

Detailed Project Report

For funding under National Adaptation Fund For Climate Change

DPR : SUSTAINABLE LIVELIHOODS OF
AGRICULTURE-DEPENDENT RURAL COMMUNITIES
IN DROUGHT PRONE DISTRICT OF HIMACHAL
PRADESH THROUGH CLIMATE SMART SOLUTIONS

Government of Himachal
Pradesh

The following proposal development process was undertaken by Climate Change Cell, DEST, HP with assistance from CTRAN Consulting

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Project Concept Note

Title of Project/Programme:	SUSTAINABLE LIVELIHOODS OF AGRICULTURE-DEPENDENT RURAL COMMUNITIES IN DROUGHT PRONE DISTRICT OF HIMACHAL PRADESH THROUGH CLIMATE SMART SOLUTIONS
Project/Programme Objective/s:	To reduce the climate related vulnerability and improve the adaptive capacity of rural small and marginal farmers including rural women in the State of Himachal Pradesh by introducing a combination of Climate Smart Farming Technologies along with required social engineering and capacity building processes leading to improved food security and enhanced livelihood options to enhance resilience.
Project/ Programme Sector:	Agriculture
Name of Executing Entity/ies/Department:	Department of Environment, Science & Technology, Government of Himachal Pradesh as executing entity Project Implementation Agency (ies) Department of Agriculture & Horticulture Department of Forest & Environment
Beneficiaries:	Poor small and marginal farmers in drought affected areas of Sirmour district
Project Duration: in Years	5
Start Date:	January 2016
End Date:	December 2020
Amount of Financing Requested (Rs.):	20 crore
Project Location: State: District:	HP Sirmour

Contact Details of Nodal Officer of the Executing Entity/ies/:	A.K. Lal Director, Department of Environment, Science & Technology, Govt. of Himachal Pradesh, Paryavaran Bhawan, Near US Club, Shimla-171001 Himachal Pradesh
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1. PROJECT BACKGROUND

1.1 Project / Programme Background and Context:

Himachal Pradesh is predominately an agricultural State where Agriculture provides direct employment to about 71 percent of the total population. The Agriculture sector contributes nearly 30 percent of the total state domestic product (GDP).

Himachal Pradesh has a high reliance on agriculture which has a direct bearing from climate variations. Climate change poses additional challenges as higher temperatures increase the need for water, irrigation and the risk of warm stress on crops. Changing weather patterns and rising temperatures will leave the farmers of the State vulnerable to crop losses on one hand and excessive precipitation also destroy the crops on other hand. Climate change will also negatively affect the water resources with increased water scarcity in rural stations. The increase in water demands will increase the vulnerability in the State.

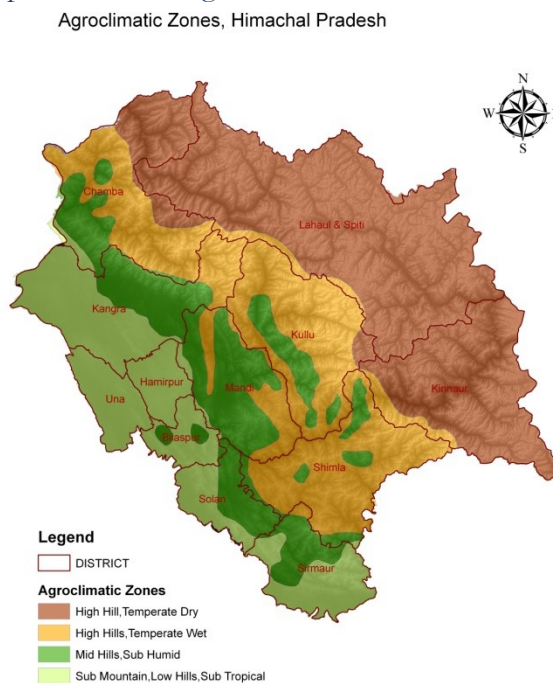


Figure 1 Agroclimatic Zone in Himachal Pradesh

Entire Himachal Pradesh has been divided into four agro-climatic zones viz. i) Sub-tropical, Sub-mountain, Low Rural ii) Sub-tropical, Sub-humid, Mid-rural iii) Wet-Temperate High Rurals and; iv) Dry Temperate High Rurals & Cold Desert. With increasing temperatures, it is anticipated that there may be an all-round decrease in horticultural- agricultural production in the region in long-term, and the line of production may shift to higher altitudes. Apple production in the Himachal Pradesh region has decreased between 1982 and 2005 as the increase in maximum temperature has led to a reduction in total cumulative hours in the region-a decline of more than 9.1 units per year in last 23 years has taken place. Temperature Humidity Index (THI) is projected to rise in many parts of State during March–September with a maximum rise during April–July in 2030s with respect to 1970s will lead to discomfort of the livestock productivity and therefore will have negative impact on livestock productivity.

a. *Problem context*

The Sirmour district of Himachal Pradesh which has second highest level of rural population growth in the decade is experiencing moisture stress and with negative livelihood consequence for the agriculture and horticulture based livelihood. The recent drought history of the district indicates that most of the teshsils of this district were drought affected in 2002 and 2009. The following climatic, socio-economic and cultural pattern have pushed the people (the small and marginal land holders) of the district to margin: (a) deficit and erratic rainfall (b) high dependence on monsoon and least diversification of crops and livelihood options (c) lack of rain water harvesting culture (d) lack of reservoirs/check dams for conservation of water, high poverty, traditional practices (compatible for earlier climatic scenario and now not relevant).

The proposed project tries to build the adaptive capacity of small and marginal farmers to adapt to drought and related impacts and enhance resilience through a climate smart approach. This will enable mainstream climate change agenda in the district agricultural planning process. The proposed solutions will also take in to account the climate vulnerability and adaptive capacity that is not usually considered in the regular planning context.

b. *Linkage with SAPCC and NAPCC*

The State Strategy & Action Plan on Climate Change (SAPCC) has linkages with the all eight National Missions including National Mission for Sustainable Agriculture with the following proposed actions under Agriculture sector:

- Perform an analysis of the vulnerability and adaptation potential of the agricultural sector and Himachal Pradesh's water and soil resources. [Sirmour has high vulnerability score]
- Assess and summarize national policies and strategies for adaptation in the agricultural sector and water and soil resources. [As per the district contingency plan and NICRA guidance]
- Conduct a socioeconomic assessment of the impact of climate change on the agricultural sector. [basic secondary assessment shows marginalization and migration]
- Perform studies to identify climate change adaptation measures and projects in Himachal Pradesh Agricultural sector, especially in rural agricultural areas with small family farms. [budgeted]
- Develop a system to manage agro-climatic risks and agricultural emergencies. [proposed]
- Implement a Genetic Improvement Program to develop new plant varieties that can be adapted for new climate change scenarios.

- Foster and promote the efficient use of water in agriculture. [proposed component]
- Reduce use of chemicals for agri-horti productions. [soil health based nutrition proposed]
- Increase the State’s irrigated surface area by 50% through a new watershed -dam construction program. [component complements state’s planned project for the district]
- Expand irrigation and water policies to include small reservoirs, artificial groundwater replenishment, relining of canals. [component complements state’s planned project for the district]
- To promote organic farming in the State.

This project has significant linkage with various components National Mission on Sustainable agriculture and Mission Activities in section 10.7 of the State Action Plan on Climate Change.

c. Climate Analysis and vulnerability Analysis

The climate change impact on the agriculture sector in the state necessitates to take several adaptation measures in different climate scenarios.

Adverse Effects due to Climate Change

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

Specific Changes	Adverse Effects
<p>Changed precipitation conditions</p> <p>Winter precipitation in the form of snow fall has declined over the years Warmer and shorter winters with less snowfall. 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"> – Decrease in water availability in the streams and rivers in summer due to decreased snow fall. – Increased run-off, less infiltration and loss of surface soil on steeper mountain slopes which would accelerate the rates of siltation and flash floods. – Increased run-off coupled with removal of forest cover, have already started showing signs of depleted rural aquifer regime. – Overall decreased water availability. – Streams and springs that used to act as the lifeline of the mountain communities by providing much needed water for drinking and agriculture during dry spells, are drying up. – Decline in soil moisture hampering crop cultivation
<p>Extreme weather events</p>	<ul style="list-style-type: none"> – Intense rainfall coupled with deforestation, sloping terrain and loose soil leading to soil erosion and loss of fertile soil, thereby making agriculture difficult. – Land degradation and loosening of soil.
<p>Sudden events leading to total loss of crops and property</p>	<ul style="list-style-type: none"> – Sudden weather events like hail storm, cloud burst and Increased instances of landslides compared to the past.
<p>Land and soil degradation due to intense rains Temperature variations</p>	<ul style="list-style-type: none"> – Increase in human-animal conflicts. – Increased pressure on forests resulting into decline of biodiversity. – Proliferation of invasive species. – Increased requirement for feed supplements for livestock. – Fodder scarcity and resultant drudgery for women.

Vulnerability Context

The choice of location is driven by the high climate vulnerability of the district as depicted in the State Action Plan on climate change. The following figures shows the high exposure and high level of climate variability in Sirmour both in the current and future scenario.

The figure 2 below shows the vulnerability of the district to be high.



Figure 2 Climate Vulnerability of Sirmour District

Source: State Action Plan on Climate Change, HP

The analysis of results reveals that the low lying areas of Himachal Pradesh are highly exposed to climate change. The areas falling in Hamirpur, Sirmour, Solan and Una districts are highly exposed whereas, Kangra, Chamba and Mandi districts are also exposed but comparatively less than the above districts. Likewise areas falling in and Shimla and Kullu districts are also moderately exposed to climate change.

High exposure to variable precipitation and high temperature is the urgency that requires smart approach for adaptation. This approach will be tied up with short term adaptive capacity enhancement and long term infrastructure planning. This project will also be tied to a transformational project the state is planning in the water sector with high environmental eco-system co-benefit for the region.

