ADAPTATION FUND

AFB/PPRC.16/10
29 March 2015

Adaptation Fund Board
Project and Programme Review Committee
Sixteenth Meeting
Bonn, Germany, 7-8 April 2015

Agenda Item 6 f)

PROPOSAL FOR INDIA (3)

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", contained in the Annex to document AFB/PPRC.8/4, 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 April 8, 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 proofing of watershed development projects in the states of Tamil Nadu and Rajasthan” 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 third submission of the project. The first submission had been submitted for consideration at the twenty-first meeting and subsequently withdrawn by NABARD during the review process. It was then submitted as a project concept, using the two-step approval process, for the twenty-third Board meeting, and the Board decided to:

(a) *Endorse the project concept, as supplemented by the clarification response provided by the National Bank for Agriculture and Rural Development (NABARD) to the request made by the technical review*

(b) *Request the secretariat to transmit to NABARD the observations in the review sheet annexed to the notification of the Board’s decision, as well as the following issues;*

(i) The fully-developed proposal should detail the technical specifications of the proposed insurance scheme and clarify how it is justified in terms of concretely increasing the adaptive capacity of target beneficiaries. Further, it should clarify how clear information on any such insurance scheme would be made available to target beneficiaries in order to ensure informed decisions and financial literacy, and how the outcomes of any such scheme would be made sustainable in the long-term;

(ii) The fully-developed proposal should provide a detailed justification of the cost-effectiveness of the project considering that the requested funds would be spread among investments distributed throughout 20 watersheds;

(iii) The fully-developed proposal should provide a detailed description of the arrangements that will be put in place to deliver the project activities in parallel with initiatives that will be financed through co-financing. In providing such a description and preparing the detailed project budget, due attention should be paid to ensuring that all activities financed by the Adaptation Fund should be able to deliver their outcomes and outputs regardless of the success of activities delivered in parallel with co-financing from other sources;

(c) *Approve the Project Formulation Grant of US$ 29,900;*

(d) *Request NABARD to transmit the observations under item (b) to the Government of India; and*

(e) *Encourage the Government of India to submit through NABARD a fully-developed project proposal that would address the observations under item (b) above.*

(Decision B.23/6)

10. The present submission was received by the secretariat in time to be considered in the twenty-fifth Board meeting. The secretariat carried out a technical review of the project proposal, assigned it the diary number IND/NIE/Food/2013/1, and completed a review sheet.

11. In accordance with a request to the secretariat made by the Board in its 10th 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.

12. 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 (3) – Climate proofing of watershed development projects in the states of Tamil Nadu and Rajasthan, India

Implementing Entity: *NABARD*
Project/Programme Execution Cost: USD 120,600
Total Project/Programme Cost: USD 1,270,055
Implementing Fee: USD 109,955
Financing Requested: USD 1,378,010

Project Background and Context:

The proposed project focuses on climate-proofing rain-fed agricultural areas in 20 watersheds in Tamil Nadu and Rajasthan. The overall objective is to build adaptive capacities of the communities to shifting rainfall patterns and extreme weather events exacerbated by climate change in the rained areas of these two states. NABARD has already been supporting watershed development programme in 16 states in India under the national Watershed Development Fund (WDF) and the present proposal seeks to scale up small-scale initiatives already undertaken to a larger area in the country so as to have tangible and concrete impact on communities in building resilience. NABARD will support the watershed projects as per the current model, whilst assistance is sought from the Adaptation Fund for the specific adaptation measures that represent the additionality above standard watershed development.

Component 1: Improved soil and water regime for better crop productivity and resultant increase in income of farmers (USD 170,588)

Analysis has shown there is a likelihood of more water scarcity and incidence of drought in the coming decades as well as a delay in onset of the monsoon rains. This is expected to significantly reduce crop productivity affecting food security, increasing poverty and exacerbating over grazing and ground water abstraction which will cause lowering of the water table and reduced vegetation cover. The following measures are intended to enhance water availability in the watersheds and make them climate resilient: percolation ponds to improve groundwater recharge; summer ploughing to open up hard topsoil in advance of the monsoon season to increase infiltration and reduce erosion; the use of sunken ponds to store runoff water locally that can be utilized in periods of critical need for crops and livestock; and weirs and diversion drains to safely evacuate excess runoff during high intensity rainfall events.

Component 2: Increased adaptation to climate change through climate resilient farming system approach and diversification of livelihoods (USD 673,670)

The project envisages improving existing cropping systems to reduce dependency on water intensive crops and introduce hardy varieties and farming techniques that are efficient in water scarce situations. Specifically this will involve, amongst others, the use of deep tillage operations in summers to modify adverse physical and chemical properties of the soil and increase moisture availability at the crop root zone; agro-forestry that introduces woody perennial vegetation and crops and livestock to provide farmers with additional sources of income with higher productivity of the land; agro-horticulture, the introduction of high yield drought tolerant crop varieties, and a range of small-scale interventions such as micro-irrigation and modern water-management practices.

Component 3: Integration of risk mitigation products like crop, weather and market advisory / insurance and other financial products for the farmers (USD 195,917)

This component will install automatic weather stations on a cluster basis and disseminate crop-weather advisories to farmers, based on real time data. Advisories will be disseminated through mobile with a suitable Technology Service Provider (TSP) and information generated from the automatic weather stations from the project area will be linked to the TSP for agro advisory services. The project also proposes to undertake an in-depth study of hydro-geological regime study notably thanks to the installation of equipment like run-off measurement devices, sedimentation observatory unit and associated data analysis equipment's, and to implement community-based crop-water budgeting based on the hydro-geological, in order to sustain the impact from the watershed development programme on the long term.

Component 4: Creation of knowledge management system for climate proofing of watersheds (USD 109,283)

It is proposed to create a knowledge management system which would enable large scale dissemination of knowledge and lessons learned to project partners as well as policy makers and planners. This would include production of an operational manual, policy briefs, audio visual materials, interactive workshops and exposure visits. The operational manual will be developed in a participative manner both in English and in local languages with illustrations so that the trainers can use it in training farmers. This output will extend over the life time of the project and will highlight the impact of climate change on natural resources and agricultural development in Tamil Nadu and Rajasthan.

ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY: Regular-sized Project

Country/Region: **India**
Project Title: **Climate proofing of watershed development projects in the states of Tamil Nadu and Rajasthan**
AF Project ID: **IND/NIE/Water/2013/1**
IE Project ID: Requested Financing from Adaptation Fund (US Dollars): **1,378,010**
Reviewer and contact person: **Hugo Remaury** Co-reviewer(s): **Daouda Ndiaye**
IE Contact Person: **V. Mashar, Dy. General Manager, NABARD**

Review Criteria	Questions	Comments 23rd February	Comments 13th of March
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, India is vulnerable to CC. Expected impacts include rise of temperatures (up to 4°C by 2100), dramatic decrease in crop yields, and increase of extreme weather-related events, including increasing droughts in watersheds.	
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project/programme?	No. Please submit the letter of endorsement as soon as possible. **CAR 1**	**CAR 1**. Addressed.
	2. Does the project / programme support concrete adaptation actions to assist the country in addressing adaptive capacity to the adverse effects of climate change	Yes, however more information is needed on the proposed activities to fully understand to which extent they are appropriate in responding to the threats identified, and the technical specifications of the activities proposed.	

	and build in climate resilience?	**CR 1**: Some sections of the proposal include activities that are not part of the project description (examples are the establishment of a dedicated maintenance fund, the introduction of insurance products and the introduction of non-farm sources of livelihood). The results framework (p. 80) also includes elements not mentioned under the project description such as solar pumps and lighting (Output 2.3), market advisory/insurance and other financial products for the farmers (Component 3 title) and a grassland ecological study in Rajasthan not mentioned elsewhere (Output 4.3). Moreover, on p. 66, it is stated that under certain circumstances the project may change strategy and take on other activities to prevent pressure on the communities and ensure smooth project implementation. The alternate activities mentioned (insurances, credit provision etc.) are not included in the project description. Please provide a full and detailed description of project activities (number of physical assets that will be built, location, size, design, selection of beneficiaries, simplified maintenance and construction costs data). **CR 2**: More cohesion is needed between the proposed activities and	**CR 1**. Not addressed. The proposal lacks to provide clear and coherent information regarding the proposed activities, despite the provision of annexes in separate documents. Moreover, it remains unclear what role the project will play in some activities, such as the “maintenance fund” for instance, and insurance-related products that are still mentioned, although comments suggest that such activities have been dropped. In addition, the results framework and detailed budget still include activities that are not mentioned or not described under the project description. Furthermore, the alternate activities that may be implemented are still mentioned on page 88, even though they are supposed to be dropped. Moreover, the proposal fails to precisely outline how the selection of beneficiaries will be made, and does not demonstrate the extent to which gender considerations will be included to the proposal. Finally, it would be useful to clarify what exactly encompasses the “technical feasibility studies” that are mentioned as part of the implementation of activities. **CR 2**. Addressed.

		the expected outputs/outcomes for Components 1, 2 and 3. Please demonstrate how the delivery of the specific activities will deliver the outputs/outcome level objectives.	
		CR 3: At fully developed proposal stage, it is expected that the proposal provides, and emphasizes on the activities' appropriateness in responding to the threats posed by the likely climate scenarios. Please update the proposal accordingly.	**CR 3**. Addressed.
		CR 4: For Component 1, please clarify the scientific rationality of summer ploughing and highlight evidence of long term impacts on soil fertility and productivity. In this explanation, please outline the barriers that farmers currently face in adopting this technique. Similarly, can you provide more details on the technical aspects of the deep tillage technique, and confirm that the sites have a Pullman clay loam soil upon which is based the trials performed by Baumhardt. Finally, please provide more technical information for activities that will be carried under output 1.2 (catch pit, well recharge pit, and other water harvesting techniques, farm ponds).	**CR 4**. Addressed.
		CR 5: For component 2, please clarify evidence of scientific-based benefits from all the proposed activities, and	**CR 5**. Partially addressed. Scientific-based benefits that are put forward are not supported with relevant literature or

		provide more detail on the current drivers that prevent the adoption of such techniques, and explain further how the project design will ensure the sustainability of these activities overtime. Finally, please describe the adaptation reasoning behind output 2.3, and explain how its achievements will support the deliverance of the Outcome 2. **CR 6**: For component 3, please clarify how the generation of weather information and geo-hydrological studies will deliver an "integration of risk mitigation products like crop, weather and market advisory/insurance and other financial products for the farmers". Also, please clarify why the provision of weather-based insurance, which was part of the concept, has been dropped.	lessons learned from similar experiences in both regions. Moreover, the adaptation reasoning behind the choice of output 2.3 is still unclear, and the proposal does not demonstrate enough how the achievements of the activities planned under this output will help in "increased adaptation to climate change through climate resilient farming system approach and diversification of livelihoods". **CR 6**.Not addressed. The proposal does not outline the rationale behind performing the proposed geo-hydrological study in reaching Component 3's objective ("Integration of risk mitigation products like crop, weather and market advisory / insurance and other financial products for the farmers"). Furthermore, even though the project proponent clarified that the weather-based insurance scheme has been dropped due to "*practical difficulty in operationalization of the scheme at watershed leve*l", the proposal still envisages to have insurance-related activities (the component's title includes "insurance") for which the scope is not clearly defined in the project description section.
	3. Does the project / programme provide economic, social and environmental benefits,	Yes, to some extent. Many of the project activities are not yet identified to the level where environmental and social risks can be adequately	**CAR 2**. Not addressed. The

