the objectives of number of sub national acts and policies such as Disaster Management Act, Environment policy and Vanpanchayats Act of state of Uttarakhand
- Most of the outcomes defined will also help fulfilling India’s commitment to the UN’s Millennium Development Goals
- It is also in line with the major poverty reduction schemes of the Government of India.

**Table 9: Detailed National Programme and Its Alignment with the Components Proposed**

Key national policy /program	Programme elements /components related to the Policy
National and State Action Plans for Climate Change	Climate smart agri practices and innovations including introduction of water stress tolerant crops, crop diversification, organic farming, and soil and water conservation are aligned to National Mission on Sustainable Agriculture. Water harvesting, water saving devices and spring regeneration are related to the National Water Mission, which has set a goal of 20 percent improvement in water use efficiency. Conservation of agro-biodiversity, forest cover and other ecological values in the Himalayan region forms part of the National Mission for Sustaining the Himalayan Ecosystem. Similarly, energy based interventions are broadly covered by the National Solar Mission as well as the National Mission for Enhanced Energy Efficiency
National Agriculture Policy	Soil conservation, organic agriculture, conserving agro-biodiversity and promoting climate resilient horticulture varieties

Key national policy /program	Programme elements /components related to the Policy
National Disaster Management Policy	Weather based early warning systems are linked to community preparedness and risk assessment. Providing a decision support tool for advance planning of major livelihood support sectors including agriculture is consistent with the NDMP
National Forest Policy	Promotion of fodder trees and grasses in private lands as well as community wastelands. Cover crops in recharge zones of natural water springs are required and are called for in the policy
National Environmental Policy	Forest regeneration, conservation of native species and agro-biodiversity, water resources conservation and management. Planning climate smart interventions with mountain specificity
National Livestock Policy	Promotion of livestock management practices, fodder plantation, screening and documentation of fodder trees.
12 <sup>th</sup> Five Year Plan of India	Several FYPs, including the latest have covered actions to focus actions in the Himalayan region and study the vulnerability of the Indian Himalayan region as it has major influence on the entire Indian Economy

*E. Describe how the project / programme meet relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and comply with the Environmental and Social Policy of the Adaptation Fund.*

The programme components will be strictly implemented in accordance with various standards set out by various Ministries of Government of India and various Departments at the State level such as Department of Agriculture, Horticulture, Environment & Forest, Animal Husbandry, Fisheries, Renewable energy etc. For inputs and materials such as seeds, planting materials standards established by national research and technical institutes as well as by national level organizations like Indian Council of Agriculture Research (ICAR) will be adhered to. The details of the applicable standards *vis-a-vis* broad activities are indicated in the table below:

**Table 10: List of Relevant National Technical Standards and Compliance**

Activity	Applicable standards	Application to Project	Monitoring
Providing weather based crop advisory services at the level of farmers	<ul style="list-style-type: none"> <li>▪ National Policy on Disaster Management, 2009;</li> <li>▪ Disaster</li> </ul>	Provision of SMS based advisories by building partnerships with relevant S&T institutes	Functioning of Weather Station and number and quality of SMS advisories.



Activity	Applicable standards	Application to Project	Monitoring
Establishing linkage of the project participants with weather-based crop advisory and crop insurance service providers	Management Act, 2005		
<p>Introduction of climate resilient horticulture varieties on farmer's field</p> <p>Introduction of high value vegetable cultivation under protected conditions (using bamboo based poly houses to minimize the damage and losses due to extreme weather events)</p>	<ul style="list-style-type: none"> <li>▪ National Mission for Sustainable Agriculture (NMSA) Operational Guidelines; Department of Agriculture &amp; Cooperation Ministry of Agriculture Government of India 2014;</li> <li>▪ Mission For Integrated Development of Horticulture; Soil Health Management(SHM ) Under National Mission For Sustainable Agriculture(NMSA)(W.E.F, 1st April 2014);</li> <li>▪ National Project on Management of</li> </ul>	Water stress tolerant crops, promotion of fruit trees, vegetables, nursery, protective cultivation, seed bank.	Field visit, photos, and farmer level registers indicating various interventions.

Activity	Applicable standards	Application to Project	Monitoring
	Soil Health & Fertility” (NPMSH&F), 2008-09		
Roof Top Rain Water Harvesting along with underground water storage facility	<p>Standards as described by Bureau of Indian Standards, Guidelines For RWH in Hilly Areas by Hill Area Development Engineering Sectional Committee –( Public. resource. org.inc)</p> <ul style="list-style-type: none"> <li>▪ National Watershed Development Project for Rain-fed Areas, “Rain-fed Area Development Programme (RADP)” in the year 2011-12 (As a sub-scheme under Rashtriya Krishi Vikas Yojana (RKVY))</li> </ul>	Roof top rain water harvesting (at the level of Individual household , natural spring rejuvenation, drip/sprinkler demonstration	Field visit, photos, progress report
Increase in the productive capacity of livestock through improved breeding & scientific management of cattle.	<ul style="list-style-type: none"> <li>▪ National Livestock Policy, 2013; Government of India ,Ministry of Agriculture ,Department of Animal husbandry, Dairying &amp; Fisheries</li> </ul>	Livestock management, fodder plantation, screening & documentation of fodder trees, poultry, cold water fisheries	Field visit, Photos, progress report, document on screening of fodder.

Activity	Applicable standards	Application to Project	Monitoring
The use of isotopes for assessing water recharge and discharge zones and use of tracers for tracking of water flow	<ul style="list-style-type: none"> <li>▪ Standards developed by isotope hydrology division of BARC would be applicable. This Technique is widely applied for investigating and solving problems related to water resource management in Hills of Uttrakhand.</li> </ul>	Developing water resource in hills by rejuvenation of natural springs	Reports and analysis involving BARC and HESCO 's team of scientist

***F. Describe if there is duplication of project / programme with other funding sources, if any.***

This project will not duplicate efforts ongoing through other development agencies in a region and sub-region. There are no other efforts on climate change adaption in the selected 10 project villages.

The project will complement the on-going projects and programs in the IHR and sub-region. Some of the ongoing and proposed initiatives in this region have complementarities with the proposed project as indicated below. During project implementation, further efforts would be made to build partnerships with these ongoing programs, share field based evidences through our projects, involve these stakeholders and likeminded project implementing agencies in national level consultations. Efforts would be made to also upscale relevant best practices and proven approaches to broaden the adaptation efforts in the IHR. Following is the detailed list of on-going project in the proposed area:

**Table 11: List of on-going Projects in the Proposed Area**

<b>Project</b>	<b>Objectives</b>	<b>Complementarities</b>	<b>Geographical coverage</b>	<b>Agency</b>
Technology Interventions in Mountain Eco system (TIME)	To introduce suitable technologies having hill specificities	Technology interventions suited to mountain ecosystem are proposed. The project is yet to commence implementation	In three states of North Western Himalayas	Department of Science and Technology (DST), Govt of India
Area based programs through National Rural Employment Guarantee Scheme – Ministry of Rural Development on natural resource management	To introduce actions for soil water conservation in a landscape with the objective of creating local employment	The scheme has major area based treatment approach which can be used for treatment of wastelands.	All over India	On-going with support of department of rural development under NREGS scheme
Programme on climate change ongoing through various ICAR institutes such as, farmer's awareness, capacity building actions and ICT enabled information	To increase the interaction between the farmers and the Agro-meteorological Service providers like India Meteorological Department (MD), State Agriculture University (SAU), Indian Council of Agriculture	Greater awareness of the farmers about the importance of climate and its impact on the agricultural crops and its management	All India	Ministry of Earth Science, ICAR & IMD

Project	Objectives	Complementarities	Geographical coverage	Agency
sharing	Research (ICAR)			
HICAP Himalayan Climate Change Adaptation Programme  The program has started in September 2011 – August 2016	It is collaboration among three organizations – CICERO, ICIMOD, and UNEP GRID-Arendal it is aimed at contributing to enhanced resilience of mountain communities, particularly women, through improved understanding of vulnerabilities, opportunities, and potentials for adaptation.	It is important think tank on climate change in Himalayas	Himalayan region	ongoing with support of SWISS Agency for Development Corporation, ICIMOD-Nepal
Indian Himalayas Climate Adaptation Programme (IHCAP)	The program is aimed at climate change adaption actions by building partnerships in Himalayan region	It is one important effort to take action against emerging issue of climate change	Indian Himalayan Region	Climate Change and Development (CCD), through the Embassy of Switzerland in India, under the Global Programme of Climate Change supported by Swiss Agency for Development and Cooperation (SDC) in collaboration with the Department of Science & Technology (DST), Government of India

*G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.*

One of the outcomes of this project is to create field-based evidence of climate resilient strategies and approaches in mountain ecosystems, and further create a database for its wider dissemination and possible replication in other parts of the IHR. There is a need for this type of effort as there is dearth of data covering field evidence of required climate change adaptation strategies and program approaches in the IHR. A knowledge management system will be set up to capture field evidences, best practices covering Climate Smart Agriculture Technologies in the hills. Efforts would be made to prepare a variety of knowledge products.

The training, capacity building efforts through the project will also help generate data on required training modules to transfer technologies at the level of communities and for seeking their informed participation. A multi stakeholder national consultation is also proposed to allow further exchange of best practices and better policy inputs. These efforts are expected to result in captured and disseminated learning insights, approaches, and technologies for the IHR. Several exposure visits of participants and staff are planned to understand the technologies better and to appreciate the best practices in the IHR.

During the course of project implementation, efforts would be taken to facilitate crosslearning and exchange of best practices involving several stakeholders as described in figure 13. The region has several research institutions of repute engaged in technology development in agriculture, forestry, natural resource management and allied disciplines. A large number of non-government organizations are working at the grassroots level and making a change in the lives of rural communities. Development initiatives rank highly among the priorities of the Department of Biotechnology and the Department of Science and Technology, premier agencies of Government of India for promoting scientific development initiatives. BAIF already has a programmatic base in this region (refer Annexure-1), whose field level experience along with technical input from Government and Non-government Organization as well as research knowledge base of Research institutes in the area will be utilized for wider dissemination of climate change approaches and strategies.

Following specific actions are planned under the project:

*Activity 1: Preparation of process document. Process documentation will cover field level data, experiences, approaches, technologies tested and best practices*

- Baseline report on site specific climate risks and hazard mapping ( 1 per village and overall 1 for cluster )
- Process Documentation/Audio visual reports: ( at least 3 )
  - Steps and required participatory approaches for building local level adaptive capacities (steps)
  - Technology fact sheets covering climate smart sectoral interventions

- Report covering local agro biodiversity of project villages
- Synthesis products on methodologies used for improving adaptive capacity of hill communities
- Pamphlets/ technology fact sheets/dossiers/best practice notes: (at least 10)

### **Output 3.2: Knowledge generation through consultation**

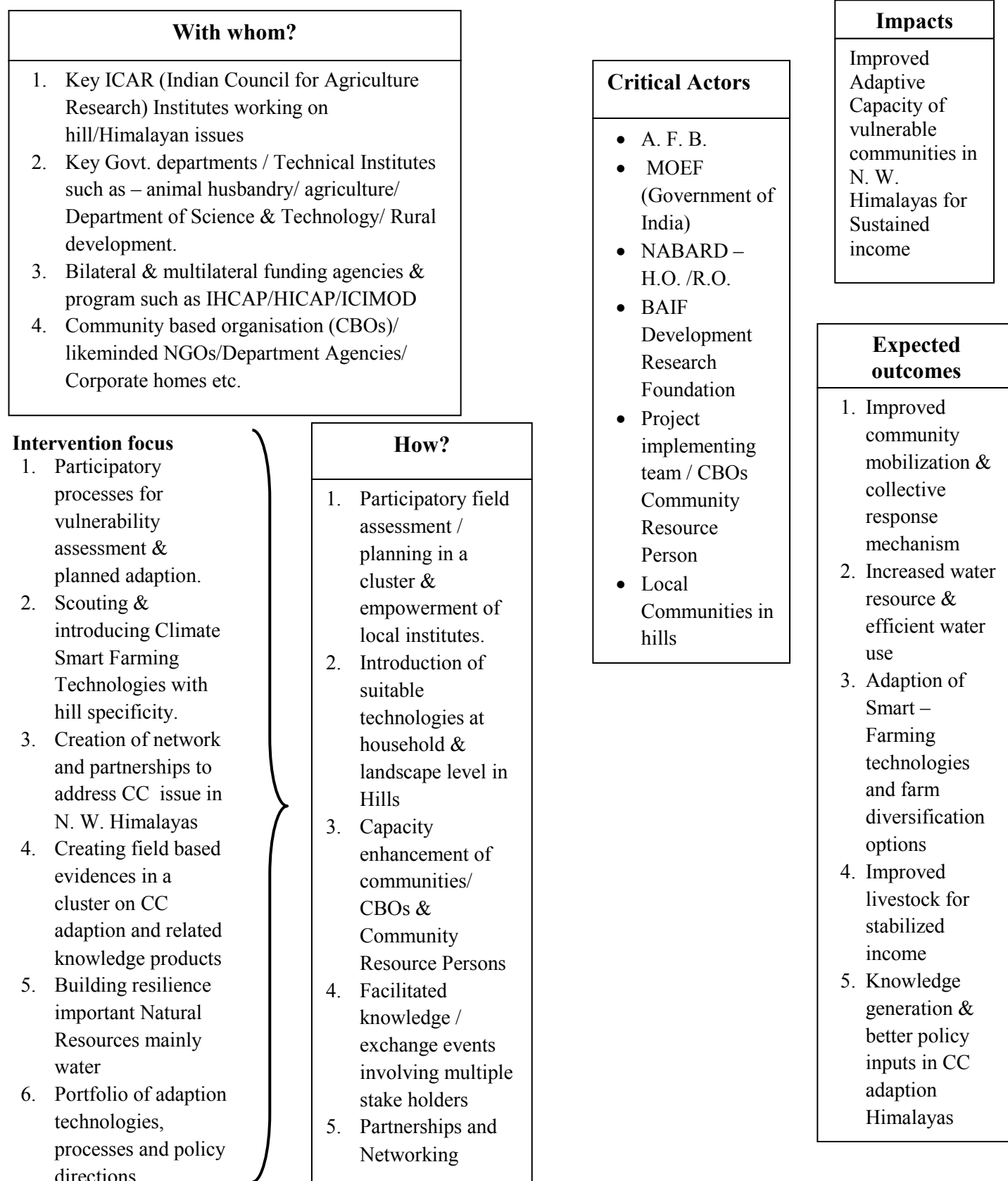
*Activity 2: To organize one multi stakeholder's consultation at national level*

- Multi stakeholder's consultation at national level to facilitate exchange and cross learning of proven and tested strategies for climate change adaptation under hill context.
- This will generate learning's at the level of development agencies concerned with the climate change issue as well as will result in to better policy inputs and replication opportunities.

### **Output 3.3: Wider dissemination of acquired knowledge**

*Activity 3: Preparation of publications such as: newsletters, articles, case studies for reaching out to the masses and the policy-makers with the adopted successful climate change adaptation strategies. This together with concept appreciation visits and consultations by various stakeholders will facilitate policy inputs, sharing of best practices and shared understanding on climate adaptation actions in Hill context.*

**Figure 11: Project related Networking and Partnerships**





*H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund.*

The proposed adaptation plan is result of understanding generated, insights gained through a series of stakeholder consultations which were held in 2013-2014 in the hill region by the executing entity as a part of its Centre for Development in Fragile Hill Area. Multiple stakeholders like villagers, district officials, scientists and development professionals, subject experts, representatives of funding and technical agencies were consulted and four such consultations have proved useful for a clear understanding of how best to adjust to the emerging climate change issue. The main objectives of such consultations were, to understand the climate change context as perceived by communities

- To understand the full effects and growing vulnerabilities of communities and their livelihood resources to identify potential ways and methods for adaptation
- To assess preferences and priorities of communities towards diverse adaptation measures and technologies
- To arrive at a broad understanding of required field actions having mountain specificity

Two consultations were held with group of farming communities which included 55 individuals, out of which around 30% were women representing all the 10 project villages. These were day long discussions using CRiSTAL tool. (Community based Risk Screening Tool- Adaptation and Livelihood) Tool is a decision support tool for assessing and enhancing project impacts on local adaptive capacity to climate variability and climate change. CRiSTAL tool is developed jointly by the International Institute for Sustainable Development (IISD), the International Union for Conservation of Nature (IUCN), the Stockholm Environment Institute in Boston (SEI-US) and the Swiss Foundation for Development and International Cooperation (Inter cooperation). During these interactions, communities shared their own perceptions of climate change indicators and how these changes are affecting agriculture and livestock resources. Communities mentioned that the uncertainty in climate events is growing since last few years thus making the dependent community more and more vulnerable. Regarding effects of climate change on men and women, it is seen that although both men and women farmers stands adversely affected by climate change effects on agriculture, women tend to bear more burden of these adversities due to nature of their engagement in food production, animal rearing and other daily activities of basic needs fulfillment like obtaining water, firewood etc. Views of the stakeholders particularly

vulnerable groups including women have been taken into account while designing various project interventions.