The climate variability pattern for the proposed district has been presented below:

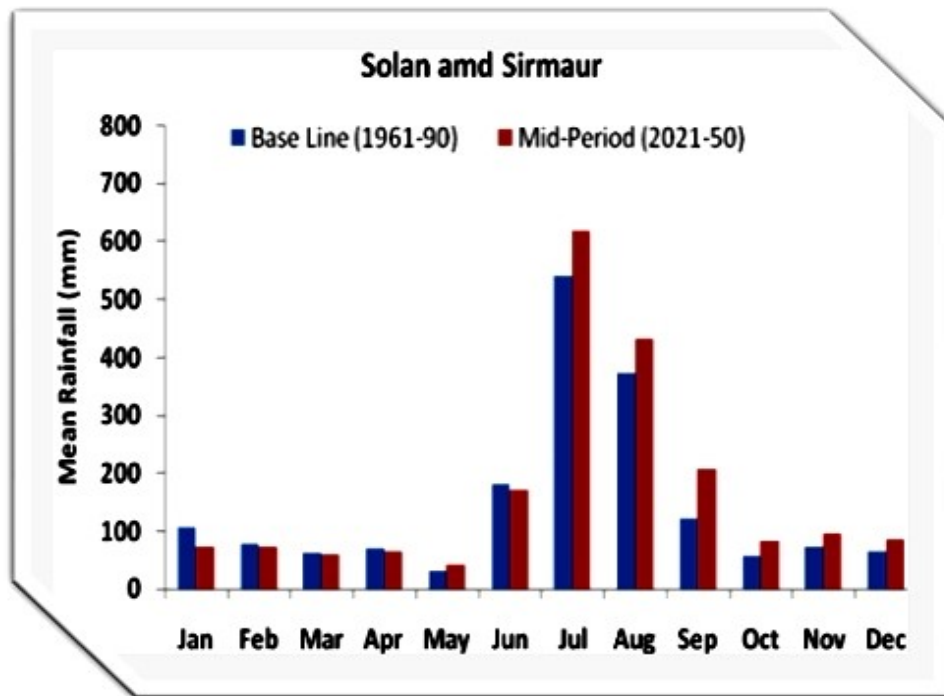


Figure 3 Variability in precipitation

Source: Verma, et.al.

The above figure suggests the area will be negatively impacted from January to June except May. From July onward till December total amount of rainfall, month-wise, will increase. The region is known for off-season vegetable crops which is the backbone of farm communities and also vegetable & fruit traders. The likely decrease in rainfall during the winter period will hamper the economy of farmers, the most.

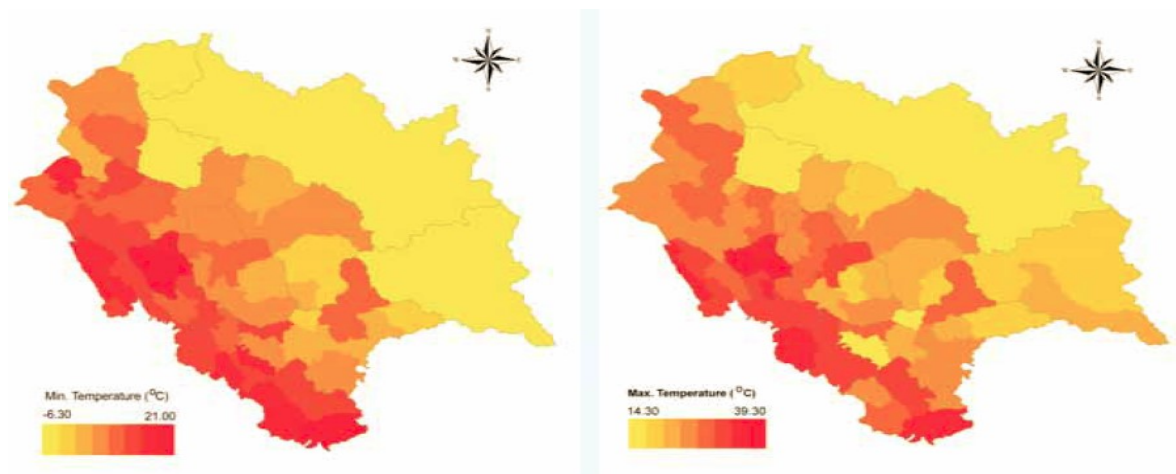


Figure 4 Temperature variability

The above figure shows the Sirmour region to have experienced high variability in both mean annual temperature and high variability in maximum annual temperature.

Current rainfall trend

The rainfall in this district in last two decades have shown some wild swings. While the variability of rainfall has not been much when it comes to total amount of precipitation. The average rainfall from South-West Monsoon in the district was about 1215.1 mm (June to September) and North-East Monsoon was 32.1 mm (October-Dec). Some examples of below normal rainfall in pre monsoon period can be seen 1992-93, 1993-94, 1995-96, 2000-01, 2001-02 where the pre-monsoon rainfall was more than 100 times of post-monsoon precipitation except for 1997-98 and 1998-99 where it was the opposite. The rainfall is bimodal in Sirmour and the second peak occurs during winter due to western disturbances. In order to maintain the uniformity over the states the split of the same is given as NE Monsoon, winter and summer rain.

This has played havoc in the crop planning and makes the district drought prone and also winter fruit crops on the upper hills vulnerable to disease and pest. It requires smart approaches to arrest run off, conserve moisture and adjust sowing time to adapt to the risks associated with it.

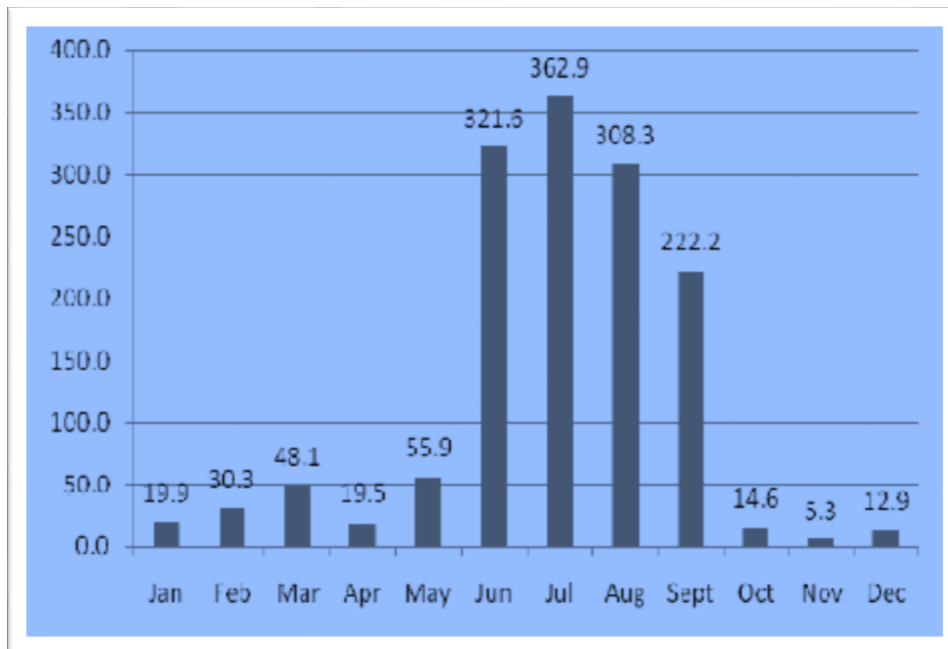


Figure 5 Mean annual rainfall past two decades, Sirmour, HP

Current Temperature Trend

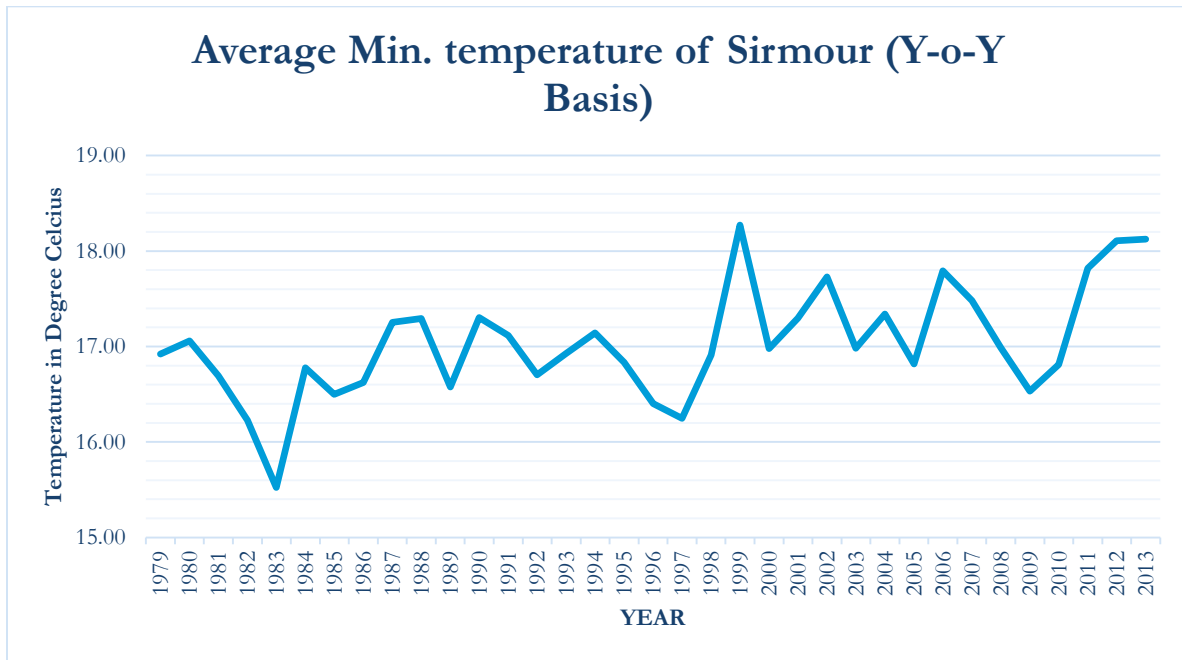


Figure 6 Average minimum temperature Sirmour

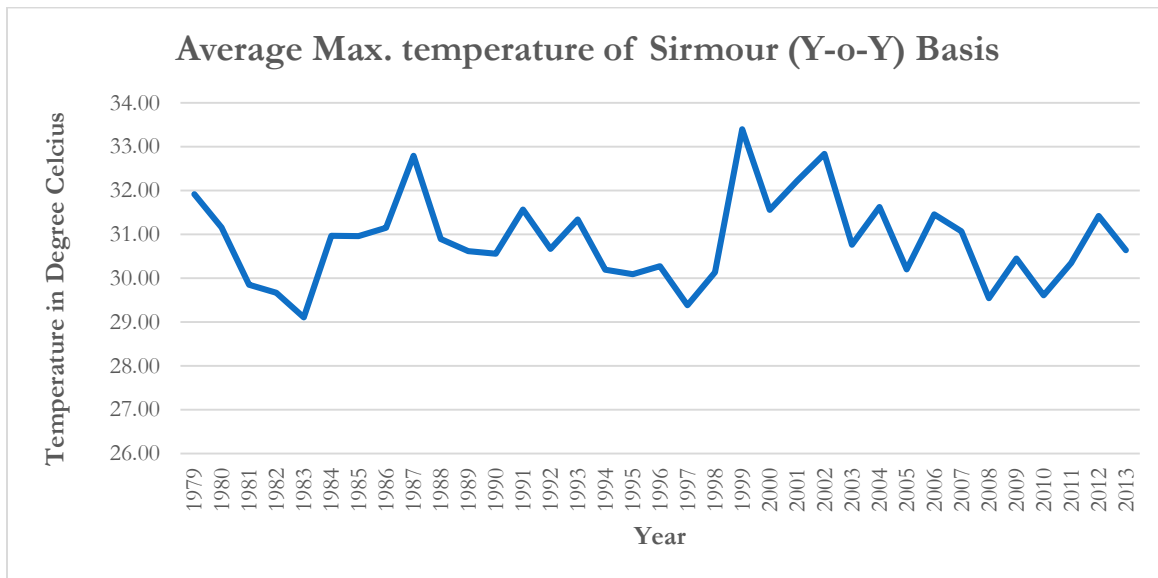


Figure 7 Average max temperature Sirmour

While the above shows variability in both minimum and maximum, the spikes shows the risks.