	particularly to vulnerable communities, including gender considerations, while avoiding or mitigating negative impacts, in compliance with the Environmental and Social Policy of the Fund?	identified and assessed. Therefore, to comply with the ESP the project will need a mechanism to identify and assess risks during project implementation as and when the activities are fully identified. This mechanism is a key component of the Environmental and Social Management Plan (ESMP) that is required for projects with partially or unidentified activities. **CAR 2**: Please provide us with an Environmental and Social Management Plan (ESMP) for the project, including the mechanism to screen activities for environmental and social risks, and to formulate mitigation and management actions in line with the ESP. **CR 7**: Table 15: please describe the acronyms and the beneficiary selection criteria and process, including a demonstration of how it takes into account vulnerable groups. Also, please clarify if the project carries any risk of marginalization of minority groups.	description of the activities has been expanded but still is not site-specific, and site selection will mostly be done during implementation. This generally pre-empts adequate risk assessment at this stage, albeit that the risks of impact associated with each individual activity are probably rather small given their size. Nonetheless, there are some more sizeable activities as well, for which environmental and social risks need to be identified as and when that is adequately possible in the feasibility/design process. Therefore, a project-level ESMP is needed, which includes the mechanism for risk identification and any subsequent management activities that may be required. CAR2 is currently not addressed beyond a statement of intent on p. 64: "Notwithstanding the above, as an abundant precaution, suitable mechanism will be put in place to identify and assess risks during project implementation and a management plan will be worked out in case significant risks warranting suitable mitigation, are identified at implementation stage." The ESMP should be commensurate with the risks identified, not as an abundant precaution but in compliance with the ESP. Finally, the proposal should confirm that the activities managed with AF

			funds will be a stand-alone project and that activities will be managed independently from the NABARD-funded project. Otherwise, if it is not so, the AF ESP would have to apply to the programme in its entirety (i.e. including NABARD-funded activities). **CR 7**. Partially addressed. However, the overall proportion of women beneficiaries remains unclear (except for women-headed households) as disaggregated data are not provided. In addition, as some beneficiaries includes castes and tribal communities, further evidence that there is no risks of marginalization of such groups should be provided, according to the ESP.
	4. Is the project / programme cost effective?	**CR 8**: The current cost-effectiveness analysis is only based on a comparison between the baseline situation and the proposed solution (i.e. cost effectiveness of the adaptation additionality), and does not include a comparison between potential alternative adaptation options and the ones being proposed through this project (cost effectiveness of the proposed adaptation solutions). Please provide a description of alternative options to the proposed measures, and perform an assessment of the cost effectiveness of the proposed measures and the alternative options.	**CR 8**. Addressed.

		CR 9: Whereas the current analysis has been done at output level, it appears important to complete this approach by a similar assessment at the level of the activities proposed in this project; wherever relevant.	**CR 9**. Mostly addressed. Although it seems that the project is cost effective, an analysis of its cost effectiveness at project and component level, that includes comparison with alternatives options, would be adequate.
	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?	Yes.	
	6. Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the Fund??	To some extent. **CR 10**: As this document is at fully developed proposal stage, please provide more details on the technical standards that will be applied to the different activities proposed by the project, and demonstrate in details how the project will comply with these technical standards. **CR 11**: Please clarify if the relevant laws require that an environmental and/or social impact assessment be conducted for any of the proposed activities.	**CR 10**. Not addressed. The proposal fails to provide details on technical standards that will be applied to the proposed activities. **CR 11**. Not addressed. The proposal fails to clearly outline the activities that would trigger environmental and/or social impact assessment according to relevant laws.
	7. Is there duplication of project / programme with other	**CR 12**: As the proposed project is at fully developed proposal stage, please	**CR 12**. Partially addressed. CR 12 was referring to the projects identified

	funding sources?	outline clearly the linkages and synergies with all relevant potentially overlapping projects/programmes, including areas of overlap and complementarity, lessons learned from other initiatives, and appropriateness of establishing a framework for coordination during project implementation.	under i) to vi) p.79 of the revised proposal.
	8. Does the project / programme have a learning and knowledge management component to capture and feedback lessons?	Yes. **CR 13**: Can you explain how knowledge will be captured and "recorded on regular basis", describe how the KM component will built upon or create synergies with potential existing LM initiatives in the project location, and clarify how the KM system and associated knowledge products created will be sustained overtime?	**CR 13**. Partially addressed. Some proposed activities, such as the establishment of Village Knowledge Centres, are not included in detail in the Component 4 section of the project description.
	9. Has a consultative process taken place, and has it involved all key stakeholders, and vulnerable groups, including gender considerations?	Yes. **CR 14**: Please describe the extent to which gender aspects have been taken into account during the consultation process. **CR 15**: As the project proposes to implement science-based activities and technologies, please describe the extent to which the scientific community has been consulted and had showed support for the proposed activities, including national and international universities/research	**CR 14**. Not addressed. There is no evidence that gender, tribal and castes considerations have been taken into account during the consultative process, and that views of such stakeholders have been integrated into the selection of activities. Similarly, there is no track of consultation with the most vulnerable communities (i.e. rural communities) that the programme plans to support in building resilience. As a result, there are no legitimate evidence that the desires of such

		centres, such as ICRISAT or other relevant scientific stakeholders? **CR 16**: As this is a fully developed proposal, please enclose the documentation of the consultative process that should at least contain a) the list of stakeholders already consulted (principles of choice, role ascription, date of consultation, signatures), b) a description of the consultation techniques (tailored specifically per target group), c) the key consultation findings (in particular suggestions and concerns raised).	populations are reflected in the project design. **CR 15**. Partially addressed. The proposal does not include enough information related to the scope and outputs of the involvement of the scientific community in the consultative process. **CR 16**. Partially addressed. The role ascription and principle of choice of stakeholders consulted have not been provided. The description of the consultation techniques per target group and key consultation findings have not been provided. Finally, scope and outcomes of Participatory Rural Appraisal results are not provided.
	10. Is the requested financing justified on the basis of full cost of adaptation reasoning?	Yes. **CR 17**: As the project will seek co-financing from NABARD, please demonstrate that the programme activities are relevant in addressing its adaptation objectives and that, taken solely, without additional funding from other donors, they will help achieve these objectives, and that outcomes and outputs will be delivered regardless of the success of NABARD-funded activities.	**CR 17**. Partially addressed. Activities funded by AF will represent the adaptation window of the larger "business as usual" NABARD-funded development project. The additional comments provided ensure that "outcomes and outputs will be delivered regardless of the success of NABARD-funded activities". However, without having a clear pictures about the precise activities that would be part of the project, it is for now impossible to assess whether the outcomes will be delivered regardless of the success of NABARD-funded activities.
	11. Is the project / program aligned with AF's results	Somewhat.	

	framework?	**CR 18**: The alignment table is not properly completed as it has blanks and does not include targets within indicators in the 4th columns, as it was partly done in the concept. Please update the table accordingly by either providing information that refer to activities that would be funded by AF only, or by both AF and NABARD through co-financing, and clearly specifying the source of funding for each indicator identified. linked	**CR 18**. Not addressed. The alignment table has not been filled properly. Examples of such tables can be found on the AF website – OPG or project under current implementation.
	12. Has the sustainability of the project/programme outcomes been taken into account when designing the project?	Partially. **CR 19**: From a broad perspective, policies and governance arrangements that will be made to sustain the project remain unclear. Please describe what the project plans to do in that level to sustain the proposed activities. **CR 20**: Although the economic profitability is often described as a main driver on which the project would rely to enforce technology adoption in proposed activities under Components 1 and 2, there is no quantitative evidence of such financial viability. Please demonstrate the economic validity of the proposed activities for Component 1, 2 and 3 and outline with necessary evidence (economic studies included) how the expected return to investments will be an incentive strong enough for farmers to change their behaviours and farming practices	**CR 19**. Mostly addressed. The modalities and scope of the "Maintenance Fund" and the "Villages Watershed Communities", have to be further detailed and explained in the project proposal, including but not limited to the project description and the results framework, highlighting their role on the long-term sustainability of the activities. **CR 20**.Not addressed. The scope and findings of the economic studies the project is relying on has not been explained in enough details to demonstrate that the economic profitability of the proposed activities will be sufficient to enforce technology adoption amongst rural communities and will change their production behaviours. Moreover, the results framework is based on the assumption that farmers will be "*willing to adopt*

		overtime. **CR 21**: Please describe further the scope and type of community corpus that will seek to mobilize funds after the completion of the project. **CR 22**: Whereas we understand that CBOs would be able to take on the maintenance and management of the resources and structures created, please demonstrate the extent to which they will have enough capacity, willingness, and financial capacity to do so.	*climate resilient technologies*" and to "diversify farming systems" that there is a risk of "*Lack of capacity and resources for adoption*". **CR 21**. Partially addressed. The brief description of the "Maintenance Fund" that has been provided is not sufficient to provide a clear understanding and scope of the Fund, and the way it will be operationalized and sustained. **CR 22**. Partially addressed. Whereas the additional information provided clarifies somehow technical and managerial capacity, the extent to which such organizations will have enough financial capacity has not been addressed.
	13. Does the project / programme provide an overview of environmental and social impacts / risks identified?	The proposal concludes that there are no such risks. **CR 23**: Based on the project description, there may be risks at least for the following ESP principles. Please clarify the following remarks: a. *Compliance with the law*: are environmental and social impacts assessments required under national regulations, especially for activities planned under outputs 1.2 and 2.1? b. *Access and Equity*, *Vulnerable and marginalized groups*, and *Gender and women's empowerment*: the	**CR 23**. Not addressed. The response should address environmental and social impacts assessments required under national regulations rather than stating that there will be no impacts.

		selection of the beneficiaries is not described other than that it is participatory. 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. c. *Core labour rights*: involves more than paying legal minimum wages. It should be clarified how the project will avoid forced or compulsory labour as well as child labour. d. *Conservation of Biodiversity*: the aquatic fern azolla can be invasive and the users should be made aware of the risk and explained how to prevent negative impacts.	
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.	
	3. Are the Project/Programme	No, execution cost are currently 9.52%	**CAR 3**. Addressed.

	Execution Costs at or below 9.5 per cent of the total project/programme budget (including the fee)?	of the total project/programme budget. **CAR 3**	
Eligibility of IE	4. Is the project/programme submitted through an eligible Implementing Entity that has been accredited by the Board?	Yes.	
Implementation Arrangements	1. Is there adequate arrangement for project / programme management?	**CR 24**: As the Village Watershed Committees (VWC) seem to bear an active role in the project execution with the EE, please clarify the current level of capacity and willingness/commitment of the VWCs to be actively involved in this project. **CR 25**: Please clarify whether or how state sectorial departments (apart from being part of the steering committee), the scientific community and the private sector (insurance companies, microfinance institutions) would be involved in the project.	**CR 24**. Mostly addressed. The additional information provided need to be further detailed and updated into the proposal. **CR 25**. Partially addressed. The proposal does not clarify how the scientific community and private sector would be involved in the project.
	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? Proponents are encouraged to refer to the draft	No. The proposal states that the project falls under “Category C”, suggesting that the project activities have been fully formulated and that there are no uncertainties regarding their characteristics and the environment in which they will be carried out. The screening of the	Not addressed. Please refer to final comments provided for CAR 2 and CR 23.