BAIF recently also organised a brain storming workshop for crafting strategies for Hill Areas along with several other NGOs, Department of Bio Technology, NABARD, Department of Science and Technology and regional NGOs like CHEA and philanthropic institutes such as HIMMOTHAN (through Tata Trust) (Proceedings are available at:

[http://www.baif.org.in/pdf/Hill\\_Workshop\\_Proceedings.pdf](http://www.baif.org.in/pdf/Hill_Workshop_Proceedings.pdf)) Following is the summary of consultation processes done and its outcome:

**Table 12: Summarized Tabular Form of Consultation Processes Done and its Outcome**

Consultation	Type of stakeholders	Objective	Outcome of discussion
Multi stakeholder meetings  On 11-12 <sup>th</sup> Nov-2011 at Forest Research Institute – Dehradun ,Uttarakhand  BAIF along with Department of Biotechnology ,DST and Himmothan society network could organise a two days brain storming workshop ,” Crafting Potential Strategies and measures for North Western Himalayan region.	40-45 invitees including eminent scientists, development workers, professionals, thematic specialists, Academicians, technocrats and representatives of Department of Sciences and Technology and Department of Biotechnology, Government of India and likeminded agencies like partners of Himmothan Society etc.	To evolve a suitable strategy framework based on sound principles of ecology and economics for sustainable livelihood development and for management of natural resource in Central and Western Himalayan hill regions  Climate change threat was also discussed in detailed	At the end of two days discussion, clarity was jointly evolved on suitable program approaches in the context of hills, along with Required technological framework to plan development interventions in hill areas.  This has also facilitated ensuring future synergetic efforts by main participating organizations to achieve development goal with hill specificity
Multi stakeholder meetings – held on 16-18July 2013, at Scientist Hostel, FRI-Dehradun.	Eminent scientists, development workers, professionals, thematic specialists, Academicians,	To Identify critical areas requiring interventions in hills (Including climate change) and to	The workshop resulted in to launching a TIME program by DST as an interface between number of

Consultation	Type of stakeholders	Objective	Outcome of discussion
<p>BAIF was part of Core group, formed by DST –Department of science and technology –GoI, which met to discuss scope and design of TIME-LEARN program which is launched by DST as a multi institutional, multi-location network program in three Himalayan states in Central and Western Himalayas.</p>	<p>technocrats and representatives of government and likeminded agencies from three main states of North Western Himalaya</p>	<p>evolve a suitable program to help addressing fundamental livelihood issues of the mountain communities by generation of new economic activities in the fragile hills.</p>	<p>premier NGOs, research and scientific organizations working in hills and Himalaya’s communities.</p>
<p>Field assessment of climate change effects and related vulnerability in Uttarakhand involving villagers</p> <p>This was held on August 2012 (CRiSTAL tool)</p> <p>An assessment was conducted on in Khetikhan village of district Champawat</p>	<p>55-60 Small and marginal farmers from 8 villages including female farmers</p>	<p>To understand</p> <ul style="list-style-type: none"> <li>▪ How climate-related hazards affect project area and local livelihoods</li> <li>▪ How people cope with the impacts of these hazards</li> <li>▪ Which livelihood resources are most affected by climate hazards and which ones are most important for coping</li> <li>▪ How project activities affect access to or availability of these</li> </ul>	<p>An assessment helped to understand and discuss adaptation and mitigation strategies as suggested by communities for climate change phenomenon in a region</p>

Consultation	Type of stakeholders	Objective	Outcome of discussion
		<p>critical livelihood resources</p> <ul style="list-style-type: none"> <li>▪ What adjustments can be made to a project to increase access to or availability of these critical livelihood resources</li> </ul>	
<p>A village level assessment of climate change and vulnerability issue involving farmers.</p> <p>Organised on 5<sup>th</sup> April, 2014 at village NariyalGaon, district Champawat</p>	<p>55-60 Small and marginal farmers including female farmers from 10 proposed project villages</p>	<p>Communities expressed helplessness as they did not know ways to accurately predict these climatic changes and its occurrence.</p> <p>Villagers indicated need for specific interventions through adaptation project. Some suggested measures includes-</p> <p>Management of Water for irrigation as well as for drinking</p> <p>Tapping of rainwater and efficiently utilize the ground water Ex:- Spring rejuvenation, diversion based irrigation , roof top rainwater harvesting, innovative water storage ,de - silting of common water tanks ,rain water recharge etc</p> <p>Increasing productivity from land per capita land or per capita water even under changing context</p> <p>Technical handholding and on field support for newly introduced crop was also expressed as a need</p> <p>Measures to check an incidence of pests and diseases in crop and livestock resources</p> <p>Improvement guidance in Livestock rearing</p>	

Consultation	Type of stakeholders	Objective	Outcome of discussion
		<p>Need soil conservation measures in the area to protect productive soil which is washed off during intense rains</p> <p>Need to conserve forest, with reforestation on Vanpanchayats(Community managed pastoral lands). Pine needle trees causing fire in the forest therefore need is expressed to manage this properly to reduce fire. Need to ensure biodiversity in forests ,which has vanished over the years</p> <p>Need for timely information about rainfall and temperature to plan climate friendly agriculture activities in advance (Developing an Early Warning System for extreme events )</p>	

***I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.***

During the preliminary field visits it was noticed that climate change and variability are having direct bearing on rural livelihoods, especially for agriculture dependent hill communities in this part of Himalayas. The adaptation actions in this region having unique agro ecological features and socio economic conditions are thus crucial for the securing the livelihoods of number of vulnerable families in this part of Himalayas. Considering the type of vulnerabilities, the project activities are proposed with the aim of facilitating introduction of mix of climate smart technologies (covering important livelihood resources mainly, water, livestock and vegetation and crop resources) at household and landscape level in mountain conditions with technical back stopping and by building partnerships with relevant scientific and technical institutes.

The issue of climate change and related consequences on livelihoods of hill communities is recently emerging as a major threat to development. There are limited efforts so far to adapt to these changes. The overall gearing up of Indian Economy to face such problem is slow, there is general lack of field based evidences on context specific adaptation measures which as interwoven sectoral interventions providing benefits to families.

The proposed project is thus unique one, having direct bearing for the livelihoods and supportive resources in North Western Himalayas

## **Component 1: Community Mobilization and Organization**

**Baseline without Adaptation fund:** People residing in the project villages have no or very limited information about adaptation measures and the communities are feeling vulnerable due to growing uncertainty of weather events. Normally projects / programme are taken-up without adequate stakeholder consultations especially during the planning stage. Stakeholders, especially the vulnerable communities who are the direct beneficiaries of any project, are not taken on board while designing various components as well as at implementation. Hence mobilization of the stakeholders, constitution of village level institutions formation of SHGs, farmers clubs, water users association, etc. are not given the required focus. In the project villages, farm families are highly exposed to climate change related livelihood insecurity with no definite idea as to the reasons or the solutions for the future. Vulnerability assessment was not prepared by any Governmental agencies in the area prior to designing past projects. Weather information presently provided is hardly sufficient and effective to make any plan in the event of natural calamities and in most of the cases its reach to remote areas is doubtful. The nearest weather station of IMD (Indian Meteorology Department) is located at Mukteshwar, which is at the distance of 250 km from the project site. In the absence of appropriate training and capacity building, the community is unable to adopt feasible climate change adaptation measures. Further, there are hardly any agencies in the field for undertaking the required capacity building of the communities covering multiple livelihood sectors that have a bearing on climate change adaptation. As a part of project interventions processes are planned to be adopted to form and strengthen diverse user groups and commodity interest groups of vegetable growers, women SHGs for milk collection, water user's associations, Poly house farmers etc around the activities proposed. These groups will be strengthened to handle post production agri produce including vegetable produce (tomatoes, capsicum and even surplus milk ). There are many market players including traders, aggregators and dairy networks in region. The commodity interest groups ( CIGs) will be linked with these marketing channels. In the process their capacities would be built in such a manner that they are able to negotiate in a better way.

**With Adaptation Fund Support:** Fund support would enable site specific studies on participatory assessment of climate risks, vulnerabilities and future climate change scenarios, risk mapping, socio-economic impact assessment and listing adaptation measures. This would enable positive effects on physical and natural and human resources, mapping of threats, planning response strategies, etc. A baseline will be created in respect of all the participating 800 households in the project villages. In the project scenario a systematic effort will be made in mobilizing the stakeholders so that a gender balanced village level institution such as SHGs, farmers clubs, water users association etc. will be established for performing various roles during project implementation and sustaining the project activities thereafter. It is proposed to form/strengthen 50 village level institutions under the project. The project has been designed to start with a vulnerability assessment in participatory way so that all the target households have a reasonable understanding of climate change related impacts on their lives and livelihoods and

possible solutions. Availability of reliable weather based information would enable the community to prepare themselves against disaster as well as to plan ahead for contingencies. Towards this end, the project proposes to establish one weather station at the project level and provide regular SMS based weather advisories to all the 800 households.

## **Component 2: Introduction of Water Resource Development and Climate Smart Farming Technology**

**Baseline without Adaptation fund:** Growing scarcity of water (surface and sub-surface) for drinking and irrigation purposes due to erratic, unseasonal, and unpredictable rains in the hills since last few years, including the drying up of natural springs. Drinking water sources are becoming scarce, thus adding to drudgery of women in finding and carrying water. Similarly, agriculture in the IHR and project area is mostly rain fed and is characterized by small-scale and low productivity – it is highly vulnerable to climate change. The potential of horticulture, including protected cultivation, as livelihood options against adverse impact of climate change remains largely untapped. The lack of proven local solutions to address low incomes and vulnerability has led to migration of productive labor to other areas for work, resulting in an even greater local threat to food security and family wellbeing. Animal husbandry which is second largest sectors supporting livelihoods is turning unproductive and less remunerative due to the scarcity of fodder leading to increased cost of production. Dependence on agriculture alone will not be sufficient in ensuring resilience to climate change.

**With Adaptation Fund Support:** Creation of water reserves to address water stress due to climate change is envisaged by undertaking site-specific measures. Rain water harvesting techniques (individual & community), natural spring rejuvenation and demonstration of water saving devices are the main activities proposed as important activity under this component.

Adoption of climate smart, context specific and feasible activities as proposed will contribute to enhanced yield and income from the farming and livestock sectors. These interventions are expected to create alternate livelihood options to the hill farmers, stabilize the income even under changing context and thereby enable them to cope with the adverse impact of climate change. Introduction of niche fruit crops having high value are planned to be promoted with required technical support. The changed climate is conducive for growth of diverse, high value fruits such as, walnut, peach and grafted pear. Promotion of farming under protected conditions (low cost bamboo based poly houses) would also help in growing high value and off season vegetables. Long term conservation of hill agro biodiversity is also identified as important component leading to risk mitigation and ensuring food security

It is proposed to focus on fodder trees, which are native to hill areas. Activities include listing of native fodder, nutritional analysis, and collection of germplasm, innovative propagation and integration on private lands. Further, fodder tree regeneration/plantation on community pastoral

lands is also proposed. Once an adequate fodder base is built, it would be easier to implement climate resilient livestock management ensuring stabilized income for vulnerable hill families.

With appropriate training and capacity building, the ability of the community to adopt feasible interventions will greatly be improved. It is proposed to impart training to 50 Self Help Groups/Producer Organizations, training for 10 local cadre of technicians who are residing in the project villages, 30 training packages on climate resilient activities and 20 exposure visits for stakeholders to visit and understand proven improved and more climate resilient livelihood models.

These interventions would result into creating direct impact at family level in the pilot areas. (Better income and more productive assets, better management systems ,diversifying and strengthening livelihoods, livelihood assets and improved access to climate resilient livelihood options for vulnerable households and direct impacts accruing at the area level in the pilot areas (e.g. productive and better managed natural resources in the areas through proposed actions of spring rejuvenation, management of community and private lands.)

### **Component 3: Knowledge Management including knowledge creation and wider dissemination actions**

**Baseline without Adaptation fund:** A suitable mechanism to capture processes and factors leading to the success or failure, has been sadly missing in most of the flagship projects to date. Thereby, it becomes quite often difficult to replicate and upscale many of the pilot projects implemented in the country. Documentation of the project during as well as after implementation is a neglected area limiting the scope for dissemination of information and constraining future up scaling of identified and successful activities.

**With Adaptation Fund Support:** Reliable database is needed to have a clear picture of the area under planning so as to design potential strategies for any development programme. Under the project, attempt to document case studies will be made in a systematic manner. Further, an impact assessment will be undertaken and fact sheets of the achievement will be made known to all stakeholders. This will give an idea, about the direction of the project and results on various interventions at a regular frequency

The support is requested only to allow the introduction of suitable technologies at the level of hill families during four year's duration. Thus this is minimum support required to introduce combination of interventions. The fund support required for sustained efforts to realize income by participant farmers beyond four years is not factored in here. But approach taken is to lay thrust on capacity building of these farmers and growers so that they are able to gain from forward and backward linkages on their own.



During the course of project implementation, efforts would be taken to facilitate cross learning and exchange of best practices involving several stakeholders. The region has several research institutions of repute engaged in technology development in agriculture, forestry, natural resource management and allied disciplines. A large number of non-government organizations are working at grassroots level and making a change in the lives of rural communities. Development initiatives of the hill region figure high among the priorities of the Department of Biotechnology and the Department of Science and Technology, premier agencies of Government of India for promoting scientific development initiatives. BAIF's existing networks and partnerships will prove useful for allowing such dissemination

*J. Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project / programme.*

The project activities are planned at the level of individual households. Since most of these interventions will help building resilience of communities and reduce their vulnerabilities due to climate variations, communities are likely to adopt and sustain these efforts on their own. There are certain activities which will require initial material and techno – managerial input support at the time of initial establishment and adoption. Once these are introduced successfully, very little sustained hand holding is required. There are certain activities like hi-value vegetable cultivation under protected condition where marketing inputs or support for forward linkages may be required. These are mostly software activities for which efforts would be planned from year 1 for building capacity of growers, formation of commodity interest groups, linking them with other market players and institutional buyers, developing entrepreneurial skills amongst these groups, linking them with banks and markets etc. Since this is related to process and approach of project implementation, efforts would be made to build right perceptiveness amongst project implementation team and community level resource persons

As a part of project interventions processes are planned to be adopted to form and strengthen diverse user groups and commodity interest groups of vegetable growers, women SHGs for milk collection, water user's associations, Poly house farmers etc around the activities proposed. These groups will be strengthened to handle post production agri produce including vegetable produce (tomatoes, capsicum and even surplus milk). There are many market players including traders, aggregators and dairy networks in region. The commodity interest groups (CIGs) will be linked with these marketing channels. In the process their capacities would be built in such a manner that they are able to negotiate in a better way.

Given dynamic and unpredictable scenarios arising from climate change, sustaining the adaptive capacity strategies by the project beneficiaries over a longer period is challenging. Notwithstanding the above, the project has been designed keeping in view sustainability aspects as indicated below:

- Project design is based on a solid foundation of people's participation and developing strong institutions of people for ensuring sustainability
- The actions through this project are proposed in a compact area of 10 villages covering manageable households of around 800 families and the surrounding landscape of two blocks of Champawat and Pati of Champawat district
- Training and capacity building of primary groups including commodity interest groups, SHGs, Farmer's club forms part of this project. These groups (especially SHGs) could be credit linked to nearby service area banks for sustainable financing. Further, efforts will be made to bring women SHGs under the ambit of Govt. of India programme on National Rural Livelihood Mission (NRLM)
- Creation of local cadre of technicians in select villages is another specialty of the project. These technicians would provide required services and help to the project beneficiaries even after the closure of the funding as they will be residing in the project villages. Further, they can provide services at a nominal cost for up scaling and replication in other villages.
- The activities proposed are based on ecologically sound principles, i.e. - reduce, reuse, restore and regenerate. This approach would ensure long-term sustainability of existing natural resources in the region e.g. vegetation, agro biodiversity, water, land and soil resources
- Although during the project period the Executing Entity is facilitating the implementation, the entire responsibility will be handed over to the People's institutions formed both at village level and at cluster level in a gradual manner
- Through positive experiences generated via adoption of climate smart practices, it is expected that the project components will be internalized gradually by most of the participants. Farmers are expected to meet the subscription cost of SMS from the second year onwards and thereby continuing it sustainably
- Project activities also have taken care of institutional sustainability by proposing formation and strengthening of village level seed banks to be managed by group of participating farmers, village level processing units to be managed by local SHGs , Village and cluster level group of commodity focused farmers, taking responsibility for aggregation and developing market linkages
- The central committee will work in close association with cluster and village level groups so as to enhance their capacities for post project management of the programme while also ensuring the successful running of enterprises and continued technical hand holding in the region
- State Government will be taken on board in up scaling and replication in similar agro-climatic hill regions through convergence of existing programmes/projects under various line

Departments like Agriculture, Horticulture, Animal Husbandry, Fisheries etc. Funds available under programmes like Rashtriya Krishi VikasYojana (RKVY), National Horticulture Mission (NHM), and National Mission on Micro Irrigation (NMMI) etc. could be dovetailed

The project will be implemented with community groups such as SHGs and Farmer's and livestock owners' collectives at village level. For area-based interventions, the activities will be taken up with the help of panchayats and village level bodies. As a strategy it is proposed to build a local cadre of technicians, through technical training. They in turn can help in wider dissemination of suitable technologies in the IHR. Their services can be used by interested farmers even potentially on a payment-for-service basis. The role of BIRD-UK will be technology scouting, demonstration and introduction. It is expected that local communities will adopt these technologies on their own after witnessing benefits. Once the technologies are found to be useful, there is need to facilitate its replication.

Throughout the project efforts will be made to involve local, district level and national government officials and departments in a network of supporting agencies. These members will be involved in consultations, field visits, scouting of technologies and programs etc. Further, concept appreciation visits to field sites by policy makers and government officials, as well as direct project stakeholders, also will be planned. The best practices and case studies will be disseminated through local and national media to create required acceptability. Together these efforts are expected to help in attracting mainstream funding (including state budget support) in the longer run.

The main objective of this intervention is to establish system weather advisory to plan timely and advance safeguard measures for agriculture crops. Majority of the farmers have expressed need to have such services as uncertainty of climatic events is emerging as major threat in the region. These services should be continued even at a cost in the post project phase by the farmers considering its utility. The initial registration charges are proposed to orient and link farmers to these services and allow them to get first-hand experience of its utility. Thus there is every likelihood that these services will be utilized by communities even after completion of the project. Suitable subscription fees would be worked out based on experience during the project implementation phase. Similar practice of utilization of such services through paid subscription has been successful in other regions of the country.