The district level and block level vulnerability are very high in this district. This has been given in the table below:

Blocks	Exposure	Sensitivity	Adaptive Capacity	Combined Vulnerability
Nahan	0.72	0.23	0.56	0.83
Pachad	0.69	0.27	0.51	0.91
Rajgarh	0.70	0.27	0.53	0.89
Sangrah	0.68	0.29	0.48	0.99
Paonta Sahib	0.78	0.25	0.58	0.94
Shilai	0.77	0.25	0.54	0.80

Figure 8 Vulnerable blocks

Source: State Action Plan on Climate Change

The analysis shows the Sangrah block to be the most vulnerable.

d. Project Location

As per the combined vulnerability data, **Sangrah block and Rajgarh block has been identified as most vulnerable area in Sirmour district.** This project aims to construct the water harvesting structure in the said block and improve the agricultural activity in the area with horticultural and agricultural interventions. The project also aims to form a FPO for improving the economic condition of the small and marginal farmer in the said drought prone area.

e. Socio-economic and demographic context

The Sirmour district is one of the twelve administrative districts of Himachal Pradesh. District Sirmour is located in outer Himalayas which is commonly known as Shivalik range having a geographical area of 2825 sq. km. The district has hilly and mountainous topography with intermountain valleys, the most prominent being the Paonta valley. The district has its headquarter at Nahan and lies between North latitude 31°01'00" to 30°22'00" and East longitude 77°01'00" to 77°50'00". There are 228 panchayats, 968 villages and 3 towns in the district. The local inhabitants mainly depend on agriculture for their subsistence and adopt several traditional practices conducive for farming in sloping terrains. Large and small scale industrial units however have come up in Paonta valley.

The demographic details of the district has been given in the figure below.

Description	Rural	Urban
Population (%)	89.20 %	10.80 %
Total Population	472,926	57,238
Male Population	246,599	30,202
Female Population	226,327	27,036
Sex Ratio	918	895
Child Sex Ratio (0-6)	935	888
Child Population (0-6)	61,931	6,027
Male Child(0-6)	32,010	3,192
Female Child(0-6)	29,921	2,835
Child Percentage (0-6)	13.10 %	10.53 %
Male Child Percentage	12.98 %	10.57 %
Female Child Percentage	13.22 %	10.49 %
Literates	322,787	46,864
Male Literates	184,197	25,411
Female Literates	138,590	21,453
Average Literacy	78.54 %	91.51 %
Male Literacy	85.84 %	94.08 %
Female Literacy	70.56 %	88.65 %

Figure 9 Demographic details of Sirmour

The district is dominated by marginal farmers and that situation is not conducive for economies of scale and enhances the vulnerability.

Sl.No.	Category	Individual Holdings		Joint Holdings		Sub-Total(Individual+Joint)		Institutional Holdings		Total Holdings	
		Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)
1	2	3	4	5	6	7	8	9	10	11	12
1	MARGINAL	24966	11344	0	0	24966	11344	17	7	24983	11350
2	SMALL	10652	15257	0	0	10652	15257	14	21	10666	15277
3	SEMIMEDIUM	8570	23986	0	0	8570	23986	13	39	8583	24025
4	MEDIUM	5404	32368	0	0	5404	32368	15	105	5419	32473
5	LARGE	1047	14899	0	0	1047	14899	23	1197	1070	16096
6	ALL CLASSES	50639	97853	0	0	50639	97853	82	1367	50721	99221

Figure 10 Operational land holdings in Sirmour, 2011

Amongst the social groups, further marginalisation is seen amongst SC and STs as given in the figure below

SI No	Category	SC (Total Holdings)		ST (Total Holdings)	
		Number	Area	Number	Area
1	2	3	4	5	6
1	MARGINAL	10292	4718	302	167
2	SMALL	3106	4365	173	248
3	SEMIMEDIUM	1599	4306	122	340
4	MEDIUM	478	2683	77	470
5	LARGE	34	456	7	94
6	ALL CLASSES	15509	16528	681	1319

Figure 11 Land holding of SC-STs, Sirmour, 2011

Therefore, the project is focussed on rural communities. One of the 7 people in this district are below poverty line.

1.2 Project / Programme Objectives:

The project aims to improve the adaptive capacity of rural small and marginal farmers including rural women in the Sirmour district in State of Himachal Pradesh by introducing a combination of Climate Smart Farming Technologies along with required social engineering and capacity building processes.

These packages of activities are expected to improve /sustain the livelihoods of vulnerable rural communities, show ways of diversification of income while also initiating the process of natural resource management in the region.

The project will deliver this objective and its various components will help in achieving following outcomes as envisaged in NAFCC:

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

1.3 Details of Project/ Programme Executing Entity:

a. *Name, Registration No. & Date, Registered Address, Project Office Address (for the proposed project)*

Name & Registered Address:

Director, Department of Environment, Science
& Technology, Govt. of Himachal Pradesh,
Paryavaran Bhawan, Near US Club, Shimla-171001
Himachal Pradesh
e-mail: akkl87@gmail.com
Mobile: +91-94180-20350

Registration No. & Date:

Department of Government of Himachal Pradesh establish in the year 2007.

The Programme Nodal Department shall be Department of Environment, Science & Technology, However, the stakeholder such as Department of Agriculture, Water and Forests shall be the implementing agencies for the project.

The project will have project implementing agencies (PIAs) at the district level from agriculture department, horticulture department and CBOs. Programme executing entity will have a mechanism of signing MOU with the PIAs.

b. Available technical manpower for the proposed project implementation:

The following manpower is currently available with the Nodal Office i.e. DEST.

- Principal Scientific Officer – I
- MIS Officer –I
- Human Habitat Officer – I
- Research Assistant – I

However, the project executing entity shall be the coordinating body to interface with Project Implementing Agencies at the district level (from stake holding departments). The relevant entities will have requisite technical manpower. The profile of such manpower will be outlined during the signing of the MoUs.

In addition the project executing entity will take help from experts and agencies for some of the activities. The cell will also have a small project management unit staffed with at least two specialists and a financial management professional.

c. Three largest Climate Change Adaptation Projects handled (if already implemented)

The following projects are handled by Forest Department, Govt. of Himachal Pradesh, However DEST was involved as one of the stakeholder at formulation of project to implementation.

Project	Objectives & geo. coverage	Amount Sanctioned	Funding Agency	Geographical Coverage	Implementation Period & Outcome
Mid Himalayan Watershed Project – I & II	The overall goal of the project is to reverse the process of degradation of the natural resource base and improve the productive potential of natural resources and incomes of the rural households in	Total Project outlay: Rs. 365.00 Crs.	The World Bank	First, it expands upwards from the Shivaliks to the Mid-Hills, a region which covers about one-third of the State and over half of the cultivated land. Second, it entrust responsibility for most Project implementation	10 districts of Himachal Pradesh w.e.f. 1st October, 2005. It aims to reverse the process of degradation of the natural resource base and improve the productive potential of natural resources and incomes of by reaching out

Project	Objectives & geo. coverage	Amount Sanctioned	Funding Agency	Geographical Coverage	Implementation Period & Outcome
	<p>the project area in Himachal Pradesh (using the Community-driven Development (CDD) approach). A secondary objective is to support policy and institutional development in the state to harmonize watershed development projects and programs across the state in accordance with best practices.</p>			<p>with the local governments (Gram Panchayats) rather than with village development committees, which were created for the purpose of IWDP implementation.</p>	<p>to around 25000 target poor families in the project area.</p>
<p>HP Bio-carbon Sub-Project</p>	<p>The twin development objectives of the proposed project include: 1 Improvement of the productive potential of degraded lands or watershed catchment areas and enhance biomass production and carbon stocks in degraded lands and 2 Improvement of livelihoods and incomes of rural households</p>	<p>Indicative carbon revenue: Rs. 3000 to 4000/ha at US\$ 4/tonne of carbon besides reduction of GHG globally</p>	<p>The World Bank</p>	<p>-do-</p>	<p>Additional top up of carbon revenue to benefit the forest conservation institutions at the community level</p>

Project	Objectives & geo. coverage	Amount Sanctioned	Funding Agency	Geographical Coverage	Implementation Period & Outcome
	residing in selected watersheds using socially inclusive, institutionally and environmentally sustainable approaches.				

d. Three largest community based NRM based projects handled

Mid Himalayan Watershed Project

e. Three largest Climate Change Adaptation / NRM projects of State / Central Government

As above

f. Comment of availability of suitable infrastructure for implementation proposed projects (vehicles, computers, required software/ tools, etc.)

The entity has a state of the art geomatics cell, requisite modelling tools and software. There will be a requirement of vehicle for project related mobility. The additional infrastructure at the district level will be determined in consultation with PIAs.

g. Whether Executing Entity (EE) was blacklisted, barred from implementation of projects, faced any charges / legal cases related to mismanagement of project and funds. (please list any such incidences and reasons):

NO

1.4 Project / Programme Components and Financing:

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (Rs Crore)
1. Drought related vulnerability assessment at the district level	Location based targeting	Improved capacity of small and marginal farmers (including women) and local governments to respond to drought and soil degradation vulnerability.	0.74
2. Climate smart package of practices for the district	Enhanced crop diversification and crop production	Enhanced food security through innovative climate smart approach	9.08
3. Development of Farmer Producer Organisation Network	At least 1 no of farmer producer organisations promoted	Farmer organizations and networks developed and strengthened	0.5 (to leverage additional fund from RKVY)
4. Capacity Building on climate smart knowledge base and lesson learning	30880 no of farmers, officials trained on drought adaption and best practices documented	Small and marginal farmers, with the support of local authorities, enhance their knowledge of climate smart approaches practices	6.17 (5 crore for community capacity building and 1.17 for lesson learning and knowledge products)
5. Inclusion risk transfer instruments	20% covered under weather insurance and financial inclusion programmes	Risk Management practices adopted	1.37 (for pilot scale risk transfer products) leverage from banks
6. Project/Programme Execution cost			1.55 (including formulation cost of R s 10 lakh and third party monitoring)
7. Total Project/Programme Cost			19.41
8. Project/Programme Cycle Management Fee charged by the Implementing Entity			0.58
Amount of Financing Requested			19.99 (rounded 20.0)

1.5 Projected Calendar:

Milestones	Expected Dates
Start of Project/Programme Implementation	January 2016
Mid-term Review (if planned)	August 2018
Project/Programme Closing	December 2020
Terminal Evaluation	August 2021

2. Project / programme Justification

a. Component-wise details and justification of the project components

I. Business-as-usual development for the targeted sector?

The key issues that necessitates some change in existing crop adaptation (from a business-as-usual) to a changed adaptation strategy in the district have been detailed out below:

Water stress in Sirmour

It is usually believed Himachal Pradesh to be water rich. There were comparatively few incidents of drought during 1990s, however in terms of area affected per year by drought, Himachal Pradesh (23.7%) was the third most affected state after Saurashtra & Kutch (37.5%) and East Rajasthan (29%) and within Himachal, Chamba was the most affected district (Guhathakurta, 2003). In this decade amongst the districts Sirmaur was the worst hit.