	Guidance document for Implementing Entities on compliance with the Adaptation Fund Environmental and Social Policy, for details.	proposed project for environmental and social risks was carried out and none were found: “implementation of the project will not cause any negative social and environmental impacts” (p. 50). Identification of the project activities is reported to have been done based on extensive consultations during which “any potential environmental and social impacts and risks in compliance with the environmental and social policy of Adaptation Fund were identified” and the proposal has been developed in such a way that there are no environmental or social risks associated with the activities (last sentence, p. 61). Accordingly, the project is assigned an ESP category C. However, based on the identified risks, the proposed project should most likely fall under category B. If all the project activities have been identified to a level where the ESP risks can be effectively identified, then these activities should be described as such in the proposal document so that the adequacy of the risk assessment can be ascertained. If, however, as it seems to be the case, not all the project activities have been identified to this extent, then the project should adopt an ESMP that includes a process of risk identification for these activities.	

		CR 26: Please clarify the grievance mechanism, which is accessible by employees and affected communities and how it is designed to receive and facilitate grievances in a transparent manner and scaled to the severity of the risks.	**CR 26**. Partially addressed. The grievance mechanism should be further detailed and should include the description of institutions involved in the procedure.
	4. Is a budget on the Implementing Entity Management Fee use included?	Yes.	**CR 29**. The planned budget (table 13) has inconsistencies about the project costs. Indeed, the total of financing requested is different than the sum of projects components and associated administrative costs.
	5. Is an explanation and a breakdown of the execution costs included?	Yes.	
	6. Is a detailed budget including budget notes included?	Yes. **CAR 4:** Please use the template provided by AF to fill in the detail budget information. It is available at: https://www.adaptation-fund.org/content/request-projectprogramme-funding-adaptation-fund-amended-november-2013 under the "Project/Programme Components and Financing" section. **CAR 5**: Please provide budget notes.	**CAR 4 and CAR 5**. Not addressed. The table provided does not fit the required format. Examples of such budget tables and associated notes can be found on project documents of projects currently funded by the AF.
	7. Are arrangements for monitoring and evaluation clearly defined, including budgeted M&E plans and sex-disaggregated data, targets and indicators?	Somewhat. **CR 27**: Whereas the M&E arrangements states that there will be "*regular recording of, and accounting for progress against AWPB targets,*	**CR 27**. Addressed.

		and routine, periodic assessments of movement towards impacts", there is no budget lines dedicated to this core M&E activity. Please revise the budget accordingly.	
	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. **CR 28**: Please provide us with (i) a results framework that includes outputs and outcomes that would be funded by the AF, and (ii) a result framework for the entire project that includes NABARD and government in-kind co-financing as well.	**CR 28**. Partially addressed. The results framework fails to provide time-bound milestones and targets. Moreover, as indicated previously, some activities described in the project description section are not included in the results framework or vice-versa. As a result, more cohesion is still required as for the activities that the project is suggesting. Finally, there is no break-down of how implementing entity IE fees will be utilized.
	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?	Yes.	
	10. Is a disbursement schedule with time-bound milestones included?	Yes. **CAR 5**: Please use AF template of disbursement schedule.	**CAR 5**. Partially addressed. The disbursement schedule does not include time- bound milestones relative to project inception and annual reporting requirement.

Technical Summary	The proposed project focuses on climate-proofing rain-fed agricultural areas in 20 watersheds in Tamil Nadu and Rajasthan. Its overall objective is to deliver specific and concrete adaptation measures to increase the adaptive

	capacity of farmers and the resilience of the targeted watersheds. The proposed interventions are expected to bring the following benefits: 1. Improving soil and water regime and boost crop productivity 2. Increasing adaptation through climate resilient farming system approach and diversification of livelihoods 3. Integrating risk mitigation products such as crop, weather and market advisory and other financial products for farmers 4. Creating a knowledge management system for climate proofing of watersheds. The current fully developed proposal has some inconsistencies in terms of activities proposed. As a result, a greater harmonization and alignment between the proposed activities and expected outcomes is required. This will allow a better understanding of the big picture of the proposed investment and of the arrangements between activities under NABARD funds and AF funds. The document needs to be revised accordingly. A number of issues were raised through the initial review and 6 Corrective Action Requests (CAR) are requested: **CAR 1**: Please submit the letter of endorsement as soon as possible. **CAR 2**: Please provide us with an Environmental and Social Management Plan (ESMP) for the project, including the mechanism to screen activities for environmental and social risks, and to formulate mitigation and management actions in line with the ESP **CAR 3**: Execution cost are currently 9.52% of the total project/programme budget **CAR 4**: Please use the template provided by AF to fill in the detail budget information. It is available at: https://www.adaptation-fund.org/content/request-projectprogramme-funding-adaptation-fund-amended-november-2013 under the "Project/Programme Components and Financing" section. **CAR 5**: Please provide budget notes. **CAR 6**: Please use AF template of disbursement schedule. In addition, 27 Clarification Requests were made where further information are requested: **CR 1**: Some sections of the proposal include activities that are not part of the project description (examples are the establishment of a dedicated maintenance fund, the introduction of insurance products and the introduction of non-farm sources of livelihood). The results framework (p. 80) also includes elements not mentioned under the project description such as solar pumps and lighting (Output 2.3), market advisory/insurance and other financial products for the farmers (Component 3 title) and a grassland ecological study in Rajasthan not mentioned elsewhere (Output 4.3). Moreover, on p. 66, it is stated that under certain circumstances the project may change strategy and take on other activities to prevent pressure on the communities and ensure smooth project implementation. The alternate activities mentioned (insurances, credit provision etc.) are not included in the project description. Please provide a full and detailed description of project activities (number of physical assets that will be built, location, size,

	design, selection of beneficiaries, simplified maintenance and construction costs data). **CR 2**: More cohesion is needed between the proposed activities and the expected outputs/outcomes for Components 1, 2 and 3. Please demonstrate how the delivery of the specific activities will deliver the outputs/outcome level objectives. **CR 3**: At fully developed proposal stage, it is expected that the proposal provides, and emphasizes on the activities' appropriateness in responding to the threats posed by the likely climate scenarios. Please update the proposal accordingly. **CR 4**: For Component 1, please clarify the scientific rationality of summer ploughing and highlight evidence of long term impacts on soil fertility and productivity. In this explanation, please outline the barriers that farmers currently face in adopting this technique. Similarly, can you provide more details on the technical aspects of the deep tillage technique, and confirm that the sites have a Pullman clay loam soil upon which is based the trials performed by Baumhardt. Finally, please provide more technical information for activities that will be carried under output 1.2 (catch pit, well recharge pit, and other water harvesting techniques, farm ponds). **CR 5**: For component 2, please clarify evidence of scientific-based benefits from all the proposed activities, and provide more detail on the current drivers that prevent the adoption of such techniques, and explain further how the project design will ensure the sustainability of these activities overtime. Finally, please describe the adaptation reasoning behind output 2.3, and explain how its achievements will support the deliverance of the Outcome 2. **CR 6**: For component 3, please clarify how the generation of weather information and geo-hydrological studies will deliver an "integration of risk mitigation products like crop, weather and market advisory/insurance and other financial products for the farmers". Also, please clarify why the provision of weather-based insurance, which was part of the concept, has been dropped. **CR 7**: Table 15: please describe the acronyms and the beneficiary selection criteria and process, including a demonstration of how it takes into account vulnerable groups. Also, please clarify if the project carries any risk of marginalization of minority groups. **CR 8**: The current cost-effectiveness analysis is only based on a comparison between the baseline situation and the proposed solution (i.e. cost effectiveness of the adaptation additionality), and does not include a comparison between potential alternative adaptation options and the ones being proposed through this project (cost effectiveness of the proposed adaptation solutions). Please provide a description of alternative options to the proposed measures, and perform an assessment of the cost effectiveness of the proposed measures and the alternative options. **CR 9**: Whereas the current analysis has been done at output level, it appears important to complete this approach by a similar assessment at the level of the activities proposed in this project; wherever relevant. **CR 10**: As this document is at fully developed proposal stage, please provide more details on the technical standards that will be applied to the different activities proposed by the project, and demonstrate in details how the project will comply with these technical standards.

	CR 11: Please clarify if the relevant laws require that an environmental and/or social impact assessment be conducted for any of the proposed activities. **CR 12**: As the proposed project is at fully developed proposal stage, please outline clearly the linkages and synergies with all relevant potentially overlapping projects/programmes, including areas of overlap and complementarity, lessons learned from other initiatives, and appropriateness of establishing a framework for coordination during project implementation. **CR 13**: Can you explain how knowledge will be captured and "recorded on regular basis", describe how the KM component will built upon or create synergies with potential existing LM initiatives in the project location, and clarify how the KM system and associated knowledge products created will be sustained overtime? **CR 14**: Please describe the extent to which the gender aspects have been taken into account during the consultation process. **CR 15**: As the project proposes to implement science-based activities and technologies, please describe the extent to which the scientific community has been consulted and had showed support for the proposed activities, including national and international universities/research centres, such as ICRISAT or other relevant scientific stakeholders? **CR 16**: As this is a fully developed proposal, please enclose the documentation of the consultative process that should at least contain a) the list of stakeholders already consulted (principles of choice, role ascription, date of consultation, signatures), b) a description of the consultation techniques (tailored specifically per target group), c) the key consultation findings (in particular suggestions and concerns raised). **CR 17**: As the project will seek co-financing from NABARD, please demonstrate that the programme activities are relevant in addressing its adaptation objectives and that, taken solely, without additional funding from other donors, they will help achieve these objectives, and that outcomes and outputs will be delivered regardless of the success of NABARD-funded activities. **CR 18**: The alignment table is not properly completed as it has blanks and does not include targets within indicators in the 4th columns, as it was partly done in the concept. Please update the table accordingly by either providing information that refer to activities that would be funded by AF only, or by both AF and NABARD through co-financing, and clearly specifying the source of funding for each indicator identified. **CR 19**: From a broad perspective, policies and governance arrangements that will be made to sustain the project remain unclear. Please describe what the project plans to do in that level to sustain the proposed activities. **CR 20**: Although the economic profitability is often described as a main driver on which the project would rely to enforce technology adoption in proposed activities under Components 1 and 2, there is no quantitative evidence of such financial viability. Please demonstrate the economic validity of the proposed activities for Component 1, 2 and 3 and outline with necessary evidence (economic studies included) how the expected return to investments will be an incentive strong enough for farmers to change their behaviours and farming practices overtime. **CR 21**: Please describe further the scope and type of community corpus that will seek to mobilize funds after the completion of the project.