**Scope for further replication of project activities along with potential sources of funding for up scaling:**

The proposed project activities will be implemented as a part of BAIF-UK's thematic center called Center for Development in Niche Areas of Hills (covering the North Western Himalayan region). The activities through this center have been ongoing in Kumaon and Gadhwal and parts of Himachal for the past 6 years. The center works towards incubating and piloting innovative project ideas. Planned efforts are taken to sensitize government officials on piloted concepts and the required development approach. This results into concept appreciation and internalization of work under government policies and programs.

BAIF has been recognized for its development programmes by the Planning Commission, Ministry of Rural Development and Ministry of Tribal Affairs, Government of India, which enables BAIF Programme Approach to be taken up as a part of Government-sponsored main stream development programmes. BAIF is also recognized as an Institute of National Importance by the Indian Council of Agricultural Research and a formal MoU has also been made to plan concrete steps jointly.

Through its programmatic presence and networking programs, BAIF-UK has developed working partnerships with number of local NGOs, Scientific and research institutes as well as with relevant line department of state of Uttarakhand.

*K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project / programme.*

**The project actions are proposed that will have minimum social and environmental risks.**

It is proposed to select beneficiary family in an open and transparent manner. Project support is planned for 800 families from 10 villages. These 800 families would be identified in consultation with village councils after initial capacity building efforts such as preliminary meetings, exposure visits, trainings and sensitization etc. Thrust would be laid on identifying the women headed families, vulnerable families having main dependence on land based activities (including agriculture and livestock), Houses which are located in remote locations etc. Efforts would be made to mobilize community and generate demand for various climate smart interventions

The interventions are proposed at household level involving family labour. The activities are proposed around natural resources that are locally available and are at the disposal of

community. The approach is to achieve integrated development while achieving resource efficiency such as land, livestock, and water resources.

Most of these interventions are planned at the level of individual participant families' Technical handholding and skill building of participants will help these families in improved management of their livelihood support resources. The activities will be introduced by family members, who are already involved in agriculture and livestock related operations on day to day basis. The work thus proposes enhanced skills, participation of family workforce for building long term productive assets and improved use of productive labour force without getting displaced for supporting climate smart livelihoods. Thus there is no threat of forced or compulsory labour or an issue of resettlement.

**Table 13: Checklist of Environment and Social Impacts and Risks Identified**

Check-List of Environmental and Social Principles	No Further Assessment Required for Compliance	Management Required for Compliance
Compliance with the Law	<p>There are no activities which are against legal framework in this project.</p> <p>The project complies with Environment (Protection) Act, 1986 and Forest Conservation Act, 1980.</p>	None
Access and Equity	The project provides fair and equitable access to the project beneficiaries in terms of alternate climate resilient livelihood options including provision of clean water and renewable energy options. The project will not be impeding access to any of the other requirements like health, clean water, sanitation, energy, education, housing, safe and decent working conditions and land rights	None
Marginalized and Vulnerable Groups	The project is basically aimed at providing alternate climate resilient livelihood options and income to marginalized communities living in the project area and as such will not have any adverse impact on other marginalized and vulnerable groups	None
Human Rights	The project does not foresee any violation of human rights of the community living in the hill region.	None
Gender Equity and Women's Empowerment	The project proposes to form/strengthen Self-Help Groups (SHGs) for empowering women in the project area, who in turn will be involved in taking up some of the livelihood activities. Capacity building of women also will be taken care of through appropriate training modules. Many interventions like strategic water reserve creation, livestock management, renewable energy etc. are going to	None

	have direct impact in reducing the drudgery of women. The above measures will ensure participation by women fully and equitably, receive comparable socio-economic benefits so that they do not suffer adverse effects	
Core Labor Rights	Payments to labour under the project will be made as per Government approved norms duly following minimum wage rate and hence ensuring core labour rights. Other rights related to core labour rights including freedom of association & collective bargaining, elimination of forced labor, elimination of child labor, non-discrimination would be ensured during the project implementation.	None
Indigenous People	Not applicable to this project	None
Involuntary Resettlement	The project does not displace any community as the interventions proposed are smaller in nature mostly confined to household / family level and hence issue of resettlement does not arise.	None
Protection of Natural Habitats	The project does not affect any of the natural habitats	None
Conservation of Biological Diversity	The project has main component of conservation and revival of local agro-biodiversity of hill regions. Many participatory events are planned for knowledge generation and exchange. For conservation of seeds establishment of community seed bank is proposed.	None
Climate Change	The project is aimed at enhancing the adaptive capacity of the community living in the North West Himalayan hill region and thereby reduce their vulnerability. The proposed interventions will not contribute to acceleration of climate change / variability.	None
Pollution Prevention and Resource Efficiency	The project activities are planned around available natural resources such as land, water, vegetation and livestock. The interventions are planned to achieve resource efficiency and optimum use of available resource. Many interventions are planned to reduce further degradation of land, to promote more green cover, to regenerate water resources and to treat the water recharge zones of natural springs. Project interventions will be implemented in an environmentally sound manner. Further, most of the activities are to be introduced in a decentralised manner	None

	<p>at the level of number of individual households .These are thus not likely to create any type of pollution or pressures</p> <p>During construction activities of underground rainwater storage possibility of pollution will be prevented by adhering to prescribed standards of construction and management such as lining of tanks, seepage prevention, etc.</p>	
Public Health	No adverse impact on public health related issues is envisaged. The improved access to water near household through water resource development and water use efficiency would lead to reduced hardship, improved work efficiency and reduced illnesses in the region	None
Physical and Cultural Heritage	No adverse impact on cultural heritage related issues is identified	None
Lands and Soil Conservation	<p>No adverse impact on land and soil conservation is envisaged.</p> <p>As part of livestock management practices measures such as control grazing, stall feeding etc., are expected to take care of green fodder requirements and hence the interventions may not lead to promotion of roaming cattle and hence may not pose as a risk of soil erosion.</p>	None
<p>IN VIEW OF THE ABOVE THE PROJECT IS CATEGORIZED AS “CATEGORY C” WITH NO ADVERSE ENVIRONMENTAL OR SOCIAL IMPACTS</p>		

## PART III: IMPLEMENTATION ARRANGEMENTS

### *A. Describe the arrangements for project / programme implementation.*

The Project will be executed by BAIF Research & Development Foundation (BAIF), Pune, having presence in 16 states across India through its sister organizations since 1977. It is committed to provide sustainable livelihood to the rural poor through management of natural resources and promotion of livestock development, watershed development and agri-horti-forestry as major income generating activities. The team of BAIF includes a Thematic Specialist having expertise and subject matter specialisation in areas such as agriculture, livestock, natural resource management, social science including strengthening of community based groups, team of finance and administration. BAIF will be directly responsible for execution of project activities in the state of Uttarakhand along with its associate agency in Uttar Pradesh (BIRD UP) and team in Uttarakhand.

Main stake-holders involved in shaping up the project are as follows:

#### **Role of NABARD in implementation of the project:**

NABARD will bear full responsibility for the overall management of the project, and will bear all financial, monitoring, and reporting responsibilities to the Adaptation Fund. NABARD would be involved in periodic monitoring (on-site and off-site) of the project.

#### **BAIF Research & Development Foundation, Pune**

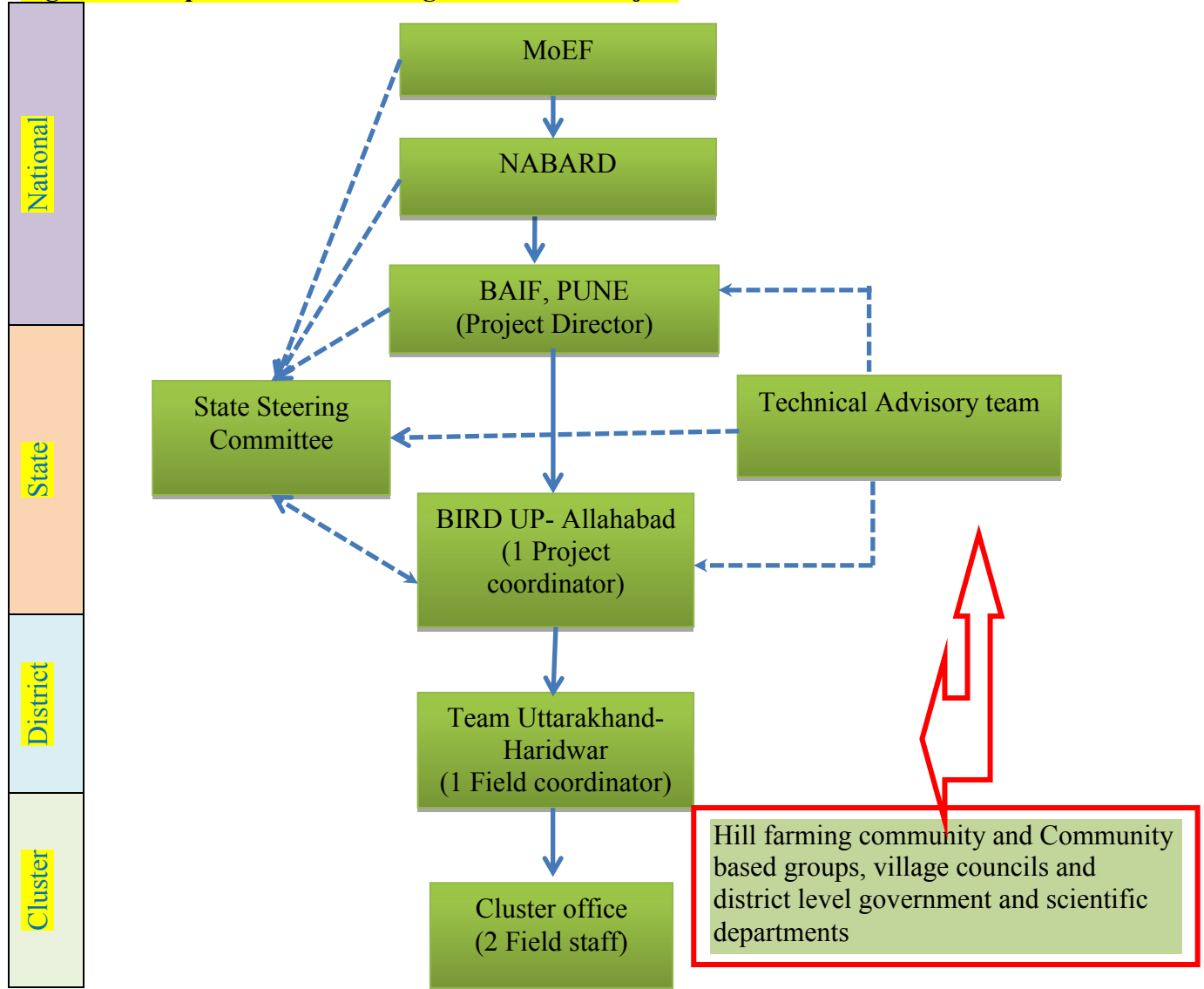
Project Director will be responsible for the financial management regarding this project as per the BAIF financial guideline. BAIF, Pune being executing entity will be the single point contact of NABARD for all the communication.

Roles and responsibilities of BAIF:

1. Project executing entity directly responsible for smooth and effective execution of proposed project activities in North Western Himalayas
2. Setting up project management systems along with BIRD- UP and Team at Uttarakhand including appointment of staff, finance, HR, M&E, Project implementation, defining strategies for defined project components
3. Facilitating involvement of stakeholders, building working relationships and partnerships with likeminded institutes and development actors
4. Knowledge management and data generation (planning strategies and suitable activities and events)
5. Facilitating convergence and co financing to enhance the impact
6. Capacity building of project staff and other stakeholders for effective project execution
7. Progress Reporting to NABARD – Physical, Financial and impact parameters.



**Figure 12: Implementation Arrangement of the Project**



**BAIF, UP & Uttarakhand Team:** the project will be executed by BAIF’s team in Uttarakhand. It has good network of field level offices and regional centers across Uttarakhand. A full-fledged team is based at District Champawat to execute and oversee work through its Center for Hill Areas. At the level of community a good rapport is built with SHGs and farmer’s groups, as the agency is regularly in touch with cattle owners in providing improved breeding services.

Institutional arrangement and responsibility matrix at various levels are given in the table below:

**Table 14: Responsibility Matrix of Project Implementation Arrangements**

<b>Institutional Arrangement</b>	<b>Composition/Membership</b>	<b>Roles and Responsibility</b>
State Steering Committee	<p>This will be comprised of</p> <ul style="list-style-type: none"> <li>- Project Director of BAIF and Project co-ordinator from BIRD-UP</li> <li>- Members from NABARD RO and HO</li> <li>- Representative of nodal department in the State dealing with climate change and Station Action Plan for Climate Change (SAPCC)</li> <li>- Representatives from Technical Advisory Group</li> </ul> <p>BAIF Project Director is Convener of the State Steering Committee, which will be called on half-yearly basis.</p>	<ul style="list-style-type: none"> <li>▪ Oversight of the project-financial and technical implementation</li> <li>▪ Ensuring full implementation of project actions and speedy progress</li> <li>▪ Monitor the progress of the project against the agreed time lines</li> <li>▪ Facilitating linkages and partnerships with resource agencies, government and other development agencies having similar mandate</li> </ul>
Technical Advisory Group	<p>Experts with qualification and Experience in:</p> <ul style="list-style-type: none"> <li>- Climate Change and development of Adaptation Strategies in Himalayan Region</li> <li>- Agriculture Experts</li> <li>- Geo Hydrology</li> <li>- Rural Marketing</li> </ul> <p>These experts will be drawn from Govt. Departments, Universities, and Technical Intuitions.</p>	<ul style="list-style-type: none"> <li>▪ Make recommendation to the Project Team on technical matters to incorporate the same in the implementation plan</li> <li>▪ Provide science and technology inputs to main program components.</li> <li>▪ Ensuring technical standards and quality of inputs</li> <li>▪ Assess relevance and impact of the climate adaptation strategies</li> </ul>
Project Team	<p>BAIF, Pune: Comprising of Project Director and other technical team</p>	<ul style="list-style-type: none"> <li>▪ Responsible for overseeing execution of project activities</li> <li>▪ Fund administration of the project</li> <li>▪ Procurement of goods and services</li> </ul>

Institutional Arrangement	Composition/Membership	Roles and Responsibility
		<ul style="list-style-type: none"> <li>▪ Monitoring and Evaluation</li> <li>▪ Communication with NABARD</li> <li>▪ Knowledge Management</li> <li>▪ Coordination with Government Departments for ensuring convergence</li> </ul>
	Project Team comprising of Project Coordinator, Field Coordinator, and Field Team Members	<ul style="list-style-type: none"> <li>▪ Adherence to various project management systems and standards as per the AF requirements</li> <li>▪ Preparation of work plans and execution.</li> <li>▪ Progress Reporting to NABARD through Project Director – Physical, Financial and impact parameters</li> <li>▪ Rapport with project stakeholders, Government Agencies, at project level.</li> </ul>

**Table 15: Component/activities checklist of Responsible parties and their Roles:**

Components/Activities	Responsible parties	Roles and Responsibilities
<b>Component 1:</b> Community Mobilization and Organization	Project Team	<p>Building rapport with the community, formation of groups, Training, Capacity Building</p> <p>The SHGs of women and farmer's collectives/user groups /commodity interest groups would be the primary groups at village level through which the efforts for introduction of appropriate climate smart interventions would be piloted in select villages</p>
<b>Component 2:</b> Introduction of Water Resource Development and Climate Smart Farming Technology	Project Team under the guidance of Thematic specialists of BAIF and local research and scientific institutions e.g. VIPKAS – Almora, GB Pant Institute Of Himalayan Environment and Development, Garhwal; Dr. Y.S. Parmar University Of	Scouting and introduction of climate smart technologies

Components/Activities	Responsible parties	Roles and Responsibilities
	Horticulture & Forestry- Solan; Central Soil and Water Conservation Research and Training Institute (CSWTRI), National Remote Sensing Centre (NRSC) etc. are some of the Institutes	
<b>Component 3:</b> Knowledge Management including knowledge creation and wider dissemination actions	BAIF with the help of consultants and documentation experts  Partnerships and collaboration will be sought with likeminded groups for this	Data Management and Documentation, Workshops, Sharing and Cross-learning Workshop, Publication & dissemination
Procurement	BAIF -BIRD-UP and project team	AF/NABARD procurement guideline will be complied with
Finance & audit	BAIF - BIRD-UP and Project team  External Auditor for annual audit	BAIF accounting guideline will be followed and AF/NABARD guidelines will also be complied with
M & E	BIRD-UP and BAIF through its central project monitoring and vigilance team members	A team will be formed comprising technical experts and financial experts to visit the site quarterly
Working partnerships with Scientific and Research Institutes	BIRD-UP and BAIF Project Leader and steering committee members	working partnerships will be developed as per the need identified in the work plan
Reporting	Project Leader and BIRD-UP	Quarterly and annual basis
Mid-term Review	External Consultant	After 2 years of work completion
Project Completion Report	BAIF with field team	Last phase of the project
Final evaluation	External Consultant	After submission of PCR

### Implementation plan for field actions

- The proposed field actions are to be introduced in select 10 villages covering vulnerable households, community managed landscape / common property resources. The social engineering processes are planned to be introduced at the level of primary groups such as

Self Help Groups, Livestock Keeper Families, Seed savers groups, Farmer's collectives, gram sabhas , Water User's Associations etc

- The approach of the proposed program is to facilitate site specific understanding on changing climate and its sectoral effects and then introduce climate smart agriculture measures by blending science and technology inputs for the benefit of agriculture dependent hill communities which mostly includes hill women
- Women have been identified as primary stakeholders of this project. Further, most of the activities are designed after considering hardship of women and steps are planned to improve the natural resource base and thereby improve direct and indirect gains for hill women. Most of the proposed activities are planned to be introduced along with women's groups such as SHGs, farmer's collectives, Commodity interest groups etc. at village level.
- The project activities will aim at facilitating introduction of mix of climate smart technologies (covering important livelihood resources mainly, land, water, livestock and vegetation and crop resources) at household and landscape level in mountain conditions with technical back stopping from relevant scientific and technical institutes.
- Linkage development with local scientific and research institutes such as agriculture universities, institutes working on Himalayan ecosystem, Technology providers for scouting of suitable climate smart agriculture technologies to be introduced in selected villages. As a first step, an attempt is made to list and document the available technologies with many of the institutes operational in Hills. Under the project, efforts would be made to introduce relevant technologies with required adaptations at the level of farmers from 10 villages
- The executing agency have programmatic base in this region. BIRD-UK has been working in Uttarakhand since year 1994. As a development agency involved in rural development efforts, BIRD-UK and Uttarakhand team already have working relationships with local and state level government departments.
- Further linkages are also being sought with on-going Climate Adaptation programs in North Western Himalayas such as HICAP, IHCAP on-going with support of SWISS Agency for Development Corporation, ICIMOD-Nepal, newly launched program of Department of Science and Technology, Government of India DST –TIME (Technology Initiatives in Mountain Ecosystems), MGNREGS scheme, NABARD etc.