Often the approach followed in agriculture planning either reactive ending up with declaration of an entire zone drought prone or resorting to waiver of loans extended earlier. Many times it attempts a short-range contingency planning.

Current cropping pattern of Sirmaur and issue of soil degradation:

The district comes under Sub-mountain, low hills sub-tropical agro-climatic region. Its main kharif season cropping pattern is Maize and paddy in kharif, wheat, barley in Rabi as food grains. Potato, peas, tomatoes, Onions and garlics are major vegetables and spices.

The current cropping pattern is as follows:

Cropping pattern	Risks associated with climate variability	Possible change envisaged; varietal and agronomic measures
Maize-wheat	(system unchanged) Normal varieties of maize may not be highly impacted Wheat variety – PBW 502	Some varieties which are not sensitive to sowing time have been suggested; gap filling sowing and intercropping as agronomic measures
Paddy-Wheat	(system unchanged) Wheat variety- PBW 502 and HPW211, HPW236	SRI method for paddy Gap fill with transplanted seedlings raised from community nurseries.

Other prevailing combinations are Maize-Toria-Wheat (some changes have been proposed).

Maize –Mash-Barley (adaptive varieties have been proposed).

Maiz-Mash-garlic/peas (adaptive varieties have been proposed)

Ginger can be tried with organic mulching as adaptive measure in the ginger belt of Sirmour.

The current yield patterns of major crops have been given in the table below:

Name of crop	Kharif		Rabi		Summer		Total	
	Production ('000 MT)	Productivity (kg/ha)	Production ('000 MT)	Productivity (kg/ha)	Production ('000 MT)	Productivity (kg/ha)	Production ('000 MT)	Productivity (kg/ha)
Maize	53.6	2327	-	-	-	-	53.6	2327
Rice	5.2	1001	-	-	-	-	5.2	1001
Wheat	-	-	34.2	1346	-	-	34.0	1346
Barley	-	-	3.7	1589	-	-	3.7	1589
Chickpea	-	-	0.1	1076	-	-	0.1	1076
Blackgram	0.5	380	-	-	-	-	0.5	380
Lentil	-	-	0.01	526	-	-	0.01	526
Oil seeds								
Toria	0.4	531	-	-	-	-	0.4	531
Sesame	0.06	471	-	-	-	-	0.06	471
Other Temperate fruits								
Mango	2.09	837	-	-	-	-	2.09	837
Peach	3.6	1224	-	-	-	-	3.6	1224

More than 75 per cent of the geographical area of the district is suffering from one or other soil degradation problem. The main degradation problems observed was water erosion including topsoil loss and terrain deformation, flooding and acidity. Therefore, major challenge is to reduce these problems up to the tolerance limits for the sustainable agricultural development of the district. Most of the vegetable growing areas are showing the deficiency of micronutrients particularly zinc and boron. Rice growing areas in lower belt are also experiencing the deficiency of zinc. In addition the community is not aware about advance crop-water management techniques and suitable cultivars to be taken up in moisture stress conditions.

The district has been deficient in moisture. In the state as a whole as per advance estimates in Economic Survey on Area, Production and Yield of crops during Kharif 2014 season, against the production target of 8.91 lakh MT of food grains, the expected production would be 8.57 lakh MT. Rabi Sowing season normally starts in October and November. There was deficient rainfall during

sowing season due to this rabi crop sowing has been affected to some extent for want of proper soil moisture. There were some rains in the 2nd fortnight of December, 2014, but these were neither adequate nor well spread. This kind of pattern is most visible in this district leading to moisture stress and resultant drought like condition.

The department has put up an ambitious plan of 11.3% annual growth in agriculture, 23.3% in livestock and 4.4% in fishery. While the stone fruits and apple would have moderate growth very high growth targets have been proposed for strawberry (186%). This crop is moisture sensitive. Therefore management of pulses, barley (in Rabi), Onion and beans, enhancement of strawberry area and fodder cultivation would be the focus of the district administration.

II. Specific adaptation activities to be implemented to reduce the climate change vulnerability compared to the business-as-usual situation

Specific adaptation activities include the following:

C1.1 Community based vulnerability analysis (this will take into account exposure, sensitivity and adaptive capacity and would be different from conventional planning)

C1.2 Identification of long list of beneficiaries to be covered including a screening criteria (based on a social mapping exercise with the most vulnerable household getting the highest score: it will link only soil and moisture criteria and not caste groupings)

C2.1 Inter-cropping of rainfed crops in paddy areas (for varieties of peas)

C2.2 SRI Cultivation in late but excess moisture condition (when excess and deficit moisture simulates alternate drying and wetting)

C2.3 Introduction of legumes and other green fodders (bald areas earmarked for green fodder)

C2.4 Early on-setting cultivars of fruits (some stone fruits and strawberry, apple is stabilised)

C2.5 Moisture Management for vegetables (drip and sprinkler irrigation)

C2.6 Small ponds at community level (using the FPOs and PRIs to agree on water use)

C2.7 Small run-off management measures (e.g. check dams, contour bonds)

C2.8 Integrated pest and nutrient management including organic cultivation wherever suitable

C3.1 Formation of FIGs around clusters and crops (this is to aggregate individual beneficiaries and also institutionally)

C3.2 Federating FIGs in to FPOs (helping in institutional strengthening working with input suppliers and pilots on weather insurance with insurance companies)

C3.3 Business Planning (to take into account the sowing and harvesting time and price model)

C3.4 Registration of FPOs (to enable them to access equity and grant fund as well as enhanced liquidity for aggregation, trading, value addition, etc.)

C3.5 Input and output market Linkage

C4.1 Training module development on climate smart approaches

C4.2 Training of trainers and progressive farmers

C4.3 Preparation of policy brief and audio-visual

C5.1 Linkages to existing financial inclusion programmes

C5.2 Piloting weather based insurance

C6.1 Project Institutional arrangement

C6.2 Concurrent monitoring and coordination with NiE and MoEFCC

III. Please justify with regards to components as on the concrete adaptation activities of the project, and how these activities contribute to climate resilience

The activities related to climate smart solutions for drought management, vulnerability analysis based targeting and planning and risk transfer instruments are concrete adaptation. Vulnerability assessment ensure precise targeting for the technical solutions as well measures to enhance adaptive capacity through sustainable livelihood oriented interventions. This will enhance resilience.

C1. *Vulnerability Analysis* based targeting is a new approach to mainstream climate related linkage and this can be used as a planning tool.

This will include bio-physical vulnerability (reducing effect of moisture stress through smart intervention)

This will include socio-economic vulnerability reduction through building capacity of farmer producer organisation and introduction of risk transfer instruments like weather insurance. The environmental vulnerability reduction (especially water quality improvement to reduce the disease burden mostly caused by enteropathogens)

C2. *Climate Smart solutions* for Sirmour follows the NICRA guidance for the state.

- Water harvesting structure in areas of derelict stream to cover the most vulnerable blocks like Sangrah in the district. Supporting polylined farm ponds in select cases. Poly lining in hilly areas arrests the huge percolation loss and is an important climate proofing measure.

Sr.No.	Name of Block	Name of Project	Approximate Cost in lacs	Remarks
1.	Sangrah	C/O Lift Irrigation Scheme for multi villages in Gram Panchayat Rajana Sangrah Block	630.90	In case 100% funds are not provided then efforts will be made to arrange 50% funds under state programme funds
2.	Rajgarh	Providing irrigation facility through development & construction of 20Nos Water Bodies in various Gram Panchayats in Rajgarh Block	810 lacs	In case 100% funds are not provided then efforts will be made to arrange 50% funds under state programme funds
3.	Sangrah	Providing irrigation facility through development & construction of 20Nos Water Bodies in various Gram Panchayats in Sangrah Block	810 lacs	In case 100% funds are not provided then efforts will be made to arrange 50% funds under state programme funds

- Drip and sprinkler along with lift points in stressed commands

The details of the lift points with specifications have been given below:

LIS for Multi village Rajana Maina & Bounal in Tehsil Sangrah Distt. Sirmour.

Sr. No	Name of Component	
1	Source	Nalla/Khala
2	Discharge of source	196 lps
3	CCA	256.26 Hec.
4	Rising Main Ist stage	3330 mtrs. 400mm dia MSERW Pipe
	Rising Main II nd stage	2280 Mtrs. 350mm dia MSERW Pipe
5	Pumping Machinery I stage	2X300 HP
	Pumping Machinery II nd stage	2X200 HP
6	Construction of outlets	33 Nos.
7	Constructions of sumpwells	2 Nos. 160720 ltrs. And 270580 Ltrs. Cap.
8	Distribution system	
	160mm dia	540 mtrs HDPE Pipe
	110mm dia	390 mtrs HDPE Pipe
	90mm dia	3420 mtrs HDPE Pipe
	75mm dia	360 mtrs HDPE Pipe
	63mm dia	11640 mtrs HDPE Pipe

9	SOP	
10	Estimated cost	630.93 lac.

- (2) The Krishi Vikas Samitis (KVS) eqy of FPOs have been registered by the villagers.
(3) The scheme will maintain/run by the KVS.

Providing irrigation facilities through developing and constructing water bodies in various Gram Panchayats of IPH Sub-Divisions Sangrah & Nohradhar Development block. Sangrah

Sr. No	Description of item	Qty.
1	C/O Head Weir	20.00
2	C/O Run off and spillover channels	20.00
3	C/O Silt Trap	20.00
4	C/O Reservoirs	34.50 MLD
5	C/O Intake cum filter & Channel	20.00
6	(SH:- C/O Main fold distributor & chamber	20.00
7	Estimated cost	810. 00 lac

- (2) The KVS will be framed after accord of approval
(3) The scheme will maintain/run by the KVS.