	CR 22: Whereas we understand that CBOs would be able to take on the maintenance and management of the resources and structures created, please demonstrate the extent to which they will have enough capacity, willingness, and financial capacity to do so. **CR 23**: Based on the project description, there may be risks at least for the following ESP principles. Please clarify the following remarks: a. *Compliance with the law*: are environmental and social impacts assessments required under national regulations, especially for activities planned under outputs 1.2 and 2.1? b. *Access and Equity*, *Vulnerable and marginalized groups*, and *Gender and women's empowerment*: the selection of the beneficiaries is not described other than that it is participatory. 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. c. *Core labour rights*: involves more than paying legal minimum wages. It should be clarified how the project will avoid forced or compulsory labour as well as child labour. d. *Conservation of Biodiversity*: the aquatic fern azolla can be invasive and the users should be made aware of the risk and explained how to prevent negative impacts. **CR 24**: As the Village Watershed Committees (VWC) seem to bear an active role in the project execution with the EE, please clarify the current level of capacity and willingness/commitment of the VWCs to be actively involved in this project. **CR 25**: Please clarify whether or how state sectorial departments (apart from being part of the steering committee), the scientific community and the private sector (insurance companies, microfinance institutions) would be involved in the project. **CR 26**: Please clarify the grievance mechanism, which is accessible by employees and affected communities and how it is designed to receive and facilitate grievances in a transparent manner and scaled to the severity of the risks. **CR 27**: Whereas the M&E arraignments states that there will be "*regular recording of, and accounting for progress against AWPB targets, and routine, periodic assessments of movement towards impacts*", there is no budget lines dedicated to this core M&E activity. Please revise the budget accordingly. **CR 28**: Please provide us with (i) a results framework that includes outputs and outcomes that would be funded by the AF, and (ii) a result framework for the entire project that includes NABARD and government in-kind co-financing as well. **CR 29**. The planned budget (table 13) has inconsistencies about the project costs. Indeed, the total of financing requested is different than the sum of projects components and associated administrative costs. Despite the additional information provided, the final project review finds that the proposal fails to correctly address the corrective action requests, and clarifications requests made in the initial review. The following

	observations are made: (i) The proposal should provide clearer and more coherent information regarding the outcomes, outputs, and activities, as it remains unclear what role the project will play in some proposed activities, such as the "maintenance fund" for instance, insurance-related products, the alternative activities, and others. In addition, the proposal should provide further rational between the project and activities description, the results framework, and the proposed budget still include activities that are not mentioned or not described under the project description. (ii) The proposal should provide additional consistent information regarding the consultative process, and outline that most vulnerable communities, gender, tribal and castes' considerations have been taken into account during the process, and that needs and views of such stakeholders are reflected in the selection of proposed activities. Evidence that the desires of such populations are reflected in the project design should be highlighted. (iii) The proposal should provide a project-level Environmental and Social Management Plan (ESMP), which includes the mechanism for risk identification and any subsequent management activities that may be required. The ESMP should be commensurate with the risks identified (that should address environmental and social impacts assessments required under national regulations rather than stating that there will be no impacts), not as an abundant precaution but in compliance with the Environmental and Social Policy (ESP). Finally, the proposal should confirm that the activities managed with Adaptation Fund's funds will be a stand-alone project and that activities will be managed independently from the NABARD-funded project. Otherwise, if it is not so, the AF ESP would have to apply to the programme in its entirety (i.e. including NABARD-funded activities). (iv) The proposal should demonstrate further that the economic profitability of the proposed activities will be sufficient to enforce technology adoption amongst rural communities and will change their production behaviours, as the results framework is based on the assumption that farmers will be "*willing to adopt climate resilient technologies*" and states that there is a risk of "*lack of capacity and resources for adoption*".
Date:	31 March 2015

PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART I: PROJECT / PROGRAMME INFORMATION

1.1 Project / Programme Information:

Project / Programme Category:	Regular
Country / ies:	India
Title of the Project / Programme:	Climate Proofing of Watershed Development Projects in the States of Rajasthan and Tamil Nadu
Type of Implementing Entity:	National Implementing Entity (NIE)
Implementing Entity:	National Bank for Agriculture and Rural Development (NABARD)
Executing Entity / ies	Executing Entities-Rajasthan: Foundation for Ecological Security (FES) ITC-Rural Development Trust (ITC-RDT) Rajasthan Rural Institute of Development Management (RRIDMA) ALERT SANSTHAN SEVA MANDIR MAHAN SEVA SANSTHAN GAYATRI SEVA SANSTHAN Watershed Consultants Organisation (WASCO) Executing Entities-Tamil Nadu: Mysore Resettlement Development Agency (MYRADA) Association of Serva Seva Farms (ASSEFA) Society for People's Action for Change and Education (SPACE) Centre for Improved Rural Health and Environmental Protection (CIRHEP) Sri Sakthi Social Economical and Educational Welfare Trust (SWEET) Voluntary Organisation for Integration of Community and Environment (VOICE)
Amount of Finance Requested:	US $ 1,378, 010 (US $ 1.378 million)

1.2 Project / Programme 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.

1.2.1 Introduction and Situational Overview:

In India, rainfed areas constitute 55 per cent of the net sown area of the country and about 40 per cent of human population reside in these areas. As per the estimation of National Rainfed Area Authority (NRAA), even after realizing the full irrigation potential, about 50 per cent of the cultivated area will remain rainfed. Earlier efforts of characterization of rainfed areas mainly focused on a few bio-physical indicators without giving importance to socio-economic aspects related to livelihoods issues. In order to meet this challenge, NRAA prioritized the rainfed areas for resource allocation and targeting of interventions based on resource availability, livelihood parameters and potential for development.

Rainfed area occupies about 200 million hectares (that is, over two-fifths of India's total geographical area) and agriculture that depends on the south-west monsoon (and winter rains) is to be found in about 56% of the total cropped area. NRAA of India has estimated that 77% of pulses, 66% of oilseeds and 45% of cereals are grown under rainfed conditions.

India has about 18% of world's population and 15% of livestock population to be supported from only 2% of geographical area and 1.5% of forest and pasture lands. The increasing human and animal population has reduced the availability of land over the decades. The per capita availability of land has declined to 0.89 hectare in 1951 and is projected to slide down further to 0.20 hectare in 2035. As far as agricultural land is concerned the per capita availability of land has declined to 0.48 hectare in 1951 and is likely to decline further to 0.08 hectare in 2035. This decline in per capita land availability in the country is mostly on account of rising population.

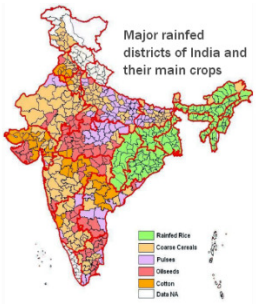
Out of 328.7 million hectare of geographical area of India, about 141 million hectares is Net Cultivated Area. Of this, about 57 million hectare (40%) is irrigated and the remaining 85 million ha. (60%) is rainfed. This area is generally subject to wind and water erosion and is in different stages of degradation for subjecting to intensive agricultural production. Therefore, it needs improvement in terms of its productivity per unit of land and per unit of water for optimum production. Rainfed agriculture is characterized by low levels of productivity and low input usage. Crop production is subjected to considerable instability from year to year due to its dependence on rainfall, which is slightly erratic and variant in space and time. More than 200 million of the rural poor live in the rainfed regions. These risk prone areas exhibit a wide variation and instability in yields.

The information on the extent of soil degradation in the country has been assessed by various agencies. The estimates of these agencies vary widely i.e. 63.9 m. ha to 187.0 m. ha due to different approaches in defining degraded soils and adopting various criteria for delineation. The problems of land degradation are prevalent in many forms throughout the country. In most cases, a combination of such problem exists. In absence of comprehensive and periodic scientific surveys, estimates have been made on the basis of localized surveys and studies. Recently, (2005) National

Bureau of Soil Survey and Land Use Planning (NBSS&LUP), Nagpur of ICAR has published that 146.82 million hectare area is reported to be suffering from various kinds of land degradation. It includes water erosion 93.68 million ha, wind erosion 9.48 million ha, water logging/flooding 14.30 million ha., salinity/alkalinity 5.94 million ha., soil acidity 16.04 million ha and complex problem 7.38 million ha.

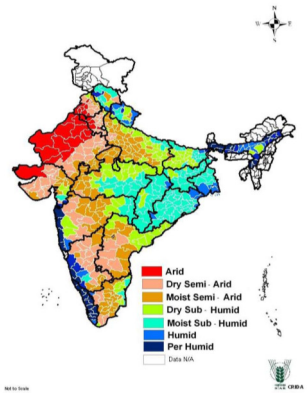
Planning Commission (Khanna, 1989), Government of India has identified 15 agro-climatic regions in the country. The agro-climatic classification of the Planning Commission is primarily based on geographical basis for developmental purpose. As per Planning Commission classification, the State of Rajasthan falls under Trans-Gangetic Plains and Tamil Nadu in West Coast Plains and Ghat. Later, based on following four major criteria, Planning Commission come up with 150 disadvantaged districts across the States for concentrated interventions.

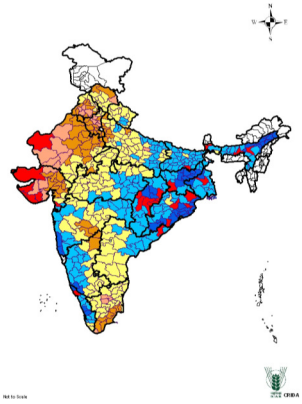
1. High population of landless and agricultural wage earners
2. Low household income and high rate of migration
3. Higher per cent of SC and ST population
4. Status of infrastructure



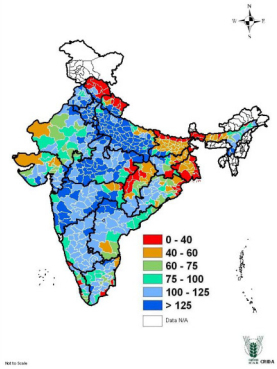
Natural Resource Index (NRI)

Rainfall: According to the Natural Resource Index (NRI) of NRAA, based on rainfall, Rajasthan falls under dry and semi-arid zone whereas western part of the State falls under arid region. The State of Tamil Nadu majorly falls under dry and moist semi-arid region, based on rainfall.

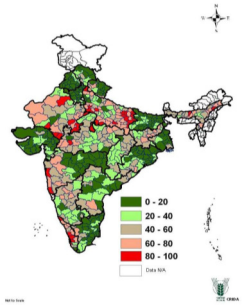




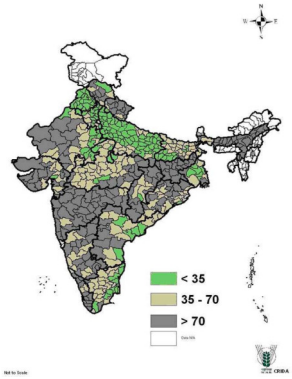
Drought: According to NRI (Combined probability of moderate and severe drought at district level based on the IMD maps, Gore et al., 2010), the probability of severe drought is high in Western parts of Rajasthan and moderate in the interior parts of Rajasthan and South India, including Tamil Nadu. Rest of the country has <10% probability of experiencing drought.



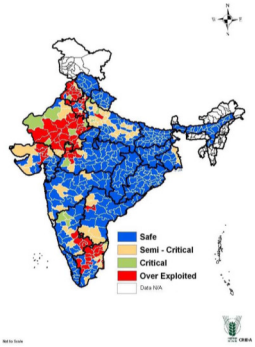
Available water content: Available water content, in absolute terms (i.e. in mm) indicates the storage capacity of soil and its availability to plants. Available water content, for majority of the district of Tamil Nadu is more than 100 mm whereas the available water content in parts of Rajasthan is less than 100 mm.



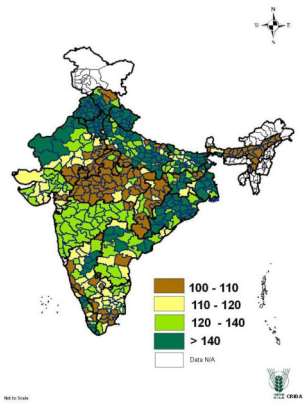
Degraded and Wastelands: Major part of degraded and wastelands are in the range 0-20% & 20-40% in majority of the districts in the country. Severely degraded land is found in Rajasthan whereas less than 20% of degraded and wastelands are observed in coastal region of Tamil Nadu.



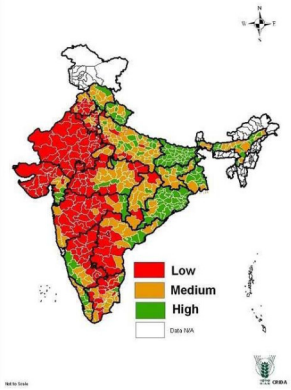
Rainfed Area: Based on the percent rainfed area, districts were categorized into 3 classes i.e. <35% rainfed area, 35-70% and >70% rainfed area. Except for few districts in coastal areas of AP, Tamil Nadu and IGP, rest of the districts are having more than 35% area as rainfed.