*B. Describe the measures for financial and project / programme risk management.*

The program interventions are identified after a series of local and regional level consultations including multiple stakeholders. This project seeks to demonstrate an integrated approach that addresses the vulnerability of agriculture dependent hill communities which is expressed by many as need of hour

The project envisages scouting and introducing combination of Climate Smart Agriculture Technologies after understanding the type of vulnerabilities. Number of scientific and research institutions are already present in this part of Himalayan region, who are actively involved in

conducting research and developing solutions to emerging challenges in hills. These technologies are planned to be packaged properly and then transferred at the level of hill farmers, which is the need of hour. The Hill context and specificities are taken in to account while devising the technology solutions thus the environmental and social risks are minimum.

Both NABARD and BAIF have rich experience of working in development sector for many years. There are many projects jointly implemented by NABARD and BAIF in India. Thus these institutes would be able to take care of any unforeseen project risks. Following risks are listed and mitigation measures are indicated:

**Table 16: List of Risk Identified and Mitigation Strategy**

Risk Class/Category	Level	Mitigation.
<p><b>Operational/Administrative:</b> Coordination of activities with other agencies; large timeliness of technical inputs and their proper scheduling number of on-going projects/programme</p> <p>Issues related to planned intervention in desired outcome due to unavailability of timely inputs</p>	Low	<ul style="list-style-type: none"> <li>▪ BAIF, BIRD–UP along with Uttarakhand team have programmatic base and development related work experience in this region since past many years.</li> <li>▪ The agency has earmarked and dedicated team. The required man power can also be drawn from other offices to ensure that project is executed smoothly</li> <li>▪ It has experienced staff with competitive compensation structures and also having long association with BAIF</li> <li>▪ Further the project has strong capacity building and local cadre building activities</li> <li>▪ NABARD will be actively involved in project monitoring, and coordination. Both the parties have previous experience of working together. Thus not much operational risks are anticipated</li> <li>▪ Advance planning will be done to take care of non-availability of timely and quality inputs for proposed project activities. The situation will be closely monitored and required adjustments will be made</li> </ul>
<p>Financial: Cost escalation leading to increased costs for goods and services</p>	Low	<ul style="list-style-type: none"> <li>▪ The current schedule of rates and wage rates has been used in estimating the budget and as such it is expected to take care of the implementation as per the phasing proposed</li> </ul>
<p>Environmental: Natural Hazards (flood, drought, storm surges, and storms) may hamper project implementation.</p>	Moderate	<ul style="list-style-type: none"> <li>▪ The programme is seeking to reduce the effect of natural hazards. However, certain activities may be at risk particularly in the early phases of implementation and piloting</li> </ul>

Risk Class/Category	Level	Mitigation.
Participation of stakeholders and required cooperation from government, private and technical institutes.	Low	<ul style="list-style-type: none"> <li>▪ The project activities are highly relevant to the stakeholders. With proper community mobilization and formation/strengthening of groups, participation could be ensured. The project has strong component of software activities in the form of capacity building and knowledge creation at the level of local communities</li> <li>▪ BAIF has previous many years of experience of working at grass root level. It also has team members having required expertise who can be involved in the program implementation</li> </ul>
Technical Risk ineffectiveness of recharge measures	Moderate	<ul style="list-style-type: none"> <li>▪ Use of Modern technologies (use of isotopes) pin pointing area specific water recharge 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</li> </ul>
Delay in aquifer recharge leading to partial achievement of project results	Low	<ul style="list-style-type: none"> <li>▪ As a strategy, intervention having long-term impact will be done in earlier part of the projects</li> </ul>
Project benefits captured by Elite group	Low	<ul style="list-style-type: none"> <li>▪ Since inception care will be taken to make the project participatory and inclusive.</li> </ul>

*A. Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy of the Adaptation Fund.*

**Table17: List of Environment and Social Risk Management in Alignment with AF Guidelines**

<b>Risk Class/Category</b>	<b>Level</b>	<b>Mitigation</b>
Project neglects the principles such as access and equity	Low	The project activities are aimed at vulnerable and agriculture dependent households from the selected region. All the participating families thus have equal chance of gaining from proposed adaptation activities
Project neglects marginalized and vulnerable groups / deny gains	Low	The project is aimed at reducing the drudgery and vulnerability of agriculture dependent hill communities. The activities will help creating long term asset base in villages, enhanced natural resource base and also will help creating livelihoods and income for local inhabitants including marginalized and vulnerable groups such as women, children, elders, handicapped persons etc
Project does not protect natural habitats / alters landscapes and natural heritages	Low	The proposed project activities will not have any adverse impact on natural habitats of will not alter landscapes and natural heritage
Project poses threat to existing biodiversity in agriculture	Low	There is a specific project activity which aims at conserving and multiplying the agro biodiversity of Himalayan food crops for food security and risk mitigation
Project does not guarantee gender equity / gender empowerment	Low	The project is proposed for agriculture dependent community. In hills, women bear the responsibility of agriculture and livestock activities. They are thus the main beneficiaries of this project. Some of the interventions like formation/strengthening of SHGs, training and capacity building of SHGs etc are exclusively aimed at empowering the hill women both socially and economically.
Project violates human rights	Low	The project does not violate any human right. Wherever, labor oriented activities are taken up, it will be ensured to provide minimum wage as guaranteed by Centre/State governments.
Project neglects indigenous	Low	The project area doesn't have indigenous population.



Risk Class/Category	Level	Mitigation
people and leads to displacement		
Project activities are not environmentally sound/ not climate smart	Low	The project activities proposed revolve around available natural resources such as land, water, vegetation and livestock and hence are environmental friendly. The interventions are planned to achieve resource efficiency and optimum use of available resources and as such would reverse further degradation of natural resources. Further, most of the activities are to be introduced in a decentralised manner at the level of individual households. 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 will be ensured by the Project Team and same will be monitored by NIE through structured monitoring.
Project does not comply with social and environmental law and commitments of country and sub regions.	Low	The project activities are planned keeping in view various social and environmental law and commitments of India and Uttarakhand state.

Mechanism of creation of awareness on Social and Environmental Policy of Fund would be on the following lines:

- Initial orientation and sensitization of all stakeholders during the inception of the project about the systems and procedures.
- Providing guidelines and orientation on the Environmental and Social Policy of the Adaptation Fund to the project team
- Grievance mechanism would be informed to community during the project inception workshop.
- Communication details of implementation entity coordinator would be available to direct beneficiaries as well as community at large through display of project information boards placed at common places.

**B. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.**

Overall responsibility for monitoring and evaluation will rest with BAIF Development Research Foundation. The senior members of BAIF will provide technical assistance and supervise, monitor and evaluate project by laying M & E systems.

The project will start with a **Project Inception Workshop** in first 1-2 months of the project start with all the stakeholders, technical advisors and State Steering Committee in order to build ownership of the project. It will be crucial in finalizing future prospect of the project listed as below:

- a. Details about roles and responsibilities of different stakeholders will be defined in the implementation of the project;
- b. Finalization of annual work plan along with indicators, means of verification, risk management activities and monitoring and reporting frameworks and schedules of different activities;
- c. Environmental and Social Risk Management and grievance redressal mechanism.

For timely and efficient flow of the information and review of the project, different M&E documentation will be established. The system will encompass a clear data collection and compilation plans for monitoring qualitative as well as quantitative result indicators using appropriate methods and tools. Data will be collected periodically at specific interval and analyzed to track the progress. Work plans with clear targets, time line and budgets will be prepared and executed to accomplish the results.

A three tier system will be followed to review the progress and reflect critically to ensure effective and effectiveness of the programme interventions. At the village level participatory monitoring will be done by community and implementing staff. At the district level, project coordinator will conduct monitoring meetings with implementing staff and community representatives and at the state level the Project Director, will monitor and review the work progress.

Following are the details of different type of M&E documents as mentioned in Result Framework:

- **Quarterly report:** Quarterly monitoring reports will be prepared based on the analysis and will incorporate the challenges and internal and external difficulties encountered during implementation of activities and in monitoring process on quarterly basis along with District Development Manager from NABARD, district office. It will highlight critical areas of concerns and strategies to overcome the challenges. First 2-3 quarters will be of very important, as this will be for entry point activities as well as linkages with other line-departments will be set up in that period.

- **Annual Report:** Annual Report is an extensive key report which is prepared to monitor progress made since project start and in particular for the previous reporting period. This will be assessed by Project Director and would be submitted to NABARD. Mainly, progress made towards project objective and project outcome against base line data will be assessed. Assessment of Risk and adaptive strategies and learning in the year, will also one of the highlights of the Annual report. The Annual report will also highlight the good practice notes, factsheets and technical documents to capture the technology related details and outcomes.
- **Period Field Survey Report & Internal Monitoring Report:** At the district level, Uttarakhand team will be doing periodic field survey on regular basis, which will highlight the periodic progress of the project as per the indicators and target set in the RF. Other than that, a monthly monitoring meeting will be conducted with implementing staff and with community representatives at quarterly interval to analyze the actual field implementation and impact. At all levels monitoring will ensure that the activities planned are completed and the results are achieved, the reports for the same will be shared with different stakeholders. The responsibility for the same lies with Project Coordinator.
- **Mid-term Assessment Report:** The project will undergo an independent Mid-Term Review by external consultant at the mid-point of project implementation. The Mid-Term Review will determine progress being made towards the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation, and provide an independent review of executing agency's role. The Mid-term Review will highlight issues requiring decisions and actions and present initial lessons learned about project design, implementation and management to the Steering Committee. Findings of this review will be incorporated as recommendations for enhanced implementation during the second half of the project implementation.
- **Terminal Evaluation Report:** Three months prior to completion of the project, an independent Terminal Evaluation by external consultant will be undertaken. The final evaluation will look at impacts and sustainability of results, delivery of the project's result and capacity building of the community. It will also include an independent review of project implementation arrangements and their efficacy.

Apart from project's result framework, the project activities would be assessed based on following socio environmental indicators:

Environment indicators:

1. Conservation and revival of local biodiversity resources
2. Level of degradation of soil and land resources
3. Green cover and natural regeneration process impact
4. Water quality and quantity

## 5. Resource use efficiency

### Social Indicators:

1. Level of vulnerability of marginalized communities in hills
2. Participation , reach and gains to hill women
3. Level of participation of local communities
4. Level of decision making and collective actions through local groups
5. Level of awareness and skills

### Role of NABARD for Monitoring and Evaluation of Project:

- On-site detailed monitoring would be done on six monthly basis jointly by NABARD Regional Office (Uttarakhand) and Head Office. The frequency of monitoring would be increased if considered necessary.
- District Development Manager i.e. NABARD officer stationed at the district would be a part of the monitoring committee for implementation of the project at local level.
- Supervision of monitoring and evaluation functions of Executing Entity through reporting mechanism (field visit / monitoring reports by EE).
- Review of the monitoring reports submitted by Executing Entity and provision of feedback.
- NABARD would be part of steering committee which would be meeting every six months. The committee would deliberate and review the progress of implementation.
- Quarterly report submission formats would be designed for submission by executing entities for desk appraisal of progress. This will be structured as a part of the off-site monitoring surveillance system and would be designed to generate warning signals, if any.
- Periodic progress reporting would be done to AFB as per the requirement

A budget of US\$ 20000 has been earmarked for undertaking the above monitoring and evaluation functions.

Budgetary requirement of Monitoring and Evaluation Plan is described as below:

**Table 18: Monitoring and Evaluation Plan**

Activity	Responsible person	Budget (US\$)	Time frame
Inception workshops	Project Director	833	Within 2 months of project starting and yearly thereafter. Submission of Inception Report
Progress Report (Periodic Field Survey /quarterly / annual)	Project Co-ordinator	0	
Annual Impact Assessment Report	Project Director	1,000	Annual

Mid-term Evaluation	External consultant	1,667	Mid term
Final evaluation	External consultant	3,334	months before end of project
Audits	External auditor	333	Every Year
<b>Total</b>		<b>7,167</b>	

C. Include a results framework for the project proposal, including milestones, targets and indicators.

**Table 19: Results Framework of Proposed project**

Strategy	Indicator	Baseline	Target at End Project	Source of Verification	Assumption and Risk
<b>Component 1: Community Mobilization and Organization</b>					
<b>Outcome 1:</b> Improved community mobilization to collectively plan and undertake Climate Change Adaptation actions	<ul style="list-style-type: none"> <li>No. of participants (M &amp; FM) trained in 10 villages in approaches to adaptation planning and implementation</li> </ul>	<ul style="list-style-type: none"> <li>Very limited awareness about climate change and its impact and possible adaptive measures to reduce the vulnerability in 10 project villages</li> </ul>	<ul style="list-style-type: none"> <li>At least 60% of people of which 50% are women, are aware about climate change and adaptive measures</li> </ul>	<ul style="list-style-type: none"> <li>Training Completion reports</li> <li>Quarterly Report</li> </ul>	<b>Assumption:</b> Women are free to participate in meetings <b>Risks:</b> Traditional values and governing structures restrict the participation of women
	<ul style="list-style-type: none"> <li>No. of stakeholders (M/FM) participated in meetings and implementation of activities of CBOs</li> </ul>	<ul style="list-style-type: none"> <li>No stakeholder participation</li> </ul>		<ul style="list-style-type: none"> <li>Quarterly Report</li> <li>Periodic Field Survey Report</li> </ul>	
<b>Output 1.1:</b> CBOs strengthened in	<ul style="list-style-type: none"> <li>No. of meetings with stipulated quorum held</li> </ul>	<ul style="list-style-type: none"> <li>Very few meetings held</li> </ul>	<ul style="list-style-type: none"> <li>At least 60% CBOs of which 50%</li> </ul>	<ul style="list-style-type: none"> <li>Minute book of the</li> </ul>	<b>Assumption:</b> Existing CBOs willing to

Strategy	Indicator	Baseline	Target at End Project	Source of Verification	Assumption and Risk
10 Villages	<ul style="list-style-type: none"> <li>Number of decisions taken by CBOs in a group</li> </ul>	Limited participation	women, are aware about climate change and adaptive measures	<ul style="list-style-type: none"> <li>meeting</li> <li>Internal Monitoring report</li> <li>Gender disaggregated data</li> </ul>	participate
<b>Output 1.2:</b> New CBOs formed in 10 villages	<ul style="list-style-type: none"> <li>No. of new CBOs formed (at least 1 for women)</li> </ul>	<ul style="list-style-type: none"> <li>No new CBOs formed during last 1 year</li> </ul>	<ul style="list-style-type: none"> <li>At least 5 CBOs formed in each village (at least one is of hill women)</li> </ul>	<ul style="list-style-type: none"> <li>Internal Monitoring report</li> <li>Gender disaggregated data</li> </ul>	<b>Assumption:</b> Villagers are willing to form new groups
<b>Output 1.3:</b> Preparation of Annual Adaptation Plan for a cluster of 10 villages based on vulnerability assessment	<ul style="list-style-type: none"> <li>No. of annual Adaptation Plan prepared</li> <li>Involvement of women in this plan preparation</li> </ul>	<ul style="list-style-type: none"> <li>No adaptation plan</li> </ul>	<ul style="list-style-type: none"> <li>Annual plan for a cluster of 10 villages</li> </ul>	<ul style="list-style-type: none"> <li>Actual Annual Plans</li> <li>Annual Report</li> <li>Gender disaggregated data</li> </ul>	<b>Assumption:</b> All stakeholders will participate in preparation of Annual Adaptation plan
<ul style="list-style-type: none"> <li><b>Component 2: Introduction of Water Resource Development and Climate Smart Farming Technology</b></li> </ul>					