Providing irrigation facilities through developing and constructing water bodies in various Gram Panchayats of IPH Sub-Division Rajgarh Development block. Rajgarh

Sr. No	Description of item	Qty.
1	C/O Head Weir	20.00
2	C/O Run off and spillover channels	20.00
3	C/O Silt Trap	20.00
4	C/O Reservoirs	34.50 MLD
5	C/O Intake cum filter & Channel	20.00
6	(SH:- C/O Main fold distributor & chamber	20.00
7	Estimated cost	810. 00 lac

- (2) The KVS will be framed after accord of approval
(3) The scheme will maintain/run by the KVS.

A portion of the planned scheme will be covered under this project and realising the importance and potential of this project idea, the GoHP will fund the rest of the project from own source.

- Cropping system intervention for moisture management
The cropping system led by Maize and Wheat in the district has been combined with other less water consuming varieties to adapt to moisture stress.

Maize+mash (maize varieties that tolerates moisture stress such as (KH 101, KH 9452, Mitra, PMZ 47 and mash variety HIM mash 1, UG 218)

Wheat + Soybean (Harit soya, Palam soya, Shivalik)

Some tree crops in the sub-temperate region with little larger spacing (peach, plum); and in Mango litchi belt (subtropical region) to have maximum moisture utilization

- Other measures would include use of organic mulching in some high value vegetables and spices (such as ginger), soil health based package up practices

C3. Building capacity of farmer producer organization and market linkage enhances the adaptive capacity.

The project would take an integrated approach including financial inclusion, insurance and also capacity building on climate smart practices to enhance adaptive capacity. It is easier for the insurance companies to interface with farmer producer organization rather than individual farmers. (e.g. In West Bengal and Odisha and Hill areas in in North East CTRAN managed to successfully create such linkages, such replication would be feasible in HP).

b. *Details on Economic, social and environmental benefits project / programme*

(Reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations)

EE may like to use following table to present the key benefits

Components/Activities	Key Benefits (Direct)		
	Social	Economic	Environmental
C1. Vulnerability Analysis and targeting	In terms of relative access to land and land based activities the dalits and Adivasi and gender wise the females have lower access and benefit inequitably (the index for land access in HP for SCs 0.6, STs 1.2 and other 1.11. They suffer the most during the	The intervention will look at economic vulnerability along with economic vulnerability for the targeting purpose, small and marginal framers, agricultural labourers and women members	Drought related exposure is the basis of this intervention. drought has very high negative environmental externality in water quality, food safety and fodder safety. Higher sue of pesticide also is seen. This project will try to

¹ Bakshi et.al

Components/Activities	Key Benefits (Direct)		
	Social	Economic	Environmental
	climate change related scenarios. The participatory vulnerability analysis will help in identifying the neediest (including destitute women, old and infirm) at the hamlet level and ensure an equitable programme design.	will be specifically targeted	address these issues.
Climate smart package of practices for the district	The beneficiaries from all social groups will have access to this package in the project area. At least one of five from the household would be sensitized to form women SHGs and women headed households would be targeted during the training program to absorb the relevant inputs to ensure gender diversity.	The value chain based planning will ensure higher value share. It will also reduce the risk of failure of some of the crops and enhance productivity thus enhancing income.	The problem of land degradation, reduction in soil organic carbon, acidification will be adequately addressed.
Development of FPO network	The FPOs are built form specific interest group and has a best combination of cooperative sector and corporate sector. The network will enhance democratic functioning and help in better social capital formation	Will help in efficiency in through aggregation, ensure input cost reduction through bulk buying of inputs	No specific environmental linkage but training can be organised by FPOs for undertaking environment friendly practices especially in disease surveillance and pest management
Capacity Building on climate smart knowledge base and lesson learning	Enhancement of adaptive capacity through documented experiences in moisture management,		

Components/Activities	Key Benefits (Direct)		
	Social	Economic	Environmental
	collaborative practices in moisture management		
Financial inclusion & risk transfer instruments	Reduces risk for vulnerable groups	Protects the investment made and transfer the economic cost with reduced risk of failure	

The district has the following gender diversity. Attempt shall be made to cover as much of the willing female cultivators and ag-labourers under this programme. Ambitions target will be set for WSHG and membership of women in KVS and FPOs.

Cultivators	Number
Male	94298
Female	88660
Agricultural labourers	Number
Male	6757
Female	3973

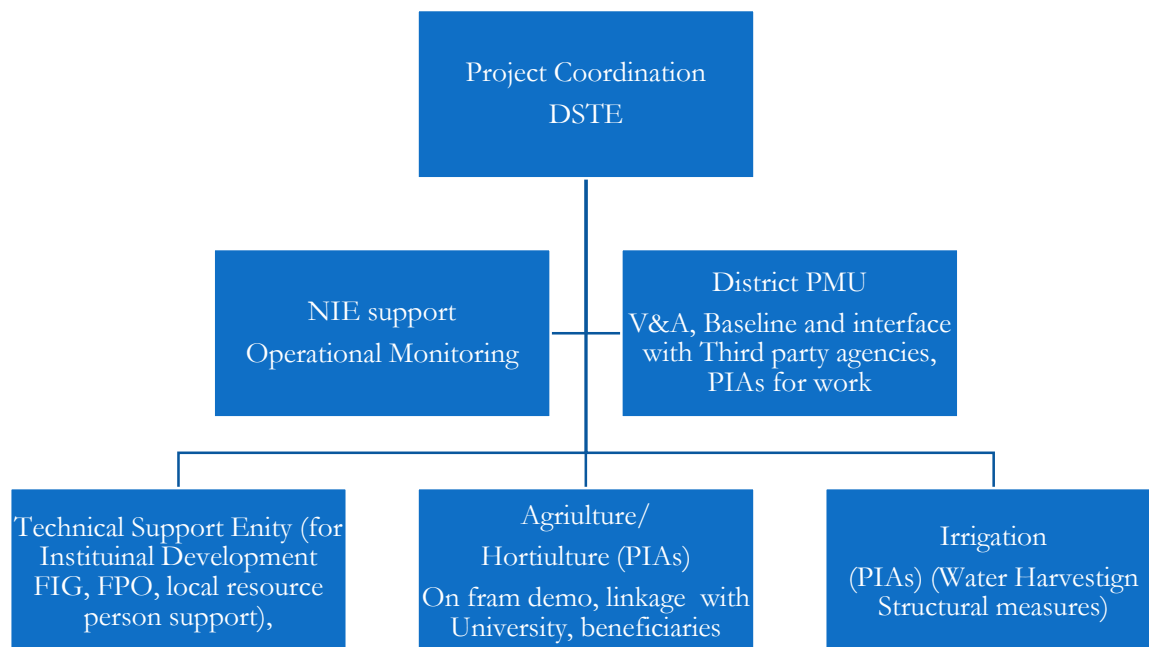
Agriculture training details	
No of Trainings to be conducted	500
No of Farmers per training	50
Approximate Cost per training	10,000
Total training Cost	50,00,000
Total Farmer to be trained	25,000
Notes: -	
25% women can be covered in the training programme	
The cost of training include honorarium to the concerned scientists/expert; literature to the farmers; refreshments; etc.	

c. Sustainability of intervention

- I. How will the project assure that the benefits achieved through its investments are sustained beyond the lifetime of the project?

Even though the project will be anchored initially by the executing entities, it is envisaged that several institutional development initiatives and capacity building initiatives would sustain the initiative beyond the project period. Technical support entities would ensure creating water user associations to undertake the O&M while the head work still be the responsibility of the department. They may create a revolving fund with one time grant and build it up through small contribution from the users. Social institutions like farmer interest groups and FPOs will have business plans aimed at sustainability. They will also receive equity and grant from other programme to enhance their capital base. The soil moisture conservation measures will be based on long term climate proofed design hence it will sustain the stress. The risk transfer instruments like micro-finance and insurance would add to the sustainability of the programme. This will also provide seamless linkages to other programme for mainstreaming climate change agenda. Efficient micro-irrigation would ensure water conservation. The weather insurance companies would work with FPOs to have pilots and later can scale up.

The district level technical support entities would build capacity of the progressive farmers and also the live department officials for successful transformation of adaptation intervention in to the field. They would also blend training modules with specific adaptation measures in regular training of trainer programmes.



*d. Analysis of the cost-effectiveness of the proposed project / programme:
(additionality)*

I. Cost effectiveness

Cost effectiveness will compare alternative options available and how the proposed components/ intervention are best for given climatic conditions. A comparison of the chosen option vis-a-vis alternative options may be provided as per the table given below:

Activity	Proposed Alternatives	Benefits
Climate smart approaches for drought management	In the context of drought management large scale irrigation project are proposed and these are costly and even have negative environmental externality in fragile Himalayan eco-system. A typical irrigation system does not take into account long term sustainability of aquifers and focused on surface water. This approach focused on ground water and run-off management is cost effective from water use efficiency point of view.	Small scale soil water conservation management; Rainwater harvesting structure can help in recharge of individual and Community farm ponds and micro-irrigation helps in water conservation
Climate smart agriculture	Proposed alternative is business as usual, where there is low productivity and low adaptive capacity in conventional agriculture. Study elsewhere has established that climate smart practices help in boosting income by 30-40% in maize based system and 25-30% in wheat or other cereal based system	There are three key benefits in this proposed component (a) reduced risk of crop failure due to climate variability and change (b) increased yield based on several soil water management measures (c) reduced emission through methane management, nitrogen fixing intercropping and efficient micro-irrigation.
Risk Transfer and financial inclusion	Standard approach is to declare the area drought prone, waive existing loans. The insurers shy away or enhance premium loading. This is a systemic risk	This will reduce the premium loading in the medium term
Water harvesting structures and sue of gravity flow	Mega lift schemes are costly and also uses fossil fuel	Improves recharge in the command

II. Weighting of project activities:

Type of Activity	List of Activities	Funding Requirement
Investment Activity	2.1 Water harvesting structure creation in the selected area for irrigation (Additional fund if required can be included from other funding programme)	10,22,64,116
	2.2 Moisture Management for vegetables (micro and drips- 80% amount is subsidised i.e 30% GoI and 50% from GoHP)	
	2.4 Introduction of legumes and other green fodders as well as Early on-setting cultivars of fruits	
	2.5 Small ponds at community level, Small run-off management measures and Linking of Livestock improvement in the proposed area	
	2.6 Soil testing and soil-moisture management system. Micro-nutrient application as per soil test findings as well as Nutrition and pest Management Plan for each crop in project locations;	
	5.2 Piloting weather based insurance	
	4.3 Introduction of third party agency for implimentation ,co-ordination and monitoring of agricultural and horticultural plans.	
Capacity Building Activity	1.1 Community based vulnerability analysis (this will take into account exposure, sensitivity and adaptive capacity and would be different from conventional planning)	7,63,76,660
	1.2 Identification of long list of beneficiaries to be covered including a screening criteria	
	2.3 Promotion of Inter-cropping of maize and pulses and SRI Cultivation in late but excess moisture condition (training component)	
	3.1 Formation of FIGs around clusters and crops	
	3.2 Federating FIGs in to FPOs and Business Planning	
	3.3 Registration of FPOs	
	3.4 Input and output market Linkage	
	4.1 Training module development on climate smart approaches	
	4.2 Training / Orientation of target farmers on climate resilient agriculture / horticulture;	
	4.4 Extension services and hand holding support to target farmers from time to time;	
4.5 Demonstration of different package of practices that are adaptive to climate variability;		

	4.6 Organising dissemination workshops on project learnings at State level;	
	5.1 Linkages to existing financial inclusion programmes	
Project Management Activity	6.1 Setting benchmarks for project execution and linking it to common and specific adaptation actions;	1,55,33,981
	6.2 Mobilisation of community, consultation and finalization of overall strategy in a participatory manner;	
	6.3 Finalisation of priority actions by agro-climatic situation and specific to crop;	
	6.4 Documentation of project learning from time to time;	
	6.5 Mapping climate benefit of adaptive practices and overall adaptation benefits;	
	6.6 Tracking / documenting climate specific parameters in the project locations;	
	6.7 Constitution of Project Steering Committee (PSC) and review of project dimensions;	
	6.8 Constitution of Technical Advisory Committee (TAC) and review;	
	6.9 Project monitoring, Supervision and Reporting.	