Groundwater Status: Based on groundwater utilization, the districts are categorized into safe, semi-critical, critical and over-exploited by Central Ground Water Board (CGWB). Most parts of Rajasthan and parts of Tamil Nadu are considered as over- exploited.



Irrigation intensity: More than 100% of irrigation intensity indicates assured availability of water for more than one cropping season in a year. Irrigation intensity is high in delta areas of Cauvery, Krishna & Godavari basins followed by the irrigated areas of Rajasthan. The districts falling under these regions have more than 40% of area under cultivation for more than one cropping season.



Status of Natural Resources (NRI): The combined status of natural resources (NRI) is low on left half of the country, i.e., Western and Central part extending from Haryana to Tamil Nadu with exception of West Coastal region of Karnataka & Kerala.

Rainfed areas, in particular, having complex cropping systems operating under fragile ecological conditions, constitute about 60 % of net cultivated area (140 m ha) of India. Poverty levels and high population density are other important factors that increase the vulnerability of Indian agricultural system to climate change. For this proposal, two Indian states Tamil Nadu in South-west and Rajasthan in North-west where the state level climate change action plans under the National Action Plan of Climate Change[1] have been prepared and adaptation to climate change in agriculture has been accorded as priority. Multiple stresses on natural resources such as soil erosion, degradation of irrigated lands (clearly visible in Tamil Nadu), degradation of pastures, water pollution (Rajasthan suffers from this problem) and overexploitation of forest stocks contribute to low resilience in the Indian farming systems. Since most of the agricultural production takes place in rural heartlands by engaging people from the marginalized sections of the society, the coping capacity of the farmers during climatic extremities are limited in these areas.

According to Rainfed Area Prioritisation Index (RAPI), priority index of proposed districts of Rajasthan and Tamil Nadu is as follows.

Table 1: Rainfed Area Prioritisation Index of Proposed Project Districts of Rajasthan and Tamil Nadu

State	District	RAPI	Priority Rank	NRI
Rajasthan	Bhilwara	0.4565	13	0.5880
	Jhalawar	0.4503	17	0.6377
	Udaipur	0.5226	8	0.5261
	Dungarpur	0.4056	46	0.7024
	Chittorgarh	0.4519	15	0.6066
Tamil Nadu	Krishnagiri	-	-	-
	Madurai	0.2298	408	0.8614
	Dindigul	0.3320	157	0.6975
	Tirunelveli	0.2620	347	0.8099

Source: National Rainfed Area Authority, Prioritisation of Rainfed Areas in India, Feb. 2012
Note: RAPI: Rainfed Area Priority Index Value; NRI: Natural Resource Index; Priority Rank based on RAPI Value.

1.2.2 Climate Change Scenarios:

1.2.2.1. National Context:

India climate change scenario 2030s, by Indian Institute of Tropical Meteorology, Pune highlights that (1) 1.5-2^{0}C warming in the annual mean temperature over the Indian landmass while winter (Jan-Feb) and spring (Mar-Apr-May) seasons will experience higher warming; (2) the annual mean surface air temperature may rise from 1.7^{0}C to 2^{0}C by 2030s; (3) cyclonic disturbances over Indian oceans during summer monsoon are likely to be more intense; (4) the ensemble mean changes in

[1] *India's National Action Plan on Climate Change serves as the basis of adaptation and mitigation framework for the country. There are 8 Missions which are expected to guide the Indian response to climate change adaptation and mitigation in near future* ***(http://pmindia.gov.in)***

the monsoon rainfall are in the range of 2 to 12% while the annual temperature changes are of the order of 1.4 to 1.9^0C. IPCC have specific observations on India in relation to climate change and its impact in its AR 5 Report. Some of the findings of the report in the national context are as follows.

Rainfall: Over India, the increase in the number of monsoon break days and the decline in the number of monsoon depressions are consistent with the overall decrease in seasonal mean rainfall. But an increase in extreme rainfall events occurred at the expense of weaker rainfall events over the central Indian region and in many other areas.

Water: Unsustainable consumption of groundwater for irrigation and other uses is considered to be the main cause of groundwater depletion in the Indian states like Rajasthan, Punjab and Haryana.

Adaptation Options: Adaptation of freshwater resources to climate change can be identified as developing adaptive/integrated water resource management of the trade-offs balancing water availability against increasing demand, in order to cope with uncertainty and change. Examples of the options include: developing water saving technologies in irrigation; water infrastructure development in the Ganges river basin; increasing water productivity in the Indus and Ganges river basins; changing cropping systems and patterns; and water re-use.

Projected Impact:

In India, a changing climate was projected to reduce monsoon sorghum grain yield by 2-14% by 2020, with worsening yields by 2050 and 2080. In the Indo-Gangetic Plains, a large reduction in wheat yields is projected, unless appropriate cultivars and crop management practices are adopted.

With rising temperatures, the process of rice development accelerates and reduces the duration for growth. Based on Wassmann et al. (2009a, 2009b), the report highlight that, in terms of risks of increasing heat stress, there are parts of Asia where current temperatures are already approaching critical levels during the susceptible stages of the rice plant. These include: North India (October), South India (April, August) and East India (March-June).

In India, the Indo-Gangetic Plains are under threat of a significant reduction in wheat yields. This area produces 90 million tons of wheat grain annually (about 14-15% of global wheat production). Climate projections showed that there will be a 51% decrease in the most favorable and high yielding area due to heat stress. About 200 million people (using the current population) in this area whose food intake relies on crop harvests would experience adverse impacts.

Floodplains and Coastal Areas. Three of the world's five most populated cities (Tokyo, Delhi and Shanghai) are located in areas with high risk of floods (UN, 2012). Flood risk and associated human and material losses are heavily concentrated in India, apart from Bangladesh and China.

Industry and Infrastructure: On the east coast of India, clusters of districts with poor infrastructure and demographic development are also the regions of maximum vulnerability. Hence, extreme events are expected to be more catastrophic in nature for the people living in these districts. Moreover, the lower the district is in terms of the infrastructure index and its growth, the more vulnerable it is to the potential damage from extreme events and hence people living in these regions are prone to be highly vulnerable (Patnaik and Narayanan, 2009).

1.2.2.2. In the Context of Project States:

Climate Change Scenario-Rajasthan:

Droughts:

Rajasthan has experienced 48 drought years of varied intensity in the period 1901-2002, which means that the chance of occurrence of a meteorological drought in the state is about 47% (Rathore, 2004). The state has the maximum probability of occurrence of droughts in India (RPCB, 2010). The number of severe and very severe drought years is larger in the western and southern districts of Rajasthan even though the southern region receives high average rainfall. Ray and Shewale et al (2001) estimated the percentage area in India affected by moderate and severe drought and found (based on data analysis of a 124 year time-period, 1875- 1998) that the probability of occurrence of droughts was maximum in West Rajasthan. The probability of moderate drought in Rajasthan was found to vary between 17- 24%, and between 2-14% in case of severe drought. During the year 2002 when about 29% of the total area of the country was affected by drought, the seasonal rainfall departure (%) for west Rajasthan and east Rajasthan were -71 and -60 respectively. Based on historical data, it is observed that the frequency of occurrence of droughts in the state varies district wise. The recurrence period (year) of once in 3 years is seen for the districts Barmer, Jaisalmer, Jalore, Jodhpur and Sirohi. The recurrence period of once in 4 years is seen for the districts Ajmer, Bikaner, Bundi, Dungarpur, Sriganganagar, Nagaur, Hanumangarh and Churu. For districts Alwar, Banswara, Bhilwara, Jaipur, Jhunjhunu, Pali, Sawai Madhopur, Sikar, Dausa and Karauli the frequency of droughts are once in 5 years where as for Chittorgarh, Jhalawar, Kota, Udaipur, Tonk, Rajsamand and Baran the frequency is once every 6 years. The least drought occurring frequency of once every 8 years is seen for the districts Bharatpur and Dholpur.

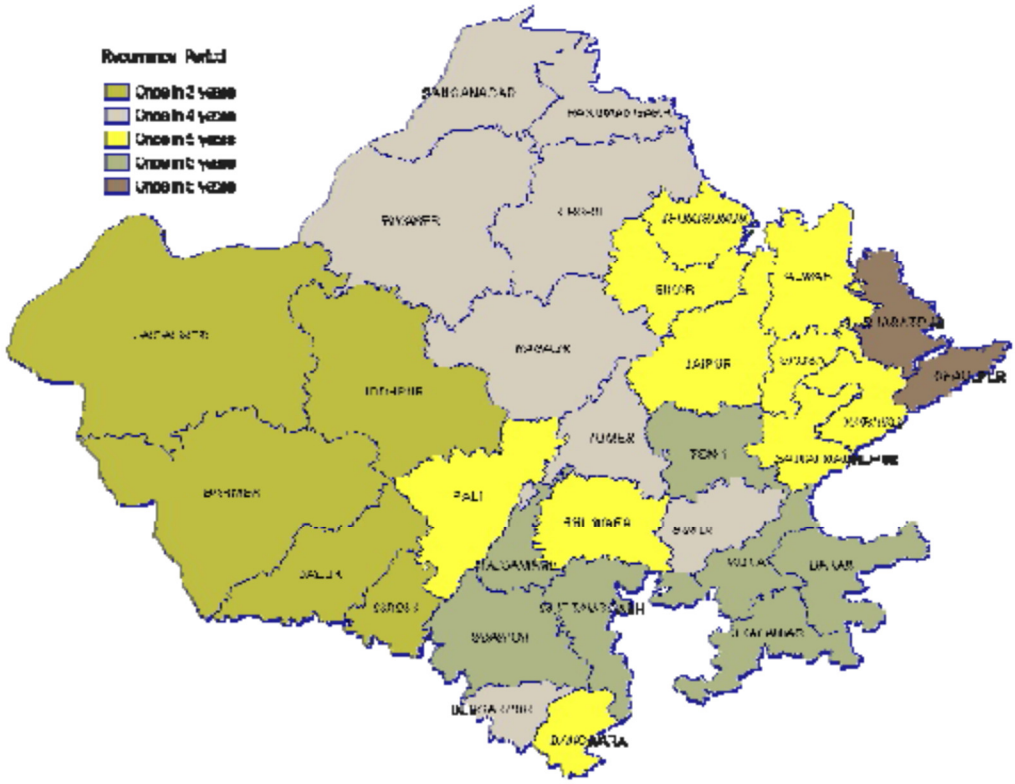


Figure 1: Map of Rajasthan showing drought frequency for different districts; Source: Disaster Management & Relief Department, Government of Rajasthan
Source: Rajasthan Climate Change Action Plan

Rainfall:

The average rainfall of Rajasthan is 574 mm compared to the all-India average of 1,100 mm and a significant variation is seen across different regions. In the western Rajasthan, the average annual rainfall ranges from less than 100 mm in north-western part of Jaisalmer (lowest in the state) to over 400 mm in Sikar, Jhunjhunu, and Pali region and along the western periphery of the Aravali range. In the eastern region, the rainfall ranges from 550 mm in Ajmer to 1020 mm in Jhalawar. In plains, Banswara (920 mm) and Jhalawar (950 mm) districts receive the maximum annual rain. The highest rainfall (1638 mm) is received at Mount Abu (Sirohi district) in the southwest region of the state. The annual spatially averaged rainfall is highly variable and it is most erratic in the western region with frequent dry spells, punctuated occasionally by heavy downpour in some years associated with the passing low pressure systems over the region (Rathore, 2004) (Draft: Disaster Risk Reduction, SAARC Disaster Management Centre, 2008). The number of rainy days during the South west monsoon period from June end to mid-September over Rajasthan varies from 10 in Jaisalmer to 40 in Jhalawar and to 48 in Mount Abu. The number of rainfall days during the rest of the year in different parts of Rajasthan range from 2.1 cm at Jaisalmer to 7.2 cm at Jaipur, distributed over 2.5 to 6 rainy day (Khan, 1988). During the rainfall deficit year of 2002, the state received just 220.4 mm rainfall up to September, against the normal of 518.6 mm in the overall monsoon. The maximum average rainfall of 726 mm was recorded in 1996 and minimum 291.6 mm was recorded in 1987 prior to 2002 (Goel and Singh, 2006). Rainfall shows a fluctuating trend in the State between 2000 and 2013. In 2012, overall, percentage of deviation from normal rainfall estimated to be 17 percent (IMD report). Excess of 20% to 59% reported in 13 districts of the State

whereas deficit of 20% to 59% reported in 2 districts of the State during the same year. Normal and actual rainfall in the State from 1999 to 2012 is presented in the table.