Strategy	Indicator	Baseline	Target at End Project	Source of Verification	Assumption and Risk
<b>Outcome 2.1:</b> Building resilience through increased water availability and efficient water use in hill region	<ul style="list-style-type: none"> <li>No. of days of water availability</li> <li>Saving of number of hours of hill women for water collection</li> </ul>	<ul style="list-style-type: none"> <li>Only 8-9 months water availability</li> </ul>	<ul style="list-style-type: none"> <li>10-11 months water availability in targeted project sites</li> <li>30% of the population of 10 villages</li> </ul>	<ul style="list-style-type: none"> <li>Periodic Field Survey Report</li> <li>Internal Monitoring report</li> <li>Gender disaggregated data</li> </ul>	
<b>Output 2.1.1:</b> Creation of water reserves in regions through rain water tapping interventions	<ul style="list-style-type: none"> <li>No. of natural springs rejuvenated</li> <li>No. of Rain-water harvesting structures created</li> <li>Number of women having access to water post project ( as compared to baseline)</li> </ul>	<ul style="list-style-type: none"> <li>Dried up Natural Springs</li> <li>No Rain water harvesting facility</li> </ul>	<ul style="list-style-type: none"> <li>15 springs rejuvenated</li> <li>300 families benefitted</li> <li>150 Rain water Harvesting Structures created</li> </ul>	<ul style="list-style-type: none"> <li>Internal Monitoring report</li> <li>Annual Report</li> <li>Gender disaggregated data</li> </ul>	
<b>Output 2.1.2:</b> Adoption of efficient water use practices and technologies	<ul style="list-style-type: none"> <li>No. of families adopting water efficient technologies and practices</li> <li>No. of families adopted the skill of water</li> </ul>	<ul style="list-style-type: none"> <li>Limited awareness but no resources for accessing Water Smart Technology</li> </ul>	<ul style="list-style-type: none"> <li>20,000 sqm areas will be covered by water use efficiency techniques.</li> </ul>	<ul style="list-style-type: none"> <li>Internal Monitoring report</li> <li>Annual Report</li> <li>Gender</li> </ul>	



Strategy	Indicator	Baseline	Target at End Project	Source of Verification	Assumption and Risk
	<ul style="list-style-type: none"> <li>saving</li> <li>▪ Saving of number of hours of hill women for water collection</li> </ul>			disaggregated data	
<b>Outcome 2.2:</b> Adoption of Climate Smart agriculture technologies and farm diversification options for climate resilient livelihoods	<ul style="list-style-type: none"> <li>▪ No. of families adopting climate friendly livelihood options ( Number of women headed households )</li> </ul>	<ul style="list-style-type: none"> <li>▪ People are clueless about Climate friendly livelihoods and required technologies</li> </ul>	<ul style="list-style-type: none"> <li>▪ 800 families adopted climate smart farm practices</li> </ul>	<ul style="list-style-type: none"> <li>▪ Field Reports</li> <li>▪ Internal Monitoring Reports</li> <li>▪ Participant Register</li> <li>Gender disaggregated data</li> </ul>	
<b>Output 2.2</b> Introduction to climate smart farming technologies with hill specificity	<ul style="list-style-type: none"> <li>No. of families ( out of these at least 50% are women participant) gaining from following interventions</li> <li>▪ acquired knowledge and skills on climate smart farming technologies for hills</li> <li>▪ adopted</li> </ul>	<ul style="list-style-type: none"> <li>▪ No training efforts have been made on this issue</li> <li>▪ Limited awareness on suggested climate smart technologies</li> </ul>	<ul style="list-style-type: none"> <li>▪ No. Of Training: 20</li> <li>▪ No. Of Exposure Visits: 10</li> <li>▪ No. Of Low-cost poly house: 200</li> <li>▪ Fruit Trees Plantation: 600 families</li> </ul>	<ul style="list-style-type: none"> <li>▪ Periodic Field Survey Report</li> <li>▪ Internal Monitoring report</li> <li>Gender disaggregated data</li> </ul>	

Strategy	Indicator	Baseline	Target at End Project	Source of Verification	Assumption and Risk
	<p>high value vegetable cultivation under protected conditions</p> <ul style="list-style-type: none"> <li>▪ adopted high value and climate resilient fruit trees as an option to diversify production system</li> <li>▪ participated in conservation, multiplication and revival of sturdy, nutritious and indigenous food crops and local biodiversity</li> <li>▪ having access and awareness on Weather based Crop Advisory Services and services of crop Insurance</li> </ul>		<ul style="list-style-type: none"> <li>▪ Agro-biodiversity conservation focusing Niche hill crops: Establishment of 1 seed bank (2 crops conserved and multiplied)</li> <li>▪ No. of families adopted Weather based Crop advisory Services: 800</li> <li>▪ Crop Insurance: 800</li> </ul>		
<p><b>Outcome 2.3:</b> Improved potential of livestock resources as an option for livelihood stabilization in</p>	<ul style="list-style-type: none"> <li>▪ Quantity of milk per participant family</li> <li>▪ Income from livestock per family</li> </ul>	<ul style="list-style-type: none"> <li>▪ The full potential of livestock is not exploited in the region resulting in low</li> </ul>	<ul style="list-style-type: none"> <li>▪ Increasing income through improved breeding and management of cattle for 800 families</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Periodic Field Survey Report</b></li> <li>▪ <b>Internal Monitoring report</b></li> </ul>	<p><b>Assumption:</b> Communities will be actively participating in adoption of project activities Material and logistics related</p>

Strategy	Indicator	Baseline	Target at End Project	Source of Verification	Assumption and Risk
hills		productivity		<ul style="list-style-type: none"> <li>Annual Report</li> </ul>	issues
<b>Output 2.3.1:</b> Introduction of improved breeding service at door step of farmers with required management practices including	<ul style="list-style-type: none"> <li>No of families made aware and acquired required skills for cattle resource management</li> <li>No. of families adopted the improved breeds of cattle and management practices</li> </ul>	<ul style="list-style-type: none"> <li>Low productivity in cattle</li> <li>Less awareness about livestock management practices</li> <li>Limited access</li> </ul>	<ul style="list-style-type: none"> <li>No. of Training: 10</li> <li>No. of Exposure visits organized: 5</li> <li>Improved Breeding Services: 800 families adopted</li> <li>Artificial Insemination</li> </ul>	<ul style="list-style-type: none"> <li>Periodic Field Survey Report</li> <li>Internal Monitoring report</li> <li>Annual Report</li> </ul>	<b>Risks:</b> Non-cooperation from other Stakeholders Occurrence of Sudden Natural Calamity

Strategy	Indicator	Baseline	Target at End Project	Source of Verification	Assumption and Risk
fodder and feed management	<ul style="list-style-type: none"> <li>No. of families linked with better cattle management services including insurance</li> <li>No. of families having access to fodder trees and grasses</li> </ul>	to livestock related services Scarcity of green fodder	Introduction of improved livestock management practices: 800 families <ul style="list-style-type: none"> <li>Area Covered under fodder development: 100 Ha</li> <li>Livestock Insurance advisory: 1600 cattle</li> </ul>	Gender disaggregated data	
<b>Output 2.3.2</b> Community level cadre developed as Para-vet to provide required livestock services	<ul style="list-style-type: none"> <li>No. of local resource persons trained and equipped to provide livestock related services at door steps of hill families</li> </ul>	<ul style="list-style-type: none"> <li>Right now there is limited reach and awareness on the required livestock management services</li> </ul>	<ul style="list-style-type: none"> <li>Training of at least 10 youth as Para-vet (Community Resource Persons)</li> <li>Number of female Para vets trained and equipped with required skills, knowledge and attitudes</li> </ul>	<ul style="list-style-type: none"> <li>Periodic Field Survey Report</li> <li>Internal Monitoring report</li> <li>Annual Report</li> <li>Gender disaggregated data</li> </ul>	<b>Assumption:</b> The youths are willing to participate in such capacity building efforts
<ul style="list-style-type: none"> <li><b>Component 3: Knowledge Management including knowledge creation and wider dissemination actions</b></li> </ul>					

Strategy	Indicator	Baseline	Target at End Project	Source of Verification	Assumption and Risk
<p><b>Outcome 3:</b> 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>	<ul style="list-style-type: none"> <li>▪ No. of adaptation techniques for vulnerable areas identified.</li> <li>▪ No. of publications covering vulnerability status prepared.</li> <li>▪ No. of knowledge Notes on adaptation measures prepared</li> <li>▪ No. of Stakeholder Workshops organized for cross learning and sharing on best practices</li> </ul>	<ul style="list-style-type: none"> <li>▪ Limited data on Climate Change Strategies, approaches and climate smart technologies in Hill Context</li> <li>▪ Lack of awareness at policy levels leading to low allocation in State Budget for Climate change and adaptation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Pamphlets/fact sheets/dossiers/best practice notes: 10</li> <li>▪ Baseline/Vulnerability Report: 1</li> <li>▪ Process Documentation/Audio visual reports: 3</li> </ul>	<ul style="list-style-type: none"> <li>▪ No. and type of Publications Workshop Reports</li> <li>▪ <b>Annual Report</b></li> </ul>	<p><b>Assumption:</b> There is a demand for knowledge how to adapt to climate change in the hill region specifically for the poor rural dwellers in the area. State is willing to implement State Action Plan for Climate Change.</p> <p><b>Risk:</b> Uptake of the knowledge is highly constrained by lack of awareness and resources at state level. (Mitigation Measure: Need to have close interaction of policy makers)</p>
<p><b>Output 3.1:</b> Knowledge generation through field action component</p>		<ul style="list-style-type: none"> <li>▪ Limited data on Climate Change Strategies, approaches and climate smart technologies in</li> </ul>	<ul style="list-style-type: none"> <li>▪ Impact Assessment Report: 1</li> <li>▪ Pamphlets/fact sheets/dossiers/best practice notes: 10</li> <li>▪ Baseline/Vulnerability Report: 1</li> </ul>		

Strategy	Indicator	Baseline	Target at End Project	Source of Verification	Assumption and Risk
<b>Output 3.2:</b> Knowledge generation through consultation	<ul style="list-style-type: none"> <li>No. of networking and partnerships meetings /events conducted.</li> </ul>	Hill Context	Meeting/ events conducted with partners - 08 No		
<b>Output 3.3:</b> Wider dissemination of acquired knowledge	<ul style="list-style-type: none"> <li>No. of Stakeholders approached</li> </ul>	<ul style="list-style-type: none"> <li>Lack of awareness at policy levels leading to low allocation in State Budget for Climate change and adaptation</li> </ul>	<ul style="list-style-type: none"> <li>Workshop-national: 1 &amp; proceedings</li> </ul>		

*D. Demonstrate how the project / programme aligns with the Results Framework of the Adaptation Fund*

**Table 20: Program Alignment with AF Result Framework**

Project Objective	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Budget (US\$)
<b>Objective:</b> To improve adaptive capacity of vulnerable communities in North Western Himalayan hill region by introducing combination of Climate Smart Farming Technologies covering crop, livestock and water resources and by undertaking community strengthening processes and capacity building actions	No. of community groups formed, (including hill women strengthened and involved in climate risk screening and vulnerability assessment based action planning	<b>Outcome 2:</b> Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	2.1. No. and type of targeted institutions with increased capacity to minimize exposure to climate variability risks 2.2. Number of people with reduced risk to extreme weather events	24,667
	Number of families including hill women reached by way of introduction of combination of climate smart technologies, diversification options for stabilized income and risk mitigation	<b>Outcome 6:</b> Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	6.1 Percentage of households and communities having more secure (increased) access to livelihood assets 6.2. Percentage of targeted population with sustained climate-resilient livelihoods	783,908

<b>Project Outcome(s)</b>	<b>Project Outcome Indicator(s)</b>	<b>Fund Output</b>	<b>Fund Output Indicator</b>	
<b>Outcome 1:</b> Improved community mobilization to collectively plan and undertake Climate Change Adaptation	No. of people trained in 10 villages about approaches to climate change adaptation planning and implementation	<b>Output 2.2:</b> Targeted population groups covered by adequate risk reduction systems	<b>2.2.1.</b> Percentage of population covered by adequate risk reduction systems	<b>24,667</b>
			<b>2.2.2.</b> No. of people affected by climate variability	
<b>Outcome 2.1:</b> Building resilience through increased water availability and efficient water use in hill region	No. of days of water availability, Saving of number of hours of hill women for water collection	<b>Output 4:</b> Vulnerable physical, natural and social assets strengthened in response to climate change impacts, including variability	<b>4.1.2.</b> No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	<b>783,908</b>
<b>Outcome 2.2:</b> Adoption of Climate Smart agriculture technologies and farm diversification options for climate resilient livelihoods	No. of families adopting climate smart farming technologies	<b>Output 6:</b> Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	<b>6.1.1.</b> No. and type of adaptation assets (physical as well as in terms of knowledge) created in support of individual or community livelihood strategies	
			<b>6.1.2.</b> Type of income sources for households generated under climate change scenario	



<p><b>Outcome 3:</b> 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>No. of adaptation techniques for vulnerable areas identified. No. of Publications covering vulnerability status prepared. No. of knowledge notes on adaptation measures prepared No. of Stakeholder Workshops organized for cross learning and sharing on best practices Number of events organized for better policy inputs</p>	<p><b>Output 7:</b> Improved integration of climate-resilience strategies into country development plans</p>	<p><b>7.1</b> Number, type, and sector of policies introduced or adjusted to address climate change risks  <b>7.2</b> No. or targeted development strategies with incorporated climate change priorities enforced</p>	<p style="text-align: center;"><b>17,500</b></p>
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*E. Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs*

**Table 21: Detailed Budget Table**

Sr. No.	Particulars	Unit	Rate	Quantity	Total Amount in \$
<b>Component 1: Community Mobilization &amp; Organization</b>					
a	Strengthening of CBOs	No.	100.00	50	5,000
b	Formation of CBOs	No.	100.00	50	5,000
c	Preparation of Annual Adaptation Plan	No.	666.67	22	14,667
<b>Sub-total Component 1</b>					<b>24,667</b>
<b>Component 2: Introduction of Water Resource Development and Climate Smart Farming Technology</b>					
a	Roof Top Rain water Harvesting (individual/ Community)	No.	679.17	150	101,875
b	Natural Spring Rejuvenation	No.	14,166.67	15	212,500
c	Water use efficiency techniques (Drip/ Sprinkler)	SqM	2.50	20000	50,000
d	Farming under protected cultivation with irrigation facility	Family	500.00	200	100,000
e	Fruit trees saplings & Manure & watering measures*	Family	166.67	600	100,000
f	Conservation of agro-bio diversity & revival of traditional useful agriculture practices	Village	6,666.67	1	6,667
g	Livestock Management Practices	Family	117.33	800	93,867
h	Fodder Plantation (Trees)	Ha	666.67	100	66,667
i	Training on suggested technologies for participants & Staff	No.	250.00	30	7,500
j	Exposure visits on suggested technologies for participants and staff	No.	500.00	15	7,500
k	Weather based crop advisory	No.	13,333.33	1	13,333
l	Inputs from SMS	Days	83.33	288	24,000
<b>Sub-Total Component 2</b>					<b>783,908</b>
<b>Component 3: Knowledge Management including knowledge creation and wider dissemination action</b>					
a	Consumables for data collection	No	416.67	2	833

Sr. No.	Particulars	Unit	Rate	Quantity	Total Amount in \$
b	Case studies/ documentation/ fact sheets/ impact assessment/ dossiers/ process document	No	333.33	20	6,667
c	State/National Workshops	No	10,000.00	1	10,000
<b>Sub-Total Component 3</b>					<b>17,500</b>
<b>1</b>	<b>Total Project Component Cost (Component 1+2+3)</b>				<b>826,075</b>
<b>2</b>	<b>Project Execution Cost</b>				<b>78,477</b>
<b>3</b>	<b>Total Project Cost</b>				<b>904,552</b>
<b>4</b>	<b>Project Cycle Management fee charged by the NIE (8.5%)</b>				<b>76,500</b>
<b>5</b>	<b>Amount of Financing Requested</b>				<b>981,052</b>

**Table 22: Budget Note**

<b>Component 1: Community Mobilization &amp; Organization</b>	
<b>Strengthening of CBOs</b>	The support is proposed to cover cost towards meetings on monthly basis for selection of participants, sensitization and training, technology related exchange events. \$ 17 per group for initial meetings in 1st year and \$ 83 for regular meetings throughout the project. This will result in to initial rapport building with the existing CBOs in project villages. Total \$ 100 will be utilized for formation and strengthening of 50 groups during 4 years of project period.
<b>Formation of CBOs</b>	This will cover cost of actions required for formation of new groups. The activities to be supported includes, initial meetings and formation of groups in the 1st year. Regular meeting on monthly basis for selection of participants, sensitization of the activities and training on their capacity building will be done. It is proposed to use approximately \$ 17 per group for initial meetings and formation of groups in 1st year and \$ 83 for regular meetings throughout the project. Total \$ 100 will be utilized for formation of 50 groups during 4 years of project period.
<b>Preparation of Annual Adaptation Plan</b>	In the initiation of the project it is needed to make a vulnerability assessment for each village. During the assessment a team of experts will interface with the villagers. \$666.67 per village is budgeted for meeting with villagers, on documentation and other expenditures. The changes will be made on annual basis which will be minimal, so for 2 <sup>nd</sup> year onwards, the cost is calculated for 4 villages each.
<b>Component 2: Introduction of Water Resource Development and Climate Smart Farming Technology</b>	
<b>Roof Top Rain water Harvesting (individual/ Community)</b>	Average rainfall in Uttarakhand is 1523 mm which is spread over approx. 100 days in a year. Water crisis is generally during March 15 to June 15. The unit cost per structure is \$ 679.17. The break up cost includes \$83 for preparation of roof top, \$63 for installation of collection pipes, \$25 for gravel filter and \$508 for construction of underground water storage tank (capacity approx. 15000 L).
<b>Natural Spring Rejuvenation</b>	The natural springs which are also a major source of water in hill areas are affected by climate change. Springs have become dry/ near to dry. Out of various technologies developed to recharge these natural springs, it is proposed to use isotope technology to