The proposed project aims to leverage various on-going schemes/programme of state government as well as central government. The funding has been asked only for concrete adaptation related activities. For e.g. Project al aims to get at least 50% fund from state minor irrigation department for the infrastructure development like core water harvesting head works structure. This leveraging gives the scope to invest 38% of its allocated money in capacity building part which can't be leveraged from other programs. The capacity building activity not only creates awareness but also sensitizes the local people on climate change part and will act as a foundation for adaptive measures.

e. Alignment with the national and state action plans and other policies / programmes:

The project is closely linked the National Mission on Sustainable Agriculture and agriculture mission and activity sets (A2-S1) of the State Action Plan on Climate Change. It conforms to the guidelines of National Adaptation Fund provided by MoEFCC. It is also in line with development plans and activities of the nodal departments (soil water conservation, organic farming, time distribution of inputs and market linkage). Component wise linkage with SAPCC and NAPCC has been mentioned in section 1.1.b .The concrete adaptation components have been highlighted in earlier sections.

f. Component wise technical standards:

Activity	Applicable Standard	Application to project
Water harvesting structures	As per the applicable structural guideline for hill region and scheduled rate. The structures will be created by Department of Minor Irrigation, Himachal Pradesh as per the regular technical standard being adopted by the department for constructional activity .	Higher water availability in the project location to be used for local livelihood promotion.
Sprinklers and drips	Technical standard (BIS) used by Department of horticulture will be used for micro irrigation system. Pre-qualified vendors empanelled with the concern department will provide the equipment as per the specification. IS 12232 (for sprinklers); 4985-1999 fro pipes etc.	Optimal uses of water for horticultural activity without wastage of available water in water harvesting structures.
Promotion of FPO	As per SFAC guideline.	Strengthening the economic condition of small and marginal farmers

To be determined in consultation with partner departments. There is no structural measures requiring EIA. Most of the activities proposed are environment friendly. The implementing entity will use the rate schedule of the states for the structural work. Common watershed guideline (updated) would be followed for structural measures along the watershed. The state has six approved vendors for lift and other micro-irrigation systems. Varieties recommended by NICRA centre would be used for developing the crop calendar delineated under climate smart cropping system. The KVS and FPOs would be as per the detailed guidelines issued by SFAC. NABAR cost norms will be used for other agricultural interventions such as organic interventions, IPNM, etc. Vulnerability assessment uses the standard IPCC methods and techniques.

g. Duplication Check:

Project	Objectives	Complementarity	Geographical Coverage/Agency
Mid Himalayan Watershed Project	Soil water conservation and livelihood	The groups will be different and entry point is not watershed based	Different approach
RKBY	Agricultural development	Some convergence, that has been shown in the budget and only additional activities for this project has been budgeted For SRI only training component included For drip and sprinkler	No duplication Only uncovered areas
Pani Panchayat	Strengthening of water user association	Will be new associations under this project	Same approach new area

The project uses convergent measures in some of the existing programmes to avoid duplication. The area is not covered under watershed programmes yet. The IPH department has realised the importance of this work and is envisaging a project a part of which would be funded for the identified area and the balance will be from the state.

The climate smart component is not the usual cropping system advised by the state agriculture department would require targeted extension measure to convince the farmers. Entire training and demonstration and benefit measurement have been planned under this project and if require more money can be leveraged from RKBY. Current proposed measures are not part of RKBY plan. However, all possible convergence for PMKSY and other schemes of the state can be proactively explored.

h. Details on Stake-holder consultation:

Consultation	Date/ Place	Participation	Objective	Outcome
With department of agriculture	4th Sept 2015	Directorate staff	Clarity on duplication and cost norms,	validation
With IPH department staff and field engineers	4th and 5th Sept Shimla - Sirmour	Staff SE and field Ex engineers	Identification area for which DPR can be prepared	Targeting
With Directorate of Horticulture	4th Sept	Special project Officer, Subject matter specialist	Discussion on climate friendly practices and baseline	Validation
With agriculture department and other stakeholders	5th Sept Sirmour	Joint Director, Dy director, SMS, other stakeholders	Discussion on climate friendly practices and baseline	Validation of cost and implementation arrangement (pictures in annexure)

i. Learning and knowledge management component to capture and disseminate lessons learned for the proposed project.

A full set of activities have been marked for generating audio-visual case studies to document the experience. In addition, the policy brief and monitoring report will provide good insight to the programme.

The key capacity building component include:

- Training need identification of beneficiaries
- Preparing manual on climate smart practices
- Inputs for farmer mobilisation to be driven by a dedicated agency with field staffing on outsourced basis

The project will ensure learning in adoption of drought adaptation strategies by the farmers managing the crop water planning, soil health management, moisture management and market interventions. The documentation will ensure replication of various pilots in the other similar areas. The trained progressive farmers and women SHG group leaders, FPO leaders can act as master trainers for other areas.

j. Sustainability of the project/programme outcomes has been taken into account when designing the project / programme.

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Sustainability Mechanism	Responsible parties
1. Drought related vulnerability assessment at the district level	Location based targeting	Improved capacity of small and marginal farmers (including women) and local governments to respond to drought and soil degradation.	Mainstreaming of climate change agenda in regular planning	DEST and partner departments and CBOs
2. Climate smart package of practices for the district	Enhanced crop diversification and crop production	Enhanced food security through innovative climate smart approach	Technically and scientifically developed modules in consultation with technical universities and ICAR systems	Technical partners
3. Development of Farmer Producer Organisation Network	At least 1 no of farmer producer organisations promoted	Farmer organizations and networks developed and strengthened	Higher social capital and enhanced bargaining power	Social Mobilisation agency
4. Capacity Building on climate smart knowledge base and lesson learning	30880 no of farmers, officials trained on drought adaption and best practices documented	Small and marginal farmers, with the support of local authorities, enhance their knowledge of climate smart approaches practices	Documented experience enhanced learning and helps replication	DEST and partners
5. Inclusion risk transfer instruments	20% covered under weather insurance and financial inclusion programmes	Risk Management practices adopted	Risk transfer enhances adaptive capacity and resilience	DEST and banks, MFIs, insurance partners

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

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
<i>Compliance with the Law</i>	Mostly	Not required
<i>Access and Equity</i>	Ensured	Ex post monitoring
<i>Marginalized and Vulnerable Groups</i>	Ensured	Ex-ante required
<i>Human Rights</i>	NA	Indeterminate at this stage
<i>Gender Equity and Women's Empowerment</i>	Ensured	
<i>Core Labour Rights</i>	Will be ensured	Ex-post, concurrent
<i>Indigenous Peoples</i>	protected	Ex-post, concurrent
<i>Involuntary Resettlement</i>	Not envisaged	No envisaged
<i>Protection of Natural Habitats</i>	Will be done	Will be assessed
<i>Conservation of Biological Diversity</i>	After site identification	Will be assessed
<i>Climate Change</i>	Addressed	Will be assessed
<i>Pollution Prevention and Resource Efficiency</i>	Will be done if required	Will be done
<i>Public Health</i>	Will be done	Will be done
<i>Physical and Cultural Heritage</i>	Ensured	As per site if any
<i>Lands and Soil Conservation</i>	Ensured	Ex post monitoring

3. Implementation arrangements

a. Describe the arrangements for project / programme implementation.

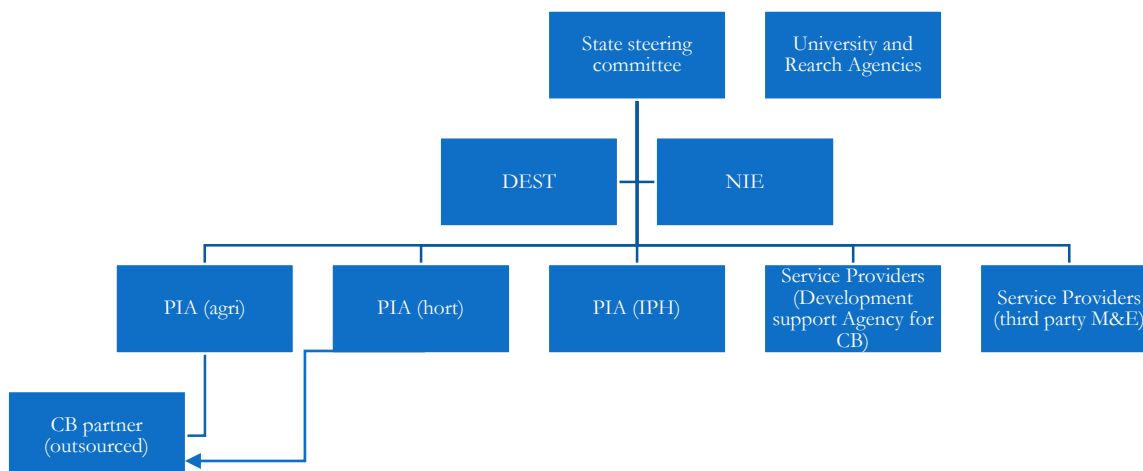
I. Who will implement the project and what are their comparative advantages and capacity compared to other potential implementing institutions?

DEST has been involved in the climate change action planning process and are fully familiar with the vulnerability, adaptation strategy and mainstreaming agenda. The agency too has capability of soil water modelling in-house. This is a crucial input for the programme design

II. How will the project be coordinated with (and/or mainstreamed into) related development activities of the targeted sector?