Table 2: Average Rainfall in Rajasthan from 1999 to 2012

Year	Normal Rainfall (mm)	Actual Rainfall (mm)	Percentage	Category
1999	531.0	450.0	(-)16 %	Normal
2000	531.0	381.0	(-) 29 %	Deficit
2001	531.0	517.0	(-) 3 %	Normal
2002	531.0	231.9	(-) 56 %	Deficit
2003	539.8	552.9	(+) 1 %	Normal
2004	539.8	484.7	(-) 12 %	Normal
2005	539.8	508.2	(-) 7 %	Normal
2006	539.8	652.5	(+) 19 %	Normal
2007	539.8	505.7	(-) 8 %	Normal
2008	539.8	540.5	(-) 3 %	Normal
2009	539.8	387.0	(-) 31 %	Deficit
2010	533.9	623.9	(+) 17 %	Normal
2011	530.1	701.0	(+) 32 %	Excess
2012	530.1	624.8	(+) 18 %	Normal

Source: Monsoon Report, 2012, Based on IMD.

The regional model estimates the mean annual rainfall to decrease slightly, but the extreme rainfall is expected to increase in frequency and intensity. 2071-2100 projections show an increase of 20 mm for maximum 1-day rainfall and 30 mm for maximum 5-day rainfall.

Temperature

A gradual decreasing trend in mean annual temperature for the region of northwest India has been observed (Pant and Hingane, 1988). The maximum contribution to his decrease is during the southwest monsoon (-0.52^{0}C/100 years). An assessment on extreme weather events over India for the last 100 years has been done by De et al. (2005). After Jammu and Kashmir, Rajasthan is the second state where maximum number of cold waves has occurred (De *et al*., 2005).

A gradual decreasing trend in mean annual temperature for North West region over India has been observed during the southwest monsoon season in the past. High resolution regional model projections for 2071-2100 have predicted an increase in annual mean surface temperature for all parts of India with an increase of 2-4^{0}C for the state of Rajasthan.

Extreme Events:

Droughts being rampant in Rajasthan, it has been found from observation records for over 100 years that the probability of occurrence of severe and very severe droughts is high over the Western Rajasthan region. In spite of receiving high average rainfall the Southern districts of Rajasthan have also experienced large number of severe droughts in the past. Many places in Rajasthan have witnessed flash floods due to heavy rainfall events. Floods in July 1981 in Jaipur, Tonk, Nagaur and in 2006 over Barmer are a few examples. All these floods have resulted in unprecedented loss of lives and property. Due to heavy rain downpour, flooding in rivers have been also observed over the state. Dholpur flood in Aug., 1982 is an example of flooding due to river Chambal.

Wind Damage:

Barring the districts of Banswara and Dungapur, all of the districts in Rajasthan come under high damage zone owing to high velocity winds.

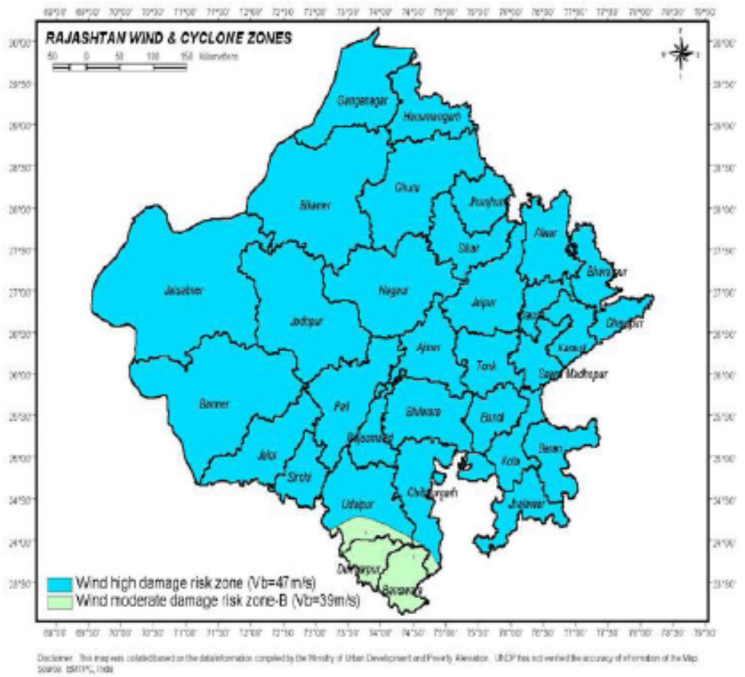


Figure 2: Map of Rajasthan showing wind damage risk zones. Blue: high risk green: moderate risk (Disaster Management & Relief Department, Government of Rajasthan)
Source: Rajasthan Climate Change Action Plan

Flood:

In July 1981, Rajasthan received abnormally heavy rain that caused flooding in Jaipur, Tonk, Nagaur and Sawai Madhopur. In July 1943, 50 inches of rain in one day was recorded on the hills of Mewar and Merwara. In August 2006, the usually drought prone Barmer district was hit by flash floods. Many people (about 1200) died in this flood. All these floods have resulted in unprecedented loss of lives and property. Apart from flooding from rainfall, river water flooding in Rajasthan has also caused havoc in past years. On 25th Aug, 1982 Dholpur in Rajasthan witnessed severe floods owing to river Chambal where the water level deviation was 14.21m over the danger level (DL) mark.

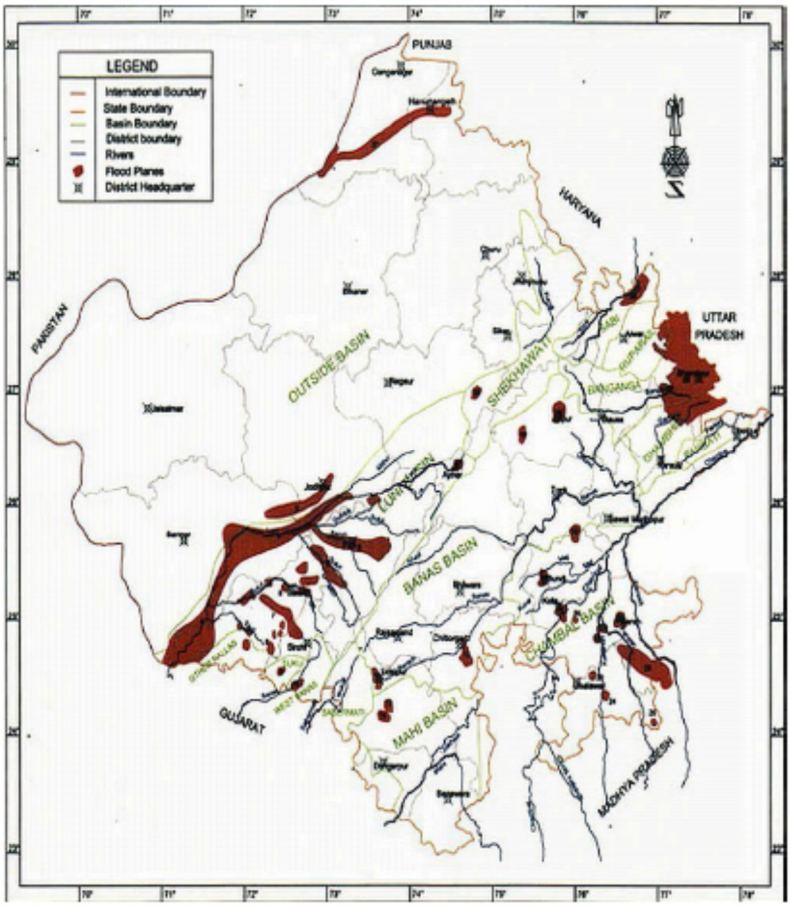


Figure 3: Map of Rajasthan showing locations of flood prone areas (Disaster Management & Relief Department, Government of Rajasthan)

Source: Rajasthan Climate Change Action Plan

Model Projections

High resolution climate change scenarios for Indian, generated by PRECIS indicate a rise in annual mean surface air temperature for all parts of India. Temperatures are likely to rise by 2-5^{0}C and 2.5-4^{0}C in A2 and B2 IPCC SRES emission scenarios by the end of 21st century (2071-2100), with warming more pronounced over the northern parts of India. The warming is also expected to be relatively greater in winter and post-monsoon seasons than in the summer monsoon season. Spatial pattern of rainfall change estimates a 20% rise in all India summer monsoon rainfall for the future in both A2 and B2 scenarios as compared to present

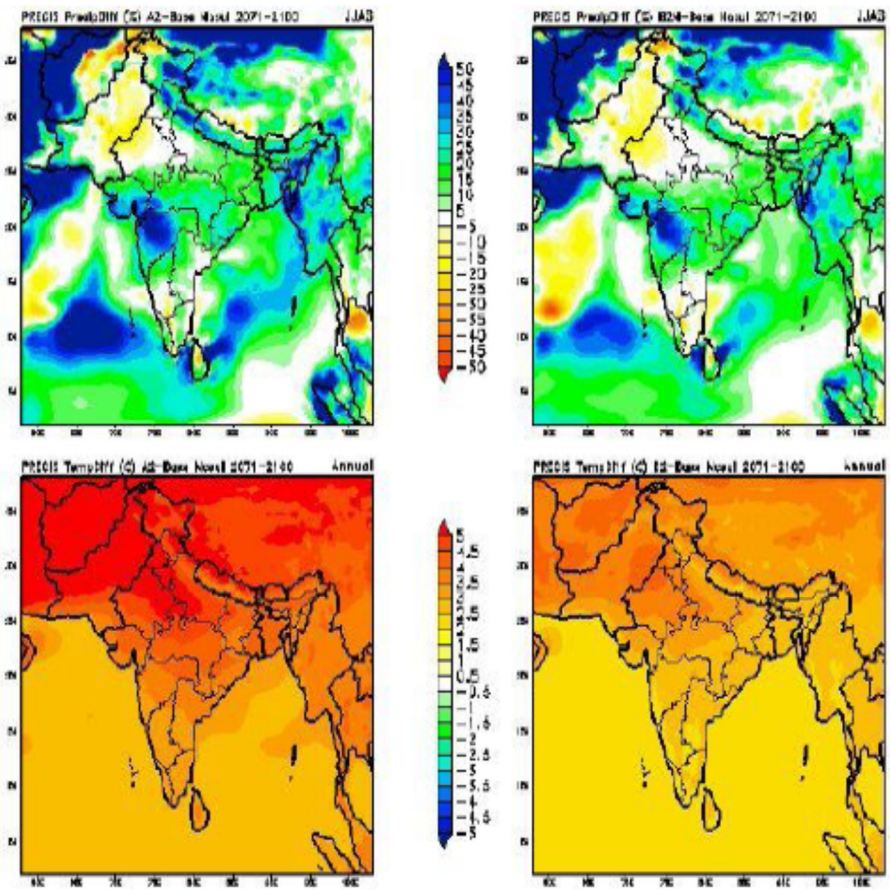


Figure 4: Projected changes in summer monsoon rainfall (upper panel) and surface air temperature (lower panel) for A2 and B2 scenarios for 2071-2100 (Kumar et al. (2006); (SDC V&A Program, 2009)
Source: Rajasthan Climate Change Action Plan

The model projections for mean annual surface air temperature in Rajasthan indicates an increase by 2-4^{0}C for the 2071-2100 period. Mean annual rainfall is predicted to decrease slightly, whereas the extreme rainfall is expected to increase in frequency and intensity. Maximum 1-day rainfall is expected to increase by 20 mm, and maximum 5-day rainfall by 30 mm in the period 2071-2100 (SDC V&A Program, 2009).