	<p>identify recharge zone. Treatment for recharge with water conservation measures (digging pond, trench and plantation etc.) - \$267 per hectare. For one spring it is needed to treat about 50 hectare land. Total cost for rejuvenation of one spring is \$14166.67. The cost includes cost towards vegetative and physical measures in recharge zone of spring and cost towards accessing technology from BARC and HESCO.</p>
<p><b>Water use efficiency techniques (Drip/ Sprinkler)</b></p>	<p>On the backdrop of climate change it is necessary to use water efficiently by promoting drip/ sprinkler technology that is known for efficient water uses. These units will be connected with roof top water harvesting tanks. The unit comprises of Chaffin/ sprinkler, pipe (32mm &amp; 16mm), screen filter, Joiner, compression valve etc. These units will be installed on 2 hectare cultivable land and the cost comes to approx. \$2.5 per sq. m.</p>
<p><b>Farming under protected cultivation with irrigation facility</b></p>	<p>In the hill area environmental conditions may suddenly change and go beyond control. To protect the crop from these sudden changes of environment, it is needed to increase the protective cultivation under poly house. Bamboo based poly houses are planned to reduce initial cost. The life expectancy of this structure is five years. During the project period a local cadre will be trained for manufacturing of these poly houses. An irrigation tank with the capacity of 4500- 5000 lit is also considered with the unit. For this intervention \$500 is proposed per unit.</p>
<p><b>Fruit tress saplings &amp; Manure &amp; watering measures*</b></p>	<p>It is proposed to acquaint farmers about tree based farming system which is advantageous over mono cropping in the climate change scenario. It is proposed to provide 50 saplings of fruit trees per family. Total cost works out to \$166.67. Break up is Grafts (\$40); pit digging (\$33), manure &amp; plant protection (\$43), and Plant nutrition &amp; maintenance (\$50).</p>
<p><b>Conservation of agro-bio diversity &amp; revival of traditional useful agriculture practices</b></p>	<p>Himalaya is amongst one of the mega diversity zone of the world. There are many landraces of pulses &amp; millets available. As some land race are going to extinct. It is needed to conserve these landraces for future use. The activity is to be implemented by participatory approach in which sub activities included are collection, fairs, Pot cultivation, Field cultivation, seed banks etc. The amount proposed for these activities is approx. US\$ 1666.67 per year. The budget proposed US\$666.67 for four years.</p>

<b>Livestock Management Practices</b>	Breed improvement with better management practices is needed for hill area for better productivity of livestock. Expenditure will occur on Artificial insemination (\$7), quarterly deworming & mineral mixture (\$28) and modification in cattle shed (\$83). This will help to strengthen livestock rearing as a sustainable source of income for rural hill people. Total cost per family is <b>US\$ 117.33</b>
<b>Fodder Plantation (Trees)</b>	In the hill areas there is acute scarcity of fodder for livestock. It is needed to plant various fodder trees & grasses on their waste land for better fodder availability and also to increase green area. In one hectare \$223 will be expended on purchase of saplings of trees & grass and \$444 for manure, water conservation, watering and fencing etc. during the project period. Total cost per ha. is <b>US\$ 666.67.</b>
<b>Training on suggested technologies for participants &amp; Staff</b>	These trainings will be covered topics e.g. Water management, Climate smart agriculture and Livestock management etc. 30 trainings will be organized and each training will cover 20 participants in each training. Cost will cover Institutional charges, Lodging, boarding and transportation.
<b>Exposure visits on suggested technologies for participants and staff</b>	These Exposure visits will be covered visits of pioneer Institutes working in the area of water management, Climate smart agriculture and Livestock management etc. 15 visits will be organized and each training will cover 15-20 participants in each training. Cost will cover Institutional charges, Lodgings, boarding and transportation.
<b>Weather based crop advisory</b>	A low cost automated weather station will be established in the area. Data collected on this station will be sent to expert group. For analysis of the data and producing various services related to weather consultant firm will be hired for the area. They will provide forecasting and other related services to the farmers during the project period. Due to unexpected weather conditions crops and other livelihood interventions are affected. It is needed to establish an early warning system for the area that gives alerts and advice to the farmers. For this intervention cost will be incurred on automated weather station \$4333 in the 1 <sup>st</sup> year, SMS based early warning centers and weather services \$9000 for the project period.

<b>Inputs from Subject Matter Specialist</b>	Various activity given above are needed expert inputs from various institutions like VPKAS, BARC, GBPUAT and other experts in BAIF head office and associate organizations. Cost will cover travel, lodging, boarding, food and honorarium for experts. <b>The cost proposed is US\$ 83.33 per day for 288 mandays.</b>
<b>Component 3: Knowledge Management including knowledge creation and wider dissemination action</b>	
<b>Consumables for data collection</b>	For collection of data during the project period for various use of documentation. Cost includes Tablet/ Survey format/ Photocopies/ Paper etc.
<b>Case studies/ documentation/ fact sheets/ impact assessment/ dossiers/ process document</b>	For dissemination of knowledge to stake holders it is planned to publish various type documents. Cost will include documentation expert charges, travel, boarding, lodging and publication.
<b>State/National Workshops</b>	For dissemination of knowledge build during the project period a workshop of various stakeholders will be organized. Cost includes Travel, Expert charges, Lodging, boarding, publication of proceedings etc.

**Table 21: Details of Execution Cost**

<b>Sl.No.</b>	<b>Budget Head</b>	<b>Cost For 4 Years in \$</b>
1	Programme coordinator @ \$300/month	14,400
2	Field coordinator 1 @ \$333/month	15,984
3	Field Team Member 2 @ \$200/ month	19,200
4	Review meetings @ \$558/ Year	2,232
5	Travel (local and for facilitation) @ \$170/ month	8,160
6	Organizational over heads, AMC, Printing, Stationary, Rent, Communication etc. @ \$ 236/ month	11,334
7	Monitoring and Evaluation	7,167
<b>Total</b>		<b>78,477</b>

### **Project management fee**

The project management fee (8.5% of the total budget) will be utilized by NABARD, the National Implementing Entity, to cover the costs associated with the provision of general management support. Table 22 below provides a breakdown of the estimated costs of providing these services.

**Table 22: Breakdown of costs for the project management fee**

Particulars	Amount (US\$)
Financial Management	22500
Information, Reporting, Knowledge Management	10000
Performance Management - Progress Monitoring- Field Monitoring	20000
Programme Support - Technical and Other to EE	24000
<b>Total</b>	<b>76500</b>

**NIE Fee Budget Notes:**

**1. Finance, Budget and Treasury.**

This covers general financial oversight, management and quality control to:

- Manage, monitor and track AF funding including allocating and monitoring expenditure based on agreed work plans, financial reporting to the AFB and the return of unspent funds to AF;
- Ensuring that financial management practices comply with AF requirements and support audits as required; E
- Ensuring financial reporting complies with AF standards; and
- Ensure cost efficient procurement processes and compliance with Government procurement rules and provide support to EE in this direction.

**2. Information, Reporting, Knowledge Management:**

- This includes maintaining information management systems and specific project management databases to track and monitor project implementation
- Periodic Reporting to the AFB on the physical progress and AF result framework
- Creating platform for knowledge dissemination for the learnings out of project

**3. Performance Management - Progress Monitoring- Field Monitoring:**

- Providing oversight of the monitoring and evaluation function of the Executing Entity.
- Field monitoring at six monthly interval and progress reporting
- Providing guidance on AF reporting requirements; managing the relationship with the AF and ensuring outputs and outcomes match with AF expectations;
- responding to information requests and arranging revisions;

**4. Programme Support - Technical and Other Support to EE**

- Providing technical support in the areas of risk management
- Policy, programming, and implementation support services;
- Providing guidance in establishing performance measurement processes; and
- Technical support on methodologies, TOR validation, identification of experts, results validation, and quality assurance.
- Technical support, troubleshooting, and support evaluation missions as necessary;



- Support on technical issues in programme implementation

*F. Include a disbursement schedule with time-bound milestones.*

**Table 23: Disbursement Schedule**


Details	Upon Agreement signature	One Year after Project Start	Year 2	Year 3	Total
Scheduled Date	Oct- Nov. 2014	1-Sep-15	1-Sep-16	1-Sep-17	
Project Funds	157,977	339,969	316,002	90,603	<b>904,552</b>
Implementing Entity Fee	19,125	19,125	19,125	19,125	<b>76,500</b>
<b>Total</b>	<b>177,102</b>	<b>359,094</b>	<b>335,127</b>	<b>109,728</b>	<b>98,1052</b>

**PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY**

**A. Record of endorsement on behalf of the government** *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

<i>Ravi Shankar Prasad, IAS, Joint Secretary, Ministry of Environment and Forest (MoEF), Government of India</i>	<i>Date:14 August 2014</i>
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**B. Implementing Entity certification** *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person’s name, telephone number and email address*

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (National Action Plan on Climate Change) and subject to the approval by the Adaptation Fund Board, <u>commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund</u> and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
 (Dr. R. M. Kummur) Chief General Manager NABARD, Head Office, Mumbai (Implementing Entity Co-ordinator)	
Date: <i>September,01, 2014</i>	Tel. and email: +91 22 2653 0083, +91 7738175446 <a href="mailto:rm.kummur@nabard.org">rm.kummur@nabard.org</a>
Project Contact Person: Dr. P. Radhakrishnan, General Manager, NABARD, Head Office, Mumbai	
Tel. and Email: +91 22 2653 9384, +91 9167499397 <a href="mailto:p.radhakrishnan@nabard.org">p.radhakrishnan@nabard.org</a> , <a href="mailto:climate.change@nabard.org">climate.change@nabard.org</a>	

## Annexure I

### About BAIF Development Research Foundation (Project Execution Entity)

**BAIF Development Research Foundation** (previously registered as the Bharatiya Agro Industries Foundation), is a reputed voluntary organization established in 1967 by Dr. Manibhai Desai, a disciple of Mahatma Gandhi, at Urulikanchan, near Pune to promote sustainable livelihoods among rural communities of India.



BAIF provides sustainable livelihood options to rural poor through management of natural resources, promotion of livestock development, watershed development and agri-horti-forestry as major income generation activities. BAIF is serving more than 4.5 million poor families living in 60,000 villages spread over 16 states across the country through the dedicated efforts of about 4500 employees.

The major activities of BAIF are the promotion of dairy husbandry, goat husbandry, water resources development, sustainable agriculture and agri-horti-forestry for the rehabilitation of rural communities on degraded lands, and various rural non-farm activities for generating employment for landless families. Emphasis on environmental sustainability and empowerment of women cut across all these programmes.

#### **Vision:**

Building a self-reliant rural society assured of food security, safe drinking water, good health, gender equity, low child mortality, literacy, high moral values and clean environment and vibrant rural economy.

#### **Mission:**

**BAIF's Mission** is to create opportunities of gainful self-employment for rural families' especially disadvantaged sections, ensuring sustainable livelihood, enriched environment, improved quality of life and good human values. This is being achieved through development research, effective use of local resources, extension of appropriate technologies and up gradation of skills and capabilities with community participation. BAIF is a non-political, secular and professionally managed organization.

#### **Nature of Programme/Work:**

BAIF Development Research Foundation is implementing a multidisciplinary programme covering livestock development through promotion of dairy husbandry, efficient use of water resources through innovative water conservation measures, agri-horti-forestry on dry lands, community health and empowerment of women through promotion of micro-enterprises and credit facilities, while ensuring a clean environment.

These programmes are important and most relevant for promoting sustainable livelihood to the rural poor, because over 80% of them are dependent on natural resources for their livelihood.

However, due to scarcity, over-exploitation and mismanagement of these resources, the productivity and employment potentials of these resources have been declining sharply, resulting in lower agricultural production, unemployment and increasing rural poverty. To address these problems, BAIF has been promoting appropriate technologies to conserve the precious natural resources such as land, livestock, water and forests, while making sustainable use of them to enable earning of livelihood by the under-employed local communities. BAIF has adopted a holistic development approach which blends livelihood programme with health education and high moral values. These together contribute to improved quality of life. The programmes aim at identifying the local problems encountered by the weaker sections of the society and try to address the problems taking into consideration the available resources with the poor and identification of appropriate technologies to make best use of degrading natural resources and idle human resources for improving the productivity and quality of life. Most of these programmes are innovative and widely replicable. BAIF's priority was to take up promotion of dairy husbandry by providing doorstep services way back in 1970. For the first time in the country, BAIF demonstrated the feasibility of using sophisticated frozen semen technology for improving the breeding efficiency on low productive, non-descript cattle. BAIF emphasized on delivery of services at the doorstep primarily to reduce the drudgery of livestock owners and also to motivate them through direct dialogue and to provide answers to all the questions posed by small farmers. This worked as effective mentoring which enabled a large number of small farmers to adopt dairy husbandry as a dependable means of livelihood. As a result of BAIF's efficient technology blended with efficient delivery services, the programme achieved significant success. The conception rate of cattle went up to 55% as compared to less than 20% in other programmes. The efficient technical guidance helped the cattle owners to take good care of the new born high yielding cows and buffaloes, which produced 2500-3000 liters per lactation and generated a net surplus of Rs. 7000 – 8000 per year. The participant families have enhanced their annual income from a meager sum of Rs. 8,000-10,000 to Rs. 45,000-55,000. Animal Husbandry has not only generated surplus income and year-round employment for all the members of the family particularly women, but also ensured nutritional supplementation for children and women and plenty of organic manure which gave a boost to the agricultural production. Looking to the prospect of providing gainful self-employment, the planning commission recommended that the programme be implemented across the country with the support under the integrated rural development programme with the infrastructure development fund. Thus, BAIF has been able to expand the programme to reach 30 lakh families spread over 46,000 villages in 12 states. Looking to the benefit of the programme, the farmers are willing to pay for the services provided by BAIF and hence an innovative programme has been initiated without seeking support from donor agencies. This is a reflection of the replicability of the programme BAIF has also trained thousands of barefoot beneficiaries as paravets for providing livestock breeding services on their own for their livelihood.

BAIF has also taken up watershed development programme sponsored by the government of India, NABARD and other agencies, where the budget and other activities are identified by the

donors and other agencies. Watershed development programme which aims at conservation and sustainable use of natural resources has been taken up covering over 120950 families spread over 673 watersheds in 1233 villages and covering about 348010 ha. However, apart from the set activities, Baif has initiated various innovative components such as promotion of improved cash crops, fruits and vegetables, application of bio fertilizers and vermicomposting and introduction of agro services for efficient backward and forward linkages. As a result, the participants of the watershed programme could enhance their crop yield and cropping intensity from 30-80% and their annual income has increased from Rs. 10,000 to over Rs. 35,000. The agri-horti-forestry programme known as the *wadi* programme is the brainchild of baif. In the early 80's, while promoting sustainable development in tribal regions of Gujarat, BAIF realized the problems of the tribal who could not meet their livelihood from collection of minor forest produce. In the absence of income, the tribal were trying to utilize the hilly terrain for agricultural production without success. This led to the migration of the entire family for livelihood and accelerated the degradation of forest resources. Looking to their plight, baif developed a unique programme for promoting *wadi* to establish fruit orchards on 0.4 ha land owned by them. To ensure food security, support was provided to use the inter-space for cultivation of food and vegetable crops while the borders were used for establishing medicinal herbs and multipurpose tree species which not only protected the fruit trees but also provided fodder, fuel, timber and medicinal herbs for home consumption. As women played a significant role in nurturing the orchards, it was necessary to address their drudgery, health problems and literacy. Development of children through health care and literacy were the integral parts. Thus, various interventions were introduced to ensure that women remained healthy and saved time through reduced drudgery, to devote their time to the development of the *wadi*. As a result of this innovative approach and hard work of the tribal, the families who hardly earned Rs. 6000 per annum earlier, could now generate a net surplus of Rs. 35,000 to Rs. 40,000 from the fifth year when the orchards started bearing fruits. With the prospects from their *wadis*, the tribal particularly the women stopped migrating and the children started attending schools. Looking to the potential of the programme for wider replication, NABARD has set up a tribal development fund to promote the programme and the ministry of tribal affairs, government of India made a budget allocation for development of the *wadi* programme by the state governments, adopting the unique approach of BAIF's tribal rehabilitation. Baif has been identified as a *wadi* resource centre for capacity building of the implementing agencies.

**a) Motivation and Objective behind the project /work**

The main drive of BAIF is to create sustainable livelihood for the rural poor through management of natural resources and promotion of livestock development, watershed development and agri-horti-forestry as major income generation activities.

As Rural India cannot prosper without conservation of the available water resources, water resource development is a major component of Rural Development. The critical components of watershed development are people's participation through awareness and motivation, efficient programme implementation and capacity building through development of local organizations.

The primary objective is to ensure safe drinking water and efficient use of water for improving agriculture and livestock production, to benefit weaker sections of rural communities.

The community has been convinced about the benefits of watershed development like improvement in soil fertility and availability of water resulting in higher crop yields, safe drinking water, increased employment opportunities and finally socio-economic upliftment of the community.

**Objectives:**

- Initiate development research and assess technologies developed by various research institutions to address the problems of the rural poor;
- Transfer of appropriate technologies to generate gainful self-employment and enhance agricultural productivity,
- Develop and produce eco-friendly inputs;
- Promote people's organizations to ensure forward and backward linkages and sustainable development.

**Specific Objectives:** 1. Promotion of Livelihoods of rural families, 2. Establishment of tree-based farming systems on underutilized lands through water resources development, 3. Promotion of Improved agriculture practices, 4. Improvement of Quality of Life of Tribal Families, 5. Integration of Women in the Development Process

b) **Means and Methodology adopted in achieving the objective**

BAIF's strategy is to interact with the target communities through the local organisations and opinion leaders. The second step is to address the target groups about the objectives of BAIF's programmes. This may also be followed by entry point activities to establish the credibility of the organization. The third step is formulation of interest groups and categorizing them into homogeneous groups of men and women. To establish close interaction with the local families, field guides are appointed in every village by selection of unemployed local youth having keen interest in the programme. These youth are trained by BAIF to work as a bridge between the local community and BAIF's project staff. Group meetings and film shows are organized to sensitize the community and encourage them to identify new opportunities. Field trips help them to interact with successful families who have adopted BAIF's programme. Based on the needs, suitable interventions are identified and compilation of interventions of individual families becomes the activities under the project.