The line departments tend to strategize the programs in business-as-usual. DEST will work with DC office in Sirmour for the pilot project that will ensure coronation across the various PIAs (e.g. agriculture and horticulture, IPH); service providers will be directly contracted by DEST.

The learning will be shared in workshops and exposure visits, policy briefs and knowledge products prepared as part of the project will be used under similar conditions in other districts.



State steering committee would ensure effective inter-departmental coordination.

The DSTE would act as the Project Management Unit to coordinate with MoEFCC and NIE

This PMU will sign MoU with various PIAs as per the role stated below:

PIA (IPH) for water harvesting structure – structural interventions and work with capacity building partners for water user association formation, etc.

PIA (Agri+Hort) for agriculture and horticulture interventions, beneficiary identification, on farm demonstration, etc. working with development support agency (for out sourced manpower at block)

PIA (CB partner) outsourced service provider for the formation of FIGs and FPOs, training, business planning and market linkage.

PMU will procure services of third party monitoring agency and development support agency for manpower supply at the block level as suggested by the line departments

The project has several institutional development and capacity building initiatives to ensure sustainability beyond the project life. This includes ensuring that the water user associations are mandated with O&M works. The business plans for KVS/FPOs would have equity and grant component to ensure long term sustainability. Development support agencies would be mandated to ensure value chain financing through bank linkage and risk management by linking with insurance companies. This would also ensure sustainability.

b. Describe the measures for financial and project / programme risk management (also include environmental and social risk, if any).

Risk	Rating (High / Medium / Low, etc.)	Mitigation Measure
Financial management	Medium	Guidance from NiE, experienced officer posted in PMU knowing fund management. High level interdepartmental coordination chaired by Chief Secretary
Project management	Low	Has prior experience, leadership will take care
Social Risk	Low	There may be minor conflict to be moderated through strong mobilisation
Environmental	Low	Will be done if any

- c. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan. (Monitoring and evaluation cost need to be included in executing entity management cost).**

Monitoring and evaluation plan Activity	Responsible person	Yr. I	Yr. II	Yr. III	Yr. IV	Total	Timeframe
Baseline (ex-ante)	DSTE	*					30 days
FPO planning and monitoring	Social Partner		*				
Concurrent Monitoring	PMU (DSTE), PIAs	*	*	*	*		
Mid Term Assessment			*				15 days
Ex post assessment					*		30 days

The project would have a comprehensive project MIS linked to the geomatics cell in DEST. Field level data support will be provided by the implementing agency and outsourced agency. There will be an agency for third party monitoring independent of NABARD. NABARD will provide project cycle monitoring support and quality assurance of the programme. The third party M&E agency will provide ex-ante baseline (with DEST also community level vulnerability assessment), support for mid-term assessment to generate midterm assessment report and ex-post monitoring report. The project will generate quarterly progress report to be forwarded to NIE and MoEFCC.

The NIE cost allocation has to be determined by NABARD. Excluding the third party monitoring cost (about 33%) rest of the operational monitoring cost to be phased by NABARD.

- d. Results framework for the project proposal, including milestones, targets and indicators with gender disaggregated data (as per the format in annexure1).**

Enclosed in annexure

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.*

Components	Activities	Fund Required	Component Cost
C1: Drought related vulnerability assessment at the district level	1.1 Community based vulnerability analysis (this will take into account exposure, sensitivity and adaptive capacity and would be different from conventional planning)	44,40,000	74,00,000
	1.2 Identification of long list of beneficiaries to be covered including a screening criteria	29,60,000	
C2: Climate smart package of practices for the district	2.1 Water harvesting structure creation in the selected area for irrigation (Additional fund required can be included from state programme fund)	6,61,75,243	9,08,25,243
	2.2 Moisture Management for vegetables (micro and drips- 80% amount is subsidised i.e 30% GoI and 50% from GoHP)	76,50,000	
	2.3 Promotion of Inter-cropping of maize and pulses and SRI Cultivation in late but excess moisture condition (training component)	68,00,000	
	2.4 Introduction of legumes and other green fodders as well as Early on-setting cultivars of fruits	34,00,000	
	2.5 Small ponds at community level, Small run-off management measures and Linking of Livestock improvement in the proposed area	25,50,000	
	2.6 Soil testing and soil-moisture management system. Micro-nutrient application as per soil test findings as well as	42,50,000	

	Nutrition and pest Management Plan for each crop in project locations;		
C3: Development of Farmer Producer Organisation Network	3.1 Formation of FIGs around clusters and crops	22,50,000	50,00,000
	3.2 Federating FIGs in to FPOs and Business Planning	10,00,000	
	3.3 Registration of FPOs	5,00,000	
	3.4 Input and output market Linkage	12,50,000	
C4: Capacity Building of community on climate smart knowledge base and lesson learning	4.1 Training module development on climate smart approaches	1,23,40,000	6,17,00,000
	4.2 Training / Orientation of target farmers on climate resilient agriculture / horticulture;	1,48,08,000	
	4.3 Introduction of third party agency for implementation ,co-ordination and monitoring of agricultural and horticultural plans.	86,38,000	
	4.4 Extension services and hand holding support to target farmers from time to time;	98,72,000	
	4.5 Demonstration of different package of practices that are adaptive to climate variability;	98,72,000	
	4.6 Organising dissemination workshops on project learnings at State level;	61,70,000	
C5: Inclusion risk transfer instruments	5.1 Linkages to existing financial inclusion programmes	41,14,660	1,37,15,534
	5.2 Piloting weather based insurance	96,00,874	
C6: Project/Programme	6.1 Setting benchmarks for project execution and	7,76,699	1,55,33,981

Execution cost (including formulation cost of Rs 10 lakh)	linking it to common and specific adaptation actions;		
	6.2 Mobilisation of community, consultation and finalization of overall strategy in a participatory manner;	38,83,495	
	6.3 Finalisation of priority actions by agro-climatic situation and specific to crop;	7,76,699	
	6.4 Documentation of project learning from time to time;	38,83,495	
	6.5 Mapping climate benefit of adaptive practices and overall adaptation benefits;	23,30,097	
	6.6 Tracking / documenting climate specific parameters in the project locations;	15,53,398	
	6.7 Constitution of Project Steering Committee (PSC) and review of project dimensions;	3,10,680	
	6.8 Constitution of Technical Advisory Committee (TAC) and review;	1,55,340	
	6.9 Project monitoring, Supervision and Reporting.	18,64,078	
Total Project/Programme Cost			19,41,74,757
C7: Project/Programme Cycle Management Fee charged by the Implementing Entity (NABARD)			58,25,243
Grand Total			20,00,00,000

Agriculture activity details				
Activity	Approximate Area (in Hactor) that can be covered for in the project Location per Year	Approximate average Cost/ Hector . (As per rate given by Agriculture Dept.)	% Share from NAF after deduction of subsidies from State Govt. & GoI	Amount for 4 years
Inter-cropping of maize and pulses	380	7,000	50%	53,20,000.00
SRI Cultivation	106	7,000	50%	14,80,000.00
Introduction of legumes & Fruits	170	5,000		34,00,000.00
Total	656		Total	1,02,00,000.00
Note: Total 68,00000 is allocated for intercropping and SRI cultivation in the costing section.				

Horticulture activity details				
Type of Micro Irrigation	Approximate Area (in Hactor) that can be covered for in the project Location	Approximate average Cost/ Hector . (As per rate given by Agriculture Dept.)	% Share from NAF after subsidies from State Govt. & GoI	Amount
Wide Spread Drip Irrigation	167	37,200	15%	9,33,750.00
Close Spread Drip Irrigation	163	90,000	15%	22,03,000.00
Micro Sprinkler	150	58,900	15%	13,25,250.00
Mini Sprinkler	200	85,200	15%	25,56,000.00
Portable Sprinkler (Will be used by Agriculture dept)	200	31,600	10%	6,32,000.00
			Total as per Section 2.2 of Costing	76,50,000.00

Training details			
	Agriculture	Horticulture	Total
No of Trainings to be conducted	500	196.00	696.00
No of Farmers per training	50	30	80.00
Approximate Cost per training	10,000	50000	60,000.00
Total training Cost	50,00,000	98,00,000	1,48,00,000.00 (Section 4.2 of cost sheet)
Total Farmer to be trained	25,000	5,880	30,880.00
Notes: -			
25% women can be covered in the training programme			
The cost of training include honorarium to the concerned scientists/expert; literature to the farmers; refreshments; etc.			
Training Calendar			
	Year -1	Year-2	Year-3
Agriculture training	150	125	125
No of farmers to be trained in agriculture activity	7,500	6,250	6,250
Horticulture training	59	49	49
No of farmers to be trained in horticulture activity	1,764	1,470	1,470
	209	174	174
	9,264	7,720	7,720

Farm Pond			
Size	45 Meter X 32 Meter		
Volume of Excavation in cutting in soil by Manual means	2582.67 meter cube	Rs 60 per meter cube	1,54,960.20
No of farm Ponds	12		
Total Expenditure in farm pond	18,59,522.40		
Livestock Improvement Budget	6,90,477.60	Will be done as per Schedule rate	
Total budget	25,50,000.00		

FPO formation cost (in lakhs)

SL	Items	Unit detail	Unit cost	Physical target			Financial Target			Total Cost
				Year-1	Year-2	Year-3	Year-1	Year-2	Year-3	
1	Organisational Development & Strenthning	No. of FIG		50	50	50				
1.2	Mobilization of farmers to form FIG and FPO	Amount in Rs.Lakhs	1	1	1		1	1.0	0.0	2.0
1.3	Organising ToTs & Exposure visits for Lead Farmer (LF)	No. of ToT/Exposure	0.15	3	3	2	0.45	0.45	0.3	1.2
1.4	Development & Distribution of Training Tool Kits for LF	No. of Kits	0.005	100	100		0.5	0.50		1.0
1.5	Managemnt & Training to Governing Body of FPO	No. of trainings	0.15	2	2	2	0.3	0.3	0.3	0.9
1.6	Exposure visit of Governing Body of FPO	No. of Exposure visits	0.36	1	1	1	0.36	0.36	0.36	1.08
1.7	Remuneration of Local Resource Persons (LRP)	cost /person/ month	0.03	5	5	5	1.8	1.8	1.8	5.4
1.8	Travel & subsistence of LRPs	cost /person/ month	0.01	5	5	5	0.6	0.6	0.6	1.8
	Sub Total						5.0	5.0	3.4	13.38
2	Agriculture Technology Introduction & Validation									
2.1	Organising Agriculture Demnstrartions	Cost /Demo	0.01	60	60	60	0.6	0.6	0.6	1.8