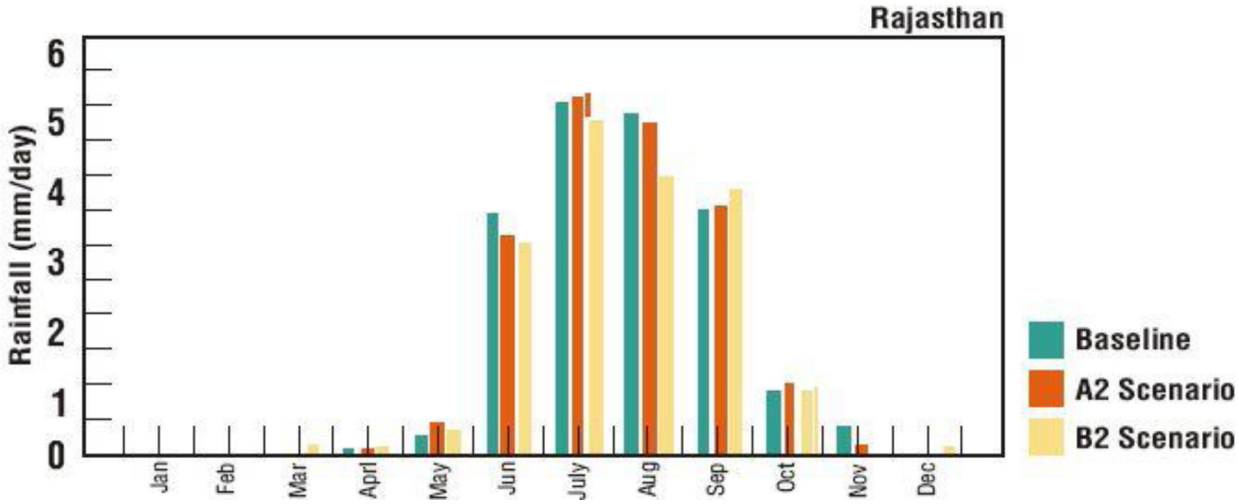


Figure 5: Baseline and future (2071-2100) projections of mean annual cycles of precipitation for Rajasthan, as simulated by PRECIS (Kumar et al., 2006)

Source: Rajasthan Climate Change Action Plan

Climate Change Scenario in Watersheds:

It is observed that climate related risk is high in all most all the watersheds. Occurrence of drought /consecutive drought is a common phenomenon in these watersheds which affect overall production and productivity of crops. Likelihood probability of drought is expected in 3-4 years in majority of the watersheds, posing high threat to people's livelihoods. Delay in onset of monsoon, high intensity rainfall in short duration and long dry spell in monsoon are also emerging as a threat for the people which results with top soil erosion, high crop mortality and poor availability of fodder crops for the livestock. Livestock rearing is one of the major livelihoods strategy in the State as a whole, including these watersheds and poor availability of fodder has got a direct bearing on the livelihoods of the marginal segment. Climate analysis reveals that probability of occurrence of such situation is once in 4-5 years in some watersheds and even within 3-4 years in some of these watersheds. Cold wave, frost, hailstorm and pest attack are some of other issues that have been observed in these watersheds.

Table 3: Existing Climate Risk, Impact and Probability of Occurrence Matrix

Risk	Impact of Climate Variability	Likelihood Probability	Risk Category
Drought	Scarcity of drinking water	Generally in 3-4 years	High
	Migration of people		
	Reduction in crop production / productivity		
	Reduction in overall productivity of fodder		
	Death of livestock due to lack of fodder		
Excess rainfall	Soil erosion	Every 3 to 4 years	Medium
	Increased incidence of Insect / Pest Attack		
	Human health issues (Fever, Dengue Etc.)		
	Damage to water harvesting structures		
Delay in Monsoon	Delay in sowing, planting and harvesting	Every 4-5 year	High
	Reduction in Kharif crop production		
	Seasonality shift reduce productivity		
	Scarcity of fodder		

	Delay in Kharif leads to delay in Rabi crop		
Intermitted long dry spell	Reduction in crop yields, crop loss	Every alternate year	High
Temperature extremes	Increased evapo-transpiration	Frequent	Medium
	Reduced flowering and grain filling in wheat		
	Increasing crop water demand		
	, High mortality of small ruminants		
	Fire out-break in forest area		
Hailstorm	Crop Damage	Every 3 to 4 years	Medium
	Increased livestock mortality		
Cold wave	High mortality of animals	Every 4-5 years	Medium
Frost	Crop Damage	Every 2-3 years	Medium
	Reduction in crop yields		

Source: Climate Vulnerability Assessment Study in the proposed ten Watersheds of Rajasthan

Community Opinion on Climate Variability and its Impact:

Field survey findings, including participatory situation analysis reveals that while the risk of drought is quite rampant in all the watersheds, floods / flash flood is also a threat due to intense rainfall in short span of time. Increasing attack of pests and morbidity / mortality rate of livestock population during such period is also witnessed by the community. Agriculture production normally goes down posing threat to family income from agricultural activities.

Extreme Weather Events:

Most of the watersheds have experienced extreme weather events during different years like, severe drought in recent years of 2002 and 2007, consecutive drought in 1998-2000, 2002-03 and 2007-10. Occurrence of flood / flash flood is also reported in some of the watersheds due to climate variability like flood of 2003 in Nayagaon-I and II watersheds, flood in 2006 in Malvi watershed etc.

Future Climate Projection:

As per the climate projection model for the watersheds, deviation in maximum temperature is expected to be between 0.26 to 0.94 across different watersheds by 2030 and which is likely to increase to 0.79 to 1.59 by 2050. Similarly, deviation in expected minimum temperature by 2030 is likely to be within 0.39 to 1.02 and by 2050, it is expected to be in the range of 1.03 to 1.77 across the watersheds. Expected change in rainfall is likely to be -3.0 to 4.3 by 2030 and 4.0 to 16.0 mm by 2050 in different watersheds.

Climate Change Scenario-Tamil Nadu:

Rainfall

The State mainly receives its rainfall in three seasons, viz. South west Monsoon (SWM), North east Monsoon (NEM) and Pre monsoon season. The normal annual rainfall falling over the state is 958.4 mm is received at the State. About 48 per cent of the total annual average rainfall is received during NEM, while about 35 per cent is received during SWM and the balance in the other seasons. Tamil Nadu receives about 51 per cent of its annual rainfall during NEM season (IMD, 2001). The coastal districts receive about 65 - 75 per cent of annual rainfall and interior districts get about 40-50 per cent in this season. The percentage share of rainfall during the NEM

is higher in most parts of Tamil Nadu. The hilly regions in the west and hilly/ plain lands in north western half of the region only receive major share from SWM.

Spatial distribution of the rain fall received over Tamil Nadu is highly variable. Rainfall over coastal areas is more and decreases to inland areas since the rainfall causing systems are forming over Bay of Bengal and moving towards the coast of Tamil Nadu. Also the rainfall over northern end is more than the southern locations. It is probably due the maximum rainfall zones of the main systems are in the north eastern sectors. Orography of the rainfall process also plays an important role in the spatial distribution of rainfall.

The windward (eastern) sides of the Eastern Ghats are having more rainfall than the leeward (western) side. The total amount of rainfall in the season is not constant and have inter seasonal and intra seasonal variability due to formation/ non-formation of rain causing mechanisms and their movements. If they move in north westerly or westerly direction, the systems cause more rainfall than when they re-curve or move in northerly direction The coefficient of variation of annual rainfall is less than 25 per cent over the central part except over the coastal area north of latitude 10° N and extreme southern part where the coefficient may even exceed 30 per cent.

A review study carried out by Jain and Kumar (2012), indicates that the annual rainfall has increased by +8.5 percent and +4.4 percent in the Cauvery river basins and the river basins north to Cauvery river basin in Tamilnadu respectively in the last 100 years with respect to the average rain fall during this period. The river basins that are in the south of the Cauvery river basin have experienced decrease in annual rain fall by -9.8 percent. An analysis of annual rainy days indicates that there is no change in the Cauvery basin in the last 100 year period, however, the river basins north and south of the Cauvery basins have experience decreasing trend by -3.6 per cent and - 32.3 per cent.

Monsoons Onset and Withdrawals: The normal onset of Southwest (SW) monsoon over Tamil Nadu is predicted to take place on 1st June with a standard deviation of 7.4 days (based on data of 1901-2011). During the last 31years (1981-2011) period, however, the normal date has advanced by a day with SD of 6 days. The earliest onset is 11th May and the late onset is 18th June. Based on the linear trend analysis, it was found that the onset is advanced by one day in every 20 years period (1901-2011).

The Northeast monsoon (NE monsoon) sets in over Tamil Nadu on 20th October (based on 1901-2000). The earliest onset is 4th October and late onset is 11th November. In 75 per cent of years, the onset of NE monsoon took place between 13th October and 27th October. In 8 per cent of years the monsoon onset was found in November month (Asokan, 2007). Northeast monsoon withdraws from Tamil Nadu on 30th December with SD of 14 days. IN 51 per cent of the years, the withdrawal is between 14th December and 4th January. IN 2 per cent of the years the withdrawal took place in November itself. IN 40 per cent of the years, the withdrawal occurred in January month. The early or late onset does not have any bearing on the monsoon performance.

Extreme Rainfall: Long term studies carried out by Guhathakurta et al (2011), for the period 1901-2005, indicate, that Tamilnadu is experiencing more dry days than wet days every year. However, there has been a significant increase in heavy precipitation events as indicated in the

recordings of the IMD observing stations in the state. Increase in one day extreme rain fall events of the order of 5 to 10 cm has been observed along the northern coast of the state. In rest of the state, the extreme rain fall event has increased by less than 5 cm or less. The analysis of 25 year return period of rain fall shows a large variation from 10cm in the western parts of Tamilnadu to 25 cm and more in the northern and central coastal regions of the state.

Temperature

In general the maximum temperature rarely exceeds 43° C and the minimum temperature rarely downs below 18° C. The mean annual temperature is 28.2°C in the plains and 15.2°C in the hills. The temperature is minimum in the month of December with 24.7°C and maximum in May with 37.3°C. Soil temperature data available for a few places indicate a range from 30.7°C to 32.3°C in the plains and around 14.4°C in the hills. On the basis of temperature the coastal plain (Aduthurai) is classified as hyper-thermic (very hot), northern part (Coimbatore) and southern part (Kovilpatty) are iso-hyperthermic (steadily very hot) and hill area (Uthagamandalam) is iso-mesic (steadily cold).