**BAIF's Sponsors and Associates**

*Government Agencies*

Ministry of Rural Development, Ministry of Agriculture, Ministry of Tribal Affairs, Ministry of Health and Family Welfare, Ministry of Finance, NABARD, DBT, Ministry of Science and Technology, Ministry of Environment and Forests, National Dairy Development Board, Maharashtra Livestock Development Board, YashwantraoChavan Academy of Development Administration, Central Silk Board, Madhya Pradesh Society for Rural livelihood Promotion, State Governments of Maharashtra, Karnataka, Gujarat, Rajasthan, Punjab, Uttar Pradesh,

Uttarakhand, Madhya Pradesh, Andhra Pradesh, Bihar, West Bengal, Orissa, Jharkhand, Chhattisgarh, Himachal Pradesh and Tripura

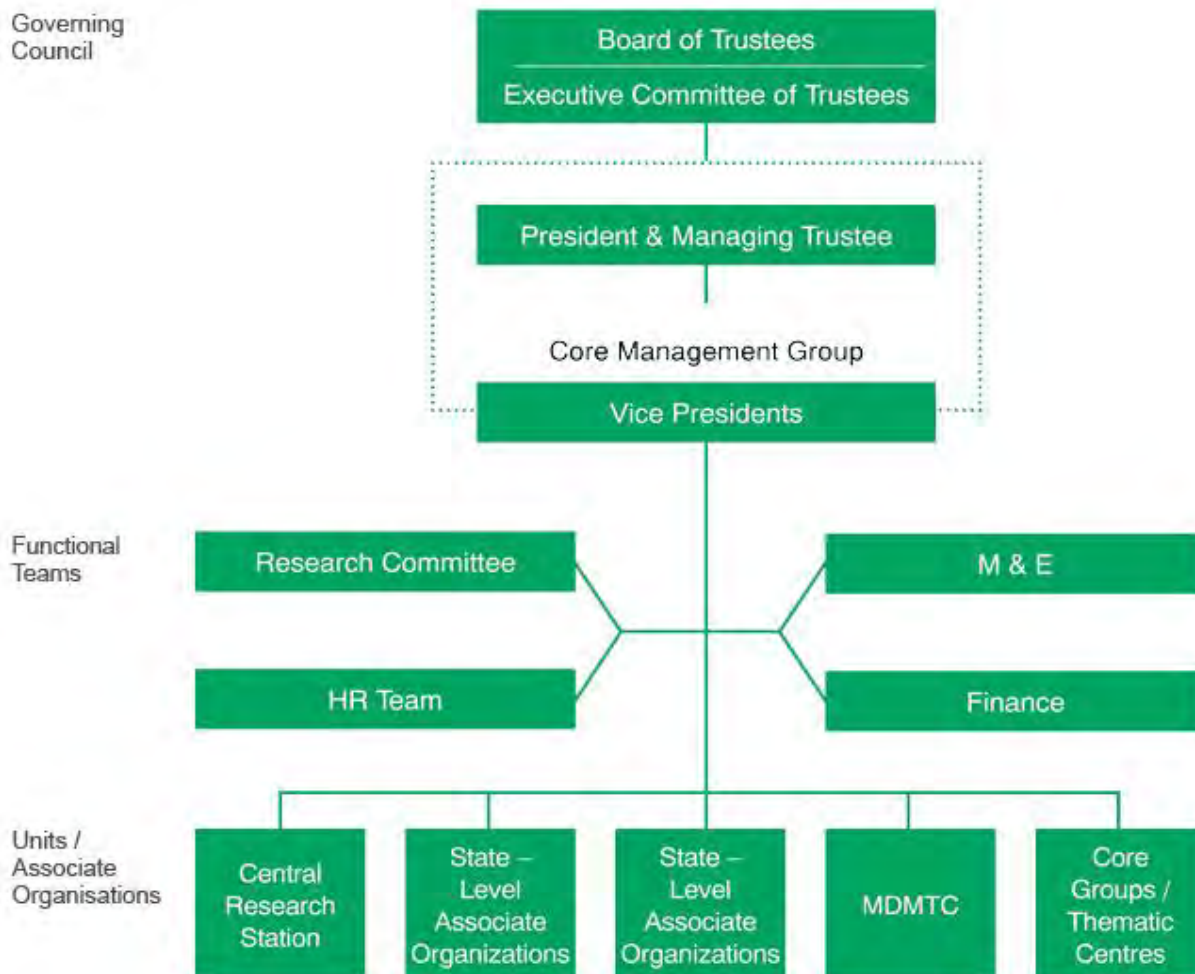
*International Agencies*

Kreditanstalt für Wiederaufbau (KfW), Bill and Melinda Gates Foundation, Embassy of France, Deutsche Welthungerhilfe - German Agro Action, GTZ, International Livestock Research Institute (ILRI), Jatro Select GmbH, Food and Agriculture organization, Union Des cooperative D'Elevage (UCEAR), Association Franco-IndienneRurale (AFIR), Digital Green, Fidelity Charitable Services, Aga Khan Foundation, Agri Business Systems International (ASI), Ford Foundation, International Finance Corporation, United Way of America, Watumull Foundation, Planet Water Foundation

**Scientific and Academic Institutions**

Indian Council of Agricultural Research, National Research Institute for Agriculture, France, International Crops Research Institute for Semi-arid Tropics, UK Department For International Development, Crops For the Future, International Water Management Institute, South Asia Pro-Poor Livestock Policy Programme for India, Erasmus University, Rotterdam, University of Queensland, Australia

## A. Organizational Structure of BAIF at a Glance



## B. BAIF's State-Level Associate Organizations

- BIRD, Andhra Pradesh
- BAIF Bihar (under BIRD UP)
- BAIF Uttarakhand (under BIRD UP)
- BIRD-UP, Uttar Pradesh
- BIRVA, Jharkhand
- BIRD-K, Karnataka
- DHRUVA, Gujarat
- GRISERV, Vadodara, Gujarat
- MITTRA, Maharashtra
- RRIDMA, Rajasthan
- SPESD, Bhopal, MP



### C. Core Groups/Thematic Centers

Core Groups are established at suitable locations to implement the role required of a Resource Support organization for particular programmes and geographical areas. Thematic Centers are Start-up Teams to initiate programme development in newer Thematic Areas.

### D. Distribution of BAIF Programmes in India



## Annexure II

### BAIF'S Engagement in Climate Change Activities

Building resilience to climate change is a new initiative of BAIF which is aimed at addressing risks of ecologically fragile zones, vulnerability of local communities and promotion of adaptation and mitigation measures. There is growing realization that the responses to alleviate climate-related adverse effects are not keeping pace when compared to the threats faced by rural communities. It is becoming increasingly evident that climate change and variability will have profound influence on key livelihood support systems and sectors on which rural communities depend and thus a comprehensive programme is essential. Recognizing the urgent need to work on these issues, climate change actions have been introduced within BAIF as a programme direction in light of changing development context and emerging development threats.

#### A. Relevance of BAIF Activities in Climate Change

Although development projects of BAIF have not been directly addressing climate change issues in the past, the choice of interventions were such that they favorably impacted causative factors of climate change. Examples of this are:

- a. **Livestock:** Stall feeding reduces vegetation loss and thereby increases carbon sinks; cross breeding of cattle for higher milk production results in fewer animals which means less emission of greenhouse gases.
- b. **Crops:** Introduction of agroforestry systems increases biomass on farmland and serves as carbon sink; conservation of native landraces of crops such as *Indicatype* rice enhances the gene pool available for climate adaptability.
- c. **Natural Resource Management:** Water resources development favorably impacts soil-plant-water continuum and biomass production; sustainable harvest of Non-Timber Forest Produce helps protect forest resources by rural communities and prevent over-exploitation.

#### B. Climate Change Initiatives of BAIF Incorporated in Development Programmes

- a. Understand climate change impact and coping strategies of farming communities;
- b. Introduce adaptation and mitigation strategies by incorporating climate smart technologies in livelihood programmes;
- c. Create climate change awareness among project beneficiaries; and
- d. Build internal capacity of the organization through training of staff.

Towards realising these aims, besides getting a few staff trained through short term trainings, BAIF has been interacting with Territorial Approach and Sustainable Knowledge (TASK) - a global Climate Change network based in France –to identified priority areas for BAIF to work on. Some of them are mentioned below:

- a. Climate friendly farming to produce more with less resources in terms of quantity and quality;
- b. Building adaptive capacity by maintaining Recovery tool kits' such as seed banks at village level;
- c. Recycling, resilience and restoration to minimize external energy input farming practices;

d. Territorial climate planning with district as a unit to realize greater impact.

### **C. Project Implementation Experience**

As the climate-focused programme of BAIF is still at an early stage, it is mostly funded internally. However, there are many field-level actions that are covered as part of on-going livelihood enhancement projects. A recent project, sponsored by the international programme on Climate Change, Agriculture and Food Security (CCAFS), had exclusive focus on Climate Change. This project assessed farmers' preferences and their willingness to pay for Climate Smart Technologies in Diverse Rainfall Zones of India. This study, conducted in 27 villages of Rajasthan and Madhya Pradesh states, had a sample of 908 farmers.

### Annexure III

#### List of Acronyms

AI:	Artificial Insemination
BAIF:	Bhartiya Agro Industries Foundation Development Research Foundation
BIRD-UP:	BAIF Institute of Rural Development-Uttar Pradesh
BPL:	Below Poverty Line
CBO:	Community Based Organizations
CBRI:	Central Building Research Institute
CCAFS :	Climate Change Agriculture and Food Security
CHEA:	Central Himalayan Environment Association
CICERO:	Centre for International Climate and Environmental Research
CITH:	Centre institute of Temperate Horticulture
CPC:	Chief Programme Coordinator
CRiSTAL:	Community Based Risk Screening Tool: Adaptation and Livelihoods
CSWTRI:	Central Soil and Water Conservation Research and Training Institute
DBT:	Department of Biotechnology
DST:	Department of Science and Technology
FAO:	Food and Agriculture Organization
FCRA:	Foreign Contribution Regulation Act
FRI:	Forest Research Institute
GBHIPED:	GB Pant Institute Of Himalayan Environment and Development
GBPUAT:	GB Pant University of Agriculture and Technology
GCF:	General Circulation Model
GDP:	Gross Domestic Product
GHG:	GHG- Green House Gases
GOI:	Government of India
HARC:	Himalayan Action Research Centre
HESCO:	Himalayan Conservation Studies and Conservation Organization
HFRI:	Himalayan Forest Research Institute
HICAP:	Himalayan Climate Change Adaptation Programme
HO:	Head Office
HP:	Himachal Pradesh
HPKV:	Himachal Pradesh Krishi Vidyalaya
ICAR:	Indian Council of Agriculture Research
ICIMOD:	International Centre for Integrated Mountain Development
ICT:	Information Communication and Technology
IFAD:	International Fund for Agricultural Development
IHBT:	Institute of Himalayan Bio resource Technology

IHCAP:	Indian Himalayas Climate Adaptation Programme
IHR:	Indian Himalayan Region
IISD:	International Institute of Sustainable Development
IIT:	Indian Institute of Technology
IITM:	Indian Institute on Tropical Meteorology
IMD:	Indian Meteorological Department
INCCA:	Indian Network on Climate Change Assessment
IPCC:	Inter Panel on climate change
IUCN:	International Union for Conservation of Nature
KVK	Krishi Vigyan Kendra
M & E:	Monitoring and Evaluation
MDG:	Millennium Development Goals
MGNREGS:	Mahatma Gandhi National Rural Employment Guarantee Scheme
MoEF:	Ministry of Environment and Forests
MoU:	Memorandum of Understanding
NABARD:	National Bank for Agriculture and Rural Development
NAIP:	National Agriculture Innovation Project
NAPCC:	National Action Plan for Climate Change
NGO:	Non- governmental Organization
NHM:	National Horticulture Mission
NIE:	National Implementing Entity
NMMI:	National Mission on Micro Irrigation
NRLM	National Rural Livelihood Mission
NSRC:	National Sensing Remote Centre
NTFP:	Non Timber Forest Produce
PAC:	Programme Advisory Committee
PMU:	Project Management Unit
POs:	Producer Organizations
PSI:	People Science Institute
RKVY:	Rashtriya Krishi Vikas Yojana
SAPCC:	State Action Plan for Climate Change
SAU:	State Agriculture University
SC:	Steering Committee
SDC:	Swiss Agency For Development And Cooperation
SEI:	Stockholm Environment Institute
SHG:	Self Help Group
SMS:	Short Messaging Service
TASK:	Territorial Approach for Sustainable Knowledge
TDF:	Tribal Development Fund ( Program of NABARD)
TIME:	Technology Intervention in Mountain Intervention

UBFDB: Uttarakhand Bamboo and Fiber Development Board  
ULDB: Uttarakhand Livestock Development Board  
UNEP: United Nation Environment Plan  
UN: United Nations

## Annexure IV

### List of References

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List of Participants, Eminent Scientists, Government Officials, and Development Professionals who participated in  
Brain Storming Workshop Organized by BAIF  
On

**“Crafting Strategy for Sustainable Livelihoods and Natural Resource Management in Central and Western  
Himalayas”  
(November 11-12, 2011)**

Sr No	Name of the Delegate	Organization
1	Dr. A. S. Ninawe,	Advisor, Deptt of Biotechnology, GoI, New Delhi
2	Girish G. Sohani	President, BAIF, Pune
3	Ramesh Rawal	Executive Vice President, BAIF, New Delhi
4	Abhay Gandhe	Senior Program Officer- SDTT
5	Dr. Rajashree Joshi	Sr. Program Coordinator BAIF, Pune
6	Dr. S. U. Ahmed	Scientist, Department of Biotechnology, GoI, New Delhi
7	Sachin M Patwardhan	Program officer SDTT
8	Dr. Hari Sharan Singh Advisor (Fodder)	ULDB-Uttarakhand Livelihood Development Board
9	Dr. M C Nautiyal, Ex Dean	Retired DEAN, College of Forestry, Dehradun
10	Dr. B P Nautiyal	Ex GM, NABARD, and Ex Director, Horticulture
11	Atul Shah	CHIRAG, Uttarakhand
12	Aadya Singh	CHIRAG
13	Dr. Vikas Vatsa	HIMCON
14	Dinesh Raturi	BAIF-Uttarakhand
15	Rakesh Bahuguna	HIMCON
16	Dr. R B P Singh	HIMCON
17	Dr. P S Bisht, Dean,	CFHA, GBPUACT, Ranichauri
18	Dr. V K Kediya,	CHFA, GBPUACT, Ranichaura
19	Dr Amrith Kumar, Sr. Scientist (Engg),	CSWC, RTI, Dehradun
20	Dr R K Maikhuri, Scientist 'E'	GBPIHED, Garhwal Unit, Srinagar, Uttarakhand-246174
21	Vimal Dhiman Forestry Manager	Uttarakhand Bamboo and Fibre Development Board (UBFDB, Dehradun)
22	Dr. S K Bhardwaj Scientist	Department of Environmental Science, University of Horticulture and Forestry, Nauni, Solan
23	Prof. K S Verma, Head	Department of Environmental Sciences, Univ of Horti and Forestry, Nauni, Solan
24	Vijay P S Adhikari	CHEA, Central Himalayan Environment Association
25	Krishna Trivedi	Appropriate Technology, India, Rudraprayag (UK)
26	Dr R B P Singh, Advisor	HIMCON, Dehradun
27	P Pandit, GM	CGM, NABARD
28	Malkit Singh, AGM	NABARD, Dehradun
29	Dr Rajendra Matupal, Addl. Manager	ULDB
30	Dr. Malavika Chauhan	Executive Director, Himmothan Society
31	Dr Yashpal Bisht	Livestock specialists Himmothan Society
32	Dr. Rawat	GBPIHED
33	Dr. Shrikant Khadilkar	CPC- BAIF- Haridwar
34	Dr. Sunil Agrawal	Scientist –DST –New Delhi
35	Dr. D.K. Tiwari	Sericulture specialist – BAIF Himachal Pradesh
36	Dr S.S.Roy	Advisor- BAIF Pune
37	Dr .J.N.Daniel	Program Director – BAIF –Pune



रवि एस. प्रसाद  
आई.ए.एस.  
संयुक्त सचिव  
**Ravi S. Prasad**  
I.A.S.  
Joint Secretary



भारत सरकार  
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय  
Government of India  
Ministry of Environment, Forests & Climate Change

D.O. No. 14/40/2013-CC

Dated: 14<sup>th</sup> August 2014

**Subject: Endorsement for the proposal on “Climate smart actions and strategies in north western Himalayan region for sustainable livelihoods of agriculture-dependent hill communities”**

In my capacity as designated authority for the Adaptation Fund in India, I confirm that the above national project / programme proposal is in accordance with the government's National priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in India.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by National Bank for Agriculture and Rural Development and executed by BAIF Development Research Foundation.