	Sub Total						0.6	0.6	0.6	1.8
3	Programme Management Cost at RI level									
3.1	Project Coordinator (1)	Cost/ month/person	0.4	1	1	1	4.8	4.8	4.8	14.4
3.4	Travel of PC	Cost/ month	0.1	1	1	1	1.2	1.2	1.2	3.6
3.5	Training of Project Team	No. of training	0.9	1	1		0.90	0.45	0	1.35
3.6	RI overheads	Cost /Month	0.2	1	1	1	2.4	2.4	2.4	7.2
	Sub-total						9.3	8.85	8.4	26.55
	Safety factor to adjust with future cost inflation as SFAC guideline is of 2013									8.27
	TOTAL									50.00

f. Disbursement schedule with time-bound milestones at the component level

Component	Percentage	Amount	Disbursement Time	Mile Stone
C1: Drought related vulnerability assessment at the district level	100%	74,00,000	Jan-16	Community based vulnerability analysis report and Identification of individual beneficiary
C2: Climate smart package of practices for the district	71%	6,44,85,922	Jan-16	Water harvesting Structure creation
	8%	72,66,019	Jan-17	Soil testing , run off management and Community pond creation done
	21%	1,90,73,301	Jul-17	Horticultural and agricultural initiative taken
C3: Development of Farmer Producer Organisation Network	10%	5,00,000	Jan-17	Pre Project Implementation
	10%	5,00,000	Jul-17	Enhancing Capacity and implementation of surplus farm production plan
	20%	10,00,000	Jan-18	Preformation stage of FPO. Preparation of FPO business plan through FIGs level Exercise
	10%	5,00,000	Jul-18	FPO Formation Stage
	10%	5,00,000	Jan-19	FPO Establishment

	20%	10,00,000	Jul-19	Implementation of Business plan of FPO
	20%	10,00,000	Jan-20	Phase out and post project sustainability
C4: Capacity Building of community on climate smart knowledge base and lesson learning	30%	1,85,10,000	Jan-16	Training module development and Phase -1 of Training / Orientation of target farmers on climate resilient agriculture / horticulture;
	20%	1,23,40,000	Jan-17	Third party agency for Co-ordinating the agricultural plan
	30%	1,85,10,000	Jul-17	Demonstration ,Hand holding support and Phase-2 of training
	20%	1,23,40,000	Jan-18	Work Shop and training and hand holding phase-3
C5: Inclusion risk transfer instruments	40%	54,86,213.48	Jan-17	Linking with existing programme and Creation of insurance mechanism. implementation of Insurance mechanism Phase-1
	30%	41,14,660.11	Jan-18	Implementation of Insurance mechanism Phase-2
	30%	41,14,660.11	Jan-19	Implimentation of Insurance mechanism Phase-3
C6: Project/Programme Execution cost (including formulation cost of Rs 10 lakh)	30%	46,60,194.17	Jul-16	Community mobilization, implementation of the specific adaptation measure. Construction of steering committee
	20%	31,06,796.12	Jul-17	Documentation of project Learning
	25%	38,83,495.15	Jul-18	Mapping of climate benefit of adaptive practices
	25%	38,83,495.15	Jul-19	Project monitoring supervision and reporting
C7: Project/Programme Cycle Management Fee charged by the Implementing Entity (NABARD)	50%	29,12,621.36	Jan-16	Programme cycle management
	30%	17,47,572.82	Jul-17	
	20%	11,65,048.54	Jan-19	

Annexure

knowledge base and lesson learning				climate resilient agriculture / horticulture;
	20%	1,23,40,000	Jan-17	Third party agency for Co-ordinating the agricultural plan
	30%	1,85,10,000	Jul-17	Demonstration ,Hand holding support and Phase-2 of training
	20%	1,23,40,000	Jan-18	Work Shop and training and hand holding phase-3
C5: Inclusion risk transfer instruments	40%	54,86,213.48	Jan-17	Linking with existing programme and Creation of insurance mechanism. Implementation of Insurance mechanism Phase-1
	30%	41,14,660.11	Jan-18	Implementation of Insurance mechanism Phase-2
	30%	41,14,660.11	Jan-19	Implementation of Insurance mechanism Phase-3
C6: Project/Programme Execution cost (including formulation cost of Rs 10 lakh)	30%	58,25,242.72	Jul-16	Community mobilization, implementation of the specific adaptation measure. Construction of steering committee
	20%	38,83,495.15	Jul-17	Documentation of project Learning
	25%	48,54,368.93	Jul-18	Mapping of climate benefit of adaptive practices
	25%	48,54,368.93	Jul-19	Project monitoring supervision and reporting
C7: Project/Programme Cycle Management Fee charged by the Implementing Entity (NABARD)	50%	29,12,621.36	Jan-16	Programme cycle management
	30%	17,47,572.82	Jul-17	
	20%	11,65,048.54	Jan-19	

RESULT FRAMEWORK

Outcome/Output	Indicator	Baseline	Target	Sources of Verification	Risks and Assumptions
Component 1: Drought related vulnerability assessment at the district level					
<i>Outcome 1: Location based targeting</i>	Climate vulnerability mapping in the sector initiated	The current planning process in the department do not include systematic vulnerability assessment	By the end of the project the planning process would have reflected vulnerability based targeting	Interviews and PRA reports	The district level bio-physical data availability
Output 1.1 Location targeting based on vulnerability	Vulnerability index for the district block wise			Vulnerability report	Sensitization of the extension personnel on the new approach
Output 1.2 Listing of beneficiary HH	Beneficiary HH identified for the pilot			Beneficiary list	
Component 2: Climate smart package of practices for the district					
<i>Outcome 2: Enhanced food security through innovative climate smart approach</i>	% of marginal and small vulnerable to drought decreased in terms of availability of food during the drought period	Cropping practices adopted are sensitive to drought and yield loss. Number of targeted small scale farmers (cooperating farmers) that are cultivating	By the end of the programme at least 75% of the targeted beneficiaries would have adopted recommended package of practices	Field verification, monitoring report	Timely availability of recommended inputs
Output 2.1 Enhanced crop diversification	At least 30000 no of farmers adopt the climate smart packages for drought adaptation	more than one crop on their land using climate smart solutions	Crop plan of the district and contingency plan indicated diversification and mainstreaming	District agricultural plan Monitoring report	Sensitization of line departments

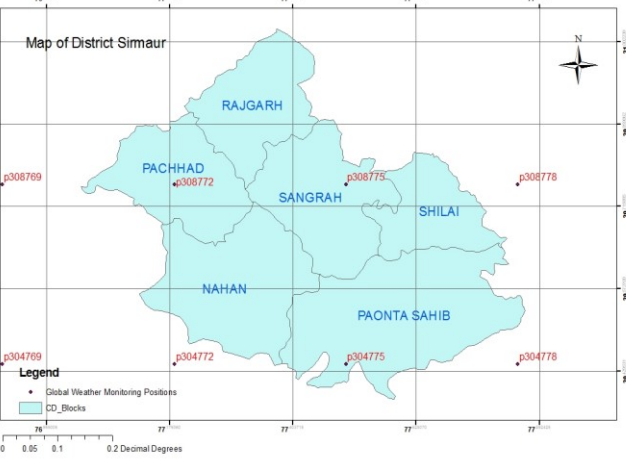


RESULT FRAMEWORK

Outcome/Output	Indicator	Baseline	Target	Sources of Verification	Risks and Assumptions
Output 2.2 Enhanced crop production	Yield per ha increased for sector as a whole	Current production statistics	At least 20% targeted	District agriculture office	Input related
Output 2.3 Enhanced water security through soil water conservation measures and micro-irrigation systems	Area	Current net irrigated area is about 13% of the potential	At least double it to 26% (addl 256 ha), No of farm ponds 12	IPH statistics	Proper Structural work
Component 3: Development of Farmer Producer Organisation Network					
<i>Outcome 3: Farmer organizations and networks developed and strengthened</i>					
Output 3.1 Farmer producer organisation formed	No of farmer producer organisation formed from targeted beneficiaries	No FPO/FPO adopted climate smart practices	Max 3 nos of FPOs start business at the end of the programme	FPO database Monitoring report	Conflict and cohesion, capacity of promoting organisations
Output 3.2 FPOs registered and linkages established	No of FPO registered and MOUs	No registered FPO in Sirmour	At least one FPO registered	Registration certificate, MoU	Conflict, distance
Component 4: Capacity Building on climate smart knowledge base and lesson learning					
<i>Outcome 4: Small and marginal farmers, with the support of local authorities, enhance their knowledge of climate smart approaches practices</i>					
	1500 no of progressive framers adopt and become community level resource persons	No systematic evidence of climate smart practices to adapt to drought		Training manual Policy briefs Audio-Visuals Monitoring report	

RESULT FRAMEWORK

Outcome/Output	Indicator	Baseline	Target	Sources of Verification	Risks and Assumptions
Output 4.1 Capacity building programme on climate smart approaches undertaken	700 no of programmes covering 30000 no of participants from among different kinds of stakeholders	No such training module existed	Yr 1 210 no of programmes Yr 2 175 of programmes Yr 175 no of programmes Yr 137 refresher And consolidation	Training report and database	Non-application of learning
Output 4.2 Policy briefs and knowledge products, videos produced capturing the lesson	4 nos of policy briefs produced, AV documentation	No policy briefs on climate smart practices available for Sirmaur	4-6 policy briefs	Policy Briefs Monitoring report	None
Component 5: Financial Inclusion risk transfer instruments					
<i>Outcome 5: Risk Management practices adopted</i>	20% covered (increase) under weather insurance and financial inclusion programmes	Existing coverage under financial inclusion and weather insurance in the districts	20-40 % coverage with annual increment	Database Monitoring report	
Output 5.1 Coverage of targeted beneficiaries in financial inclusion programme	At least 20000 farmers		75 % coverage with annual increment	Database Monitoring report	High premium, delayed procedure in claim settlement
Output 5.2 Coverage of targeted beneficiary under weather insurance programme	At least 15000 farmers		75 % coverage with annual increment	Database Monitoring report	Poor claim settlement Populist policy
Project cycle management					

ANNEXURE II : FIELD LEVEL CONSULTATION SIRMOUR

Village level consultation Picture	
Pictures	Comment
 <p>Map of District Sirmour</p> <p>RAJGARH</p> <p>PACHHAD</p> <p>SANGRAH</p> <p>SHILAI</p> <p>NAHAN</p> <p>PAONTA SAHIB</p> <p>Legend</p> <ul style="list-style-type: none">Global Weather Monitoring PositionsCD_Blocks <p>0 0.05 0.1 0.2 Decimal Degrees</p>	<p>The Picture shows the different blocks of the district.</p>
 <p>Gram Panchayat Nainatikkar Block Pachhad Distt. Sirmour Pradhan Sh. Shiv Kumar Gupta</p>	<p>The Picture shows the consultation with Pradhan of village Nainatikkar Sh. Shiv kumar Gupta ,of Sirmour district</p>
	<p>Picture of one village visited during field level consultation.</p>