Sincerely,

  
(Ravi S. Prasad)

The Adaptation Fund Board  
c/o Adaptation Fund Board Secretariat  
Email: Secretariat@Adaptation-Fund.org  
Fax: 202 522 3240/5



**Project Budget Summary**

#	Particulars	Total cost (in Dollar)	IN %
1	Component 1	24,667	3%
2	Component 2	783,908	80%
3	Component 3	17,500	1.8%
	<b>Total Project cost</b>	<b>826,075</b>	
4	Total Execution cost	78,477	9.5%
	<b>Total Project cost</b>	<b>904,552</b>	<b>92%</b>
5	NIE Cost	76,500	8.5%
	<b>Total amount requested</b>	<b>981,052</b>	

Project Component-wise Budget (for Four Years)													
Amount in \$		60											
#	Particulars	Unit	Rate	Physical					Financial				
				Year 1	Year 2	Year 3	Year 4	Total	Year 1	Year 2	Year 3	Year 4	Total
<b>Component 1: Community Mobilization &amp; Organization</b>													
a	Strengthening of CBOs	No.	100	20	10	10	10	50	2000	1000	1000	1000	5000
b	Formation of CBOs	No.	100	20	10	10	10	50	2000	1000	1000	1000	5000
c	Prperation of Annual Adoptation Plan	No.	667	10	4	4	4	22	6667	2667	2667	2667	14667
<b>Sub-total Component 1</b>									<b>10667</b>	<b>4667</b>	<b>4667</b>	<b>4667</b>	<b>24667</b>
<b>Component 2: Water Resource Development and Climate Smart Farming Technology introduction</b>													
a	Roof Top Rain water Harvesting (individual/ Community)	No.	679	20	50	50	30	150	13583	33958	33958	20375	101875
b	Natural Spring Rejuvenation	No.	14167	2	6	7	0	15	28333	85000	99167	0	212500
c	Water use efficiency techniques (Drip/ Sprinkler)	SqM	3	2000	6000	8000	4000	20000	5000	15000	20000	10000	50000
d	Farming under protected cultivation with irrigation facility	Family	500	40	80	80	0	200	20000	40000	40000	0	100000
e	Fruit tress saplings & Manure & watering measures*	Family	167	100	300	200	0	600	16667	50000	33333	0	100000
f	Conservation of agro-bio diversity & revival of traditional useful agriculture practices	Village	6667	0.25	0.25	0.25	0.25	1	1667	1667	1667	1667	6667
g	Livestock Management Practices	Family	117	100	400	200	100	800	11733	46933	23467	11733	93867
h	Fodder Plantation (Trees)	Ha	667	20	40	40	0	100	13333	26667	26667	0	66667
i	Training on suggested technologies for participants & Staff	No.	250	6	15	9	0	30	1500	3750	2250	0	7500
j	Exposure visits on suggested technologies for participants and staff	No.	500	6	5	4	0	15	3000	2500	2000	0	7500
k	Wheather based crop advisory	No.	13333	0.5	0.3	0.1	0.1	1	6667	4000	1333	1333	13333
l	Inputs from SMS	Days	83	72	72	72	72	288	6000	6000	6000	6000	24000
<b>Sub-Total Component 2</b>								<b>22200</b>	<b>127483</b>	<b>315475</b>	<b>289842</b>	<b>51108</b>	<b>783908</b>
<b>Component 3: Knowledge Management including knowledge creation and wider dessimation action</b>													

a	Consumables for data collection	No	417	2	0	0	0	2	833	0	0	0	833
b	Case studies/ documentation/ fact shets/ impact assesment/ dossiers/ process document	No	333.3	0	0	10	10	20	0	0	3333	3333	6667
c	State/National Workshops	No	10000	0	0	0	1	1	0	0	0	10000	10000
<b>Sub-Total Component 3</b>									833	0	3333	13333	17500
<b>Grand Total (1+2+3)</b>									<b>138983</b>	<b>320142</b>	<b>297842</b>	<b>69108</b>	<b>826075</b>

Summary of Component-wise Project Budget					
#	Particulars	Unit	Rate	Quantity	Total Amount (in \$)
<b>Component 1: Community Mobilization &amp; Organization</b>					
a	Strengthening of CBOs	No.	100	50	5000
b	Formation of CBOs	No.	100	50	5000
c	Prperation of Annual Adoptation Plan	No.	667	22	14667
<b>Sub-total Component 1</b>					<b>24667</b>
<b>Component 2: Water Resource Development and Climate Smart Farming Technology introduction</b>					
a	Roof Top Rain water Harvesting (individual/ Community)	No.	679	150	101875
b	Natural Spring Rejuvenation	No.	14167	15	212500
c	Water use efficiency techniques (Drip/ Sprinkler)	SqM	3	20000	50000
d	Farming under protected cultivation with irrigation facility	Family	500	200	100000
e	Fruit tress saplings & Manure & watering measures*	Family	167	600	100000
f	Conservation of agro-bio diversity & revival of traditional useful agriculture practices	Village	6667	1	6667
g	Livestock Management Practices	Family	117	800	93867
h	Fodder Plantation (Trees)	Ha	667	100	66667
i	Training on suggested technologies for participants & Staff	No.	250	30	7500
j	Exposure visits on suggested technologies for participants and staff	No.	500	15	7500
k	Wheather based crop advisory	No.	13333	1	13333
l	Inputs from SMS	Days	83	288	24000
<b>Sub-Total Component 2</b>					<b>783908</b>
<b>Component 3: Knowledge Management including knowledge creation and wider dessimination action</b>					
a	Consumables for data collection	No	417	2	833
b	Case studies/ documentation/ fact shets/ impact assesment/ dossiers/ process document	No	333	20	6667

c	State/National Workshops	No	10000	1	10000
<b>Sub-Total Component 3</b>					<b>17500</b>
1	Total Project Component Cost (Component 1+2+3)				<b>826075</b>
2	Project Execution Cost				<b>78477</b>
3	Total Project Cost				<b>904552</b>
4	Project Cycle Management fee charged by the NIE (8.5%)				<b>76500</b>
<b>5</b>	<b>Amount of Financing Requested</b>				<b>981052</b>

9.5%

8.5%

**Project Execution Cost**

Sl.No.	Budget Head	Cost For 4 Years in \$	Year 1	Year 2	Year 3	Year 4
1	Programme coordinator @ \$300/month	14,400	3,600	3,600	3,600	3,600
2	Field coordinator 1 @ \$333/month	15,984	3,996	3,996	3,996	3,996
3	Field Team Member 2 @ \$200/ month	19,200	4,800	4,800	4,800	4,800
4	Review meetings @ \$558/ Year	2,232	558	558	558	558
5	Travel (local and for facilitation) @ \$170/ month	8,160	2,040	2,040	2,040	2,040
6	Organizational over heads, AMC, Printing, Stationary, Rent, Communication etc. @ \$ 236/ month	11,334	2,834	2,834	2,834	2,834
7	Monitoring and Evaluation	7,167	1,166	2,000	333	3,667
<b>Total</b>		<b>78,477</b>	<b>18,994</b>	<b>19,828</b>	<b>18,161</b>	<b>21,495</b>



**Monitoring & Evaluation**

<b>Activity</b>	<b>Responsible person</b>	<b>Budget (US\$)</b>	<b>Time frame</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
Inception workshops	Programme Director	833	Within 2 months of project starting and yearly thereafter	833			
Annual field visits by representatives of Programme Advisory Committee	Programme Director	1,000	Annual	250	250	250	250
Mid-term Evaluation	External consultant	1,667	Mid term		1,667		
Final evaluation	External consultant	3,334	months before end of project				3,334
Audits	External auditor	333	Every Year	83	83	83	83
<b>Total</b>		<b>7,167</b>		<b>1,166</b>	<b>2,000</b>	<b>333</b>	<b>3,667</b>



**NIE Cycle Management Fee**

<b>Perticulars</b>	<b>Amount (USD)</b>
Financial Management	22500
Information, Reporting, Knowledge Management	10000
Performance Management - Progress Monitoring- Field Monitoring	20000
Programme Support - Technical and Other to EE	24000
<b>Total</b>	<b>76500</b>

Project Fund Disbursement Schedule						
S. No.	Particulars	Year 1	Year 2	Year 3	Year 4	Total
	Scheduled Date	On agreement signing (Oct/Nov 14)	1-Sep-15	1-Sep-16	1-Sep-17	
<b>TO EXECUTING AGENCY</b>						
1	Project Cost	138983	320142	297842	69108	<b>826075</b>
2	Execution cost	18994	19828	18161	21495	<b>78477</b>
3	<b>Total Project Cost</b>	<b>157977</b>	<b>339969</b>	<b>316002</b>	<b>90603</b>	<b>904552</b>
4	Percentage	17	38	35	10	
<b>TO NATIONAL IMPLEMENTING ENTITY</b>						
5	Project Management Cost (NIE)	19125	19125	19125	19125	<b>76500</b>
6	Percentage	25%	25%	25%	25%	
<b>Total Amount Requested</b>		<b>177102</b>	<b>359094</b>	<b>335127</b>	<b>109728</b>	<b>981052</b>

Disbursement Schedule - as per template

Details	Upon Agreement signature	One Year after Project Start	Year 2	Year 3	Total
Scheduled Date	Oct- Nov. 2014	1-Sep-15	1-Sep-16	1-Sep-17	
Project Funds	157977	339969	316002	90603	904552
Implementing Entity Fee	19125	19125	19125	19125	76500
<b>Total</b>	<b>177102</b>	<b>359094</b>	<b>335127</b>	<b>109728</b>	<b>981052</b>

Assumptions for Livestock Management Practices											
#	Assumptions	Unit	Quantity								
1	Rate of 1 Dollar	Rs.	60								
2	Number of Cattle/household (Breed of the cow - Desi)	No.	2								
3	Number of households covered under the project	No.	800								
4	Total number of cattle considered under the project. (Breed of the cow - Desi)	No.	1600								
5	Rate of milk in year-1	\$/kg	0.42								
6	Rate of increase in price of milk year on year	%	10								
7	Milk production per desi breed of cow per annum	Litres	600								
8	Milk production per crossbred breed of cow per annum	Litres	2500								
9	Number of days a cow gives milk	No.	300								
10	Years	1	2	3	4	5	6	7	8	9	10
	Milk price (in \$./kg)	0.42	0.46	0.50	0.55	0.61	0.67	0.74	0.81	0.89	0.98
11	Number of lactations for a desi cow breed	Years	3.5								
12	Number of lactations for a Croos breed of cow	Years	2.5								
13	Inter-calving period for a desi cow	Years	2.5								
14	Inter-calving period for a crossbred cow	Years	1.5								
15	Selling price of one cross bred cow	\$	416.67								
16	Selling price of a bull calf	\$	6.67								
17	Every year during project period (4 years) the number of milk producing cows excepting the year-1	No.	2								
18	Milk Producing Cows in a particular Yea	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10



Unit Cost Details of Livestock Management Practices							
#	Sub-components	Unit	Rate (in \$)	Quantity	Total (in \$)	Remarks	% Contribution
1.1	Breed Improvement	No.	2	4	6.67	Contribution from Project	0.50%
1.2	Deworming	No.	1	8	6.67		0.50%
1.3	Mineral Mixture	No.	2	12	20.00		1.50%
1.4	Vaccination	No.	0	4	0.67		0.05%
1.5	Modification in cattle housing	No.	83	1	83.33		6.25%
1.6	Feed & Fooder	Per day per cattle	3	365	1216.67	Farmer's Contribution in the intervention	91.20%
<b>Total (in \$)</b>					<b>1334</b>	<b>117.33</b>	

**Livestock intervention - Cost-Benefit Analysis for a House**

#	Cost Components	Unit	Rate (in \$)	Year 1		Year 2
				HHs	Amt	HHs
1	Livestock Management Practices*	Family	117.33	100	11733.3	400.0
<b>Total</b>					11733.3	

*\*Livestock intervention includes activities such as:- Deworming, Vaccination & Management practices;*

#	Benefit Components	Year 1		Year 2		Year 3
		Qty	Amt	Qty	Amt	Qty
1	Returns from Milk	1200	500.00	1200.00	550.00	1200.00

#	Benefit to Farmers (in 10 years)	Amount (in \$)
1	Farmer's expense on two cows for 10 years	<b>24333.33</b>
2	Farmer's income from the sale of milk for 10 years	24695.64
3	Income to farmer from the sales of a desi cow	166.67
4	Income to farmer from the sale of a calf bull	6.67
5	Income to a farmer from sale of crossbred cow	416.67
6	Income from Cow Dung	200.40
<b>Total Income to Farmer in 10 years</b>		<b>25486.04</b>
<b>Profit</b>		<b>1152.71</b>

Threshold				
Year 2	Year 3		Year 4	
Amt	HHs	Amt	HHs	Amt
46933.3	200.0	23466.7	100.0	11733.3
46933.3		23466.7		11733.3
Total Project Cost (in 4 years)				<b>93866.7</b>

Year 3	Year 4		Year 5		Year 6		Year 7	
Amt	Qty	Amt	Qty	Amt	Qty	Amt	Qty	Amt
605.00	1200.00	665.50	3100.00	1891.13	5000.00	3355.23	5000.00	3690.75

Year 8		Year 9		Year 10	
Qty	Amt	Qty	Amt	Qty	Amt
5000.00	4059.83	5000.00	4465.81	5000.00	4912.39



Amount US\$

Cost Benefit Analysis for a Polyhouse Establishment for a Household											
		Year 1				Year 2	Year 3	Year 4	Year 5		
<b>Expenditure</b>											
Sr. No.	Particulars	Unit	Quantity	Rate	Total						
1	Poly Sheet 120 GSM, UV Stabilized	Roll	1	117	117	No expenditure on Recurring Cost for this period					
2	Bamboo 16'L, thin (2 <sup>nd</sup> grade)	No.	25	2	46						
3	Bamboo 16'L, thick (1 <sup>st</sup> grade)	No.	15	3	38						
4	Shed Net 50% (30'X3' & 20' X 6')	Roll	1	8	8						
5	Black Poly	Meter	10	0.08	1						
6	Nail (2",3", 4" & 5")	Kg	0.75	1	1						
7	Labour Cost	No.	1	37	37						
8	GI wire (65 fit) and Plastic (90 fit)	No.	1	3	3						
9	Transportation Cost	No.	1	17	17						
Irrigation tank											
10	Bricks	No.	600	0.15	90						
11	Cement	Bag	5	6	31						
12	Sand	Bag	25	1	21						
14	Concrete	Bag	5	2	10						
15	Massion	Days	4	7	27						
16	Labour for tank	Days	8	4	33						
17	Vegetable Seed	gm	10	1	8		8.3	8	8	8	
					487	8	8	8	8	521	
<b>Benefits</b>											
1	Crop of tomato ( Total 200 plants were planted in 54 Sqm poly house, 1 plant will give average 5kg tomato and minimum rate is Rs. 15 per Kg at farmers door step)	Kg	1,000	0.25	250	250	250	250	250	1250	
<b>Net profit for the period</b>										<b>729</b>	
<b>Average age of polyhouse is 5 years and tank is 15 years</b>											

**Cost Benefit Details for a establishing a Fruit Plantation for a Household**

#	PARTICULARS	Year-01- Establishment				Year-02		Year-03		Year 04		Total
		Unit	Qty	Rate	Value	Qty	Value	Qty	Value	Qty	Value	
<b>A</b>	<b>Material (Including Transport)</b>											
1	Grafts	No	50	0.67	33	10	7		-		-	40
5	Plant nutrition & after care	Lum			3		13		17		17	50
6	Neem Cake (Pit Filling)	Kg	50	0.25	13							13
7	SSP /Rock Phosphate (Pit Filling)	Kg	25	0.25	6							6
8	Insecticide @100 g/pit (Pit Filling)	Kg	5	0.67	3							3
9	Plant protection	Lum sum			3		5		6		7	20
	<b>Total (A) - Material</b>				<b>62</b>		<b>25</b>		<b>23</b>		<b>23</b>	<b>133</b>
<b>B</b>	<b>Labour</b>											
1	Lay out (Supporting field worker)	No.	1	2	2	-	-	-	-	-	-	2
2	Digging & Filling pits ( 1x1x 1m)	No.	50	1	33	-	-	-	-	-	-	33
	<b>Total (B)-Labour Cost</b>		-	-	<b>35</b>	-	-	-	-	-	-	<b>35</b>
	<b>Total Cost Per unit of plantation</b>		-	-	<b>97</b>	-	<b>25</b>	-	<b>23</b>	-	<b>23</b>	<b>168</b>

**Prevailing Market & Farm Gate Price ( Rs)**

Details	Unit	Price \$	No. of Plants
Peach	kg	0.42	20
Walnut	kg	1.33	15
Malta	Kg	0.17	10
Lemon	kg	0.33	5

**Expected Yield**

Age of tree in years	4	5	6	7	8	9	10	11	12	13	14	15
Peach (Exp. Yield Kg/ tree)	5	8	10	15	15	15	15	20	20	20	20	20
Walnut (Exp. Yield Kg/ tree)	1	2	3	4	5	8	10	12	15	15	15	15
Malta (Exp. Yield Kg/ tree)	8	10	12	12	15	15	20	20	20	20	20	20
Lemon (Exp. Yield Kg/ tree)	0	0	5	8	10	12	15	25	30	30	30	30

**Expected Income From Wadi**

Age of tree in years	4	5	6	7	8	9	10	11	12	13	14	15
<b>Peach</b>												
Exp. Income Rs/ tree	2	3	4	6.25	6	6	6.25	8	8	8	8	8

Exp. Income Rs for all trees	<b>42</b>	<b>67</b>	<b>83</b>	<b>125</b>	<b>125</b>	<b>125</b>	<b>125</b>	<b>167</b>	<b>167</b>	<b>167</b>	<b>167</b>	<b>167</b>
<b>Walnut</b>												
Exp. Income Rs/ tree	<b>1</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>7</b>	<b>11</b>	<b>13</b>	<b>16</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>
Exp. Income Rs for all trees	20	40	60	80	100	160	200	240	300	300	300	300
<b>Malta</b>												
Exp. Income Rs/ tree	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>
Exp. Income Rs for all trees	27	33	40	40	50	50	67	67	67	67	67	67
<b>Lemon</b>												
Exp. Income Rs/ tree	<b>0</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>8</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>
Exp. Income Rs for all trees	0	0	8	13	17	20	25	42	50	50	50	50
<b>Expected Income From Wadi (in \$)</b>	<b>88</b>	<b>140</b>	<b>192</b>	<b>258</b>	<b>292</b>	<b>355</b>	<b>417</b>	<b>515</b>	<b>583</b>	<b>583</b>	<b>583</b>	<b>583</b>

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