Annamalai et al (2011), based on their study on temperature over Cauvery basin of Tamil Nadu reported that the average year to year variation in surface temperature lies in the range about 0.4° C with few years warmer or cooler by 0.8^0C. Based on the technique of deducting the long-time forced component (trend), the temperature series in both the seasons clearly indicates a warming tendency. For the period from 1951 to 2008, the warming is of the order of 0.7 to 0.8^0C and this is above the natural variability. One difference is that, while the warming is gradual during SWM, it appears to occur abruptly during NEM season. Balasubramanian et al (1994) based on their analysis of Coimbatore prevailed temperature from 1962 to 1992 found that there was decadal variability in maximum and minimum temperature and this was on the rise level up to 0.1 to 2.7^0C.

Cyclones

Along the eastern coast of India, Tamilnadu has been hit by about 32 cyclonic storms between1891 to 2006 of which 30 were severe cyclonic storms. The total number of cyclonic storms hitting the Tamilnadu coast increased to 44 by 2011. A sharp increase by 37.5 per cent between 2006 and 2011. Maximum number of cyclonic storms tend to cross over north Tamil Nadu coast in the post monsoon season. No cyclonic disturbances crossed Tamil Nadu coast during monsoon season (June-September). The number of storms crossed north Tamil Nadu coast is four times more than that crossed south Tamil Nadu coast during Pre monsoon months during this period. Only three cyclonic disturbances crossed Tamil Nadu coast during winter months.

Linear trend analysis based on two different periods 1891- 2011 for winter, pre monsoon, Monsoon, post monsoon and annual frequency shows that the formation of cyclonic disturbances in the BOB during winter and post monsoon months (October-February) shows an increasing trend while a decreasing trend is seen during the monsoon months (June – September).There is an increasing trend in the number of severe cyclonic storms to form in BOB in Pre monsoon months (March –May) during same period.

Sea level rise

The mean sea level rise trend off the Chennai coast is 0.32 mm/year, estimated with a 95% confidence interval of +0.37 mm/year based on monthly mean sea level data for the period 1916 to 2008 which is equivalent to a change of 0.10 feet in 100 years

Climate Projection:

The following section gives the projections of temperature and precipitation based on outputs obtained at a spatial resolution of 25 km x 25 km generated by the UK Met Office Hadley centre regional climate model PRECIS with boundary data inputs from 6 of the 17- member perturbed-physics ensemble (HadCM3Q0-Q16, known as 'QUMP'). The GHG emission drivers are generated by the IPCC A1B SRES scenario.

Maximum Temperature: The maximum temperature over Tamil Nadu is projected to increase by 1.1 ^{0}C, 2.0 ^{0}C and 3.4^{0}C in the years 2040, 2070 and 2100 respectively with reference to the baseline 1970-2000. District wise changes indicate a general maximum increase of about 1.3 ^{0}C over the North western districts of Nilgiris, Coimbatore, Tiruppur and western parts of Dindigul District. The minimum increase of about 0.7 ^{0}C is seen along the eastern parts of coastal districts particularly over Kanyakumari, Nagapattinam, Tirunelvelli and Ramanathapuram.

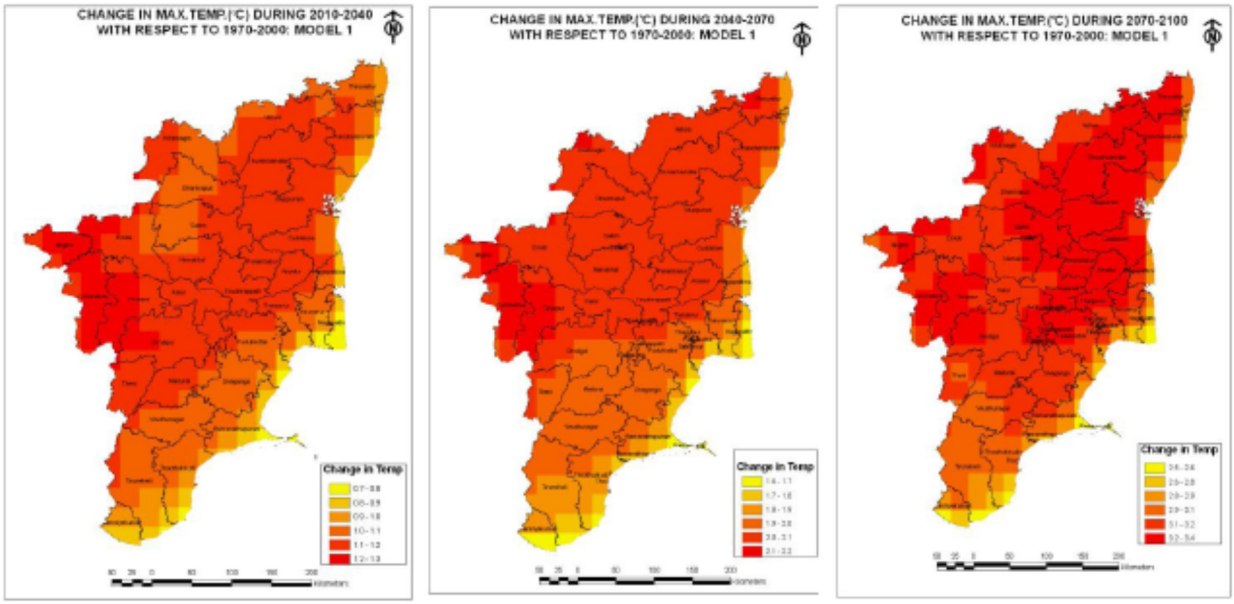


Figure 6: Change in Max. Temperature (0C) projections for 2040, 2070 and 2100 with reference to baseline (1970-2000). Source: Climate Change Action Plan, Tamil Nadu (Draft)

Minimum Temperature: Projection of minimum temperature over Tamil Nadu as a whole for 2040, 2070 and 2100 with reference to baseline 1970-2000 are likely to increase by 1.1^{0}C, 2.2 0Cand 3.4^{0}C respectively. District wise changes indicate generally lesser changes over the western parts and close to the coast. A general rise in temperature is seen ranging from 1 to 1.5^{0}C for the period 2010 to 2040 and between 2 to 2.6^{0}C for the period 2040-2070 and between 2.7 to 3.8^{0}C for the period between2070 and 2100.The southern districts Kanyakumariand Tirunelvelli show minimum increase, while the central interior districts Karur, Tiruppur, and Namakkal show the maximum increase in the minimum Temperature.

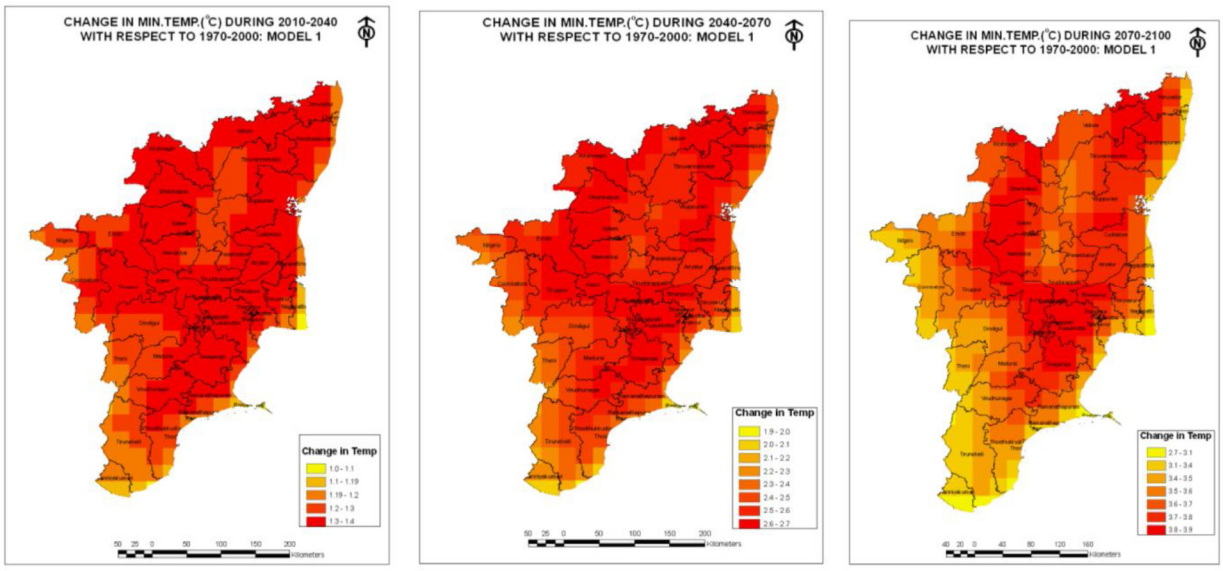


Figure 7: Change in min. Temperature (0C) projections for 2040, 2070 and 2100 with reference to baseline (1970_2000)
Source: Climate Change Action Plan, Tamil Nadu (Draft)

Annual Rainfall: The Projection for 2040 indicates a general increase in rainfall by about 7cm for the period 2040 to 2070 with reference to the base mean 1970 to 2000 while it increases by 9cm for the period 2070 to 2100. SW and NE monsoons being principal rainy seasons and analyses have been carried out for these two seasons. For Tamil Nadu as a whole, both SW and NE monsoon generally show an increase in rainfall for 2040, 2070 and 2100 ranging from 1.2 to 1.9 cm. However district wise projection indicate variant distribution.

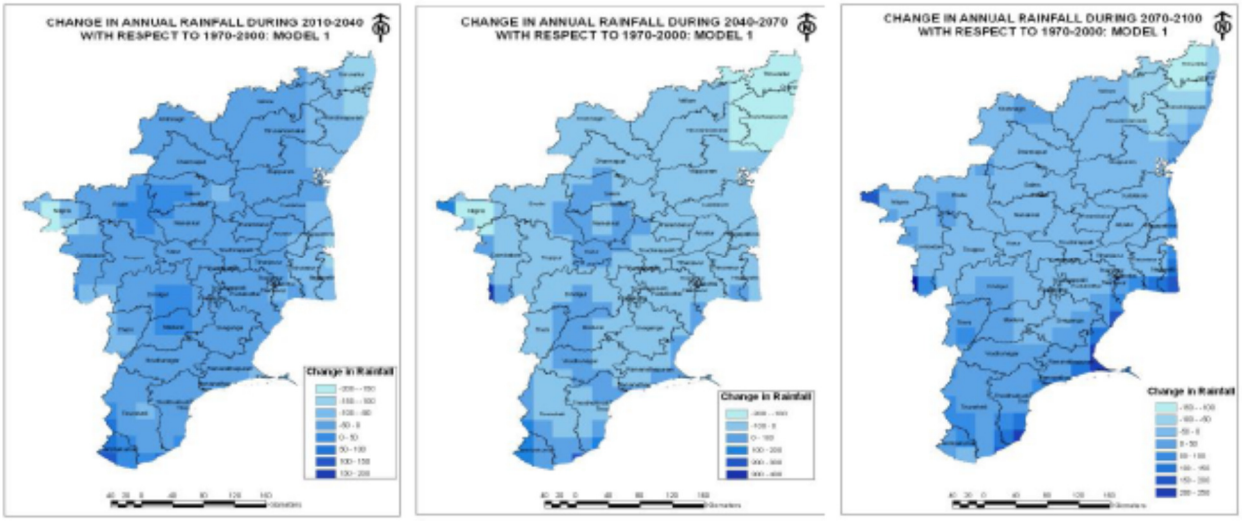


Figure 8: Change in Annual Rainfall (mm) projections for 2040, 2070 and 2100 with reference to baseline (1970_2000)
Source: Climate Change Action Plan, Tamil Nadu (Draft)

Cyclone Projections: The 4x4 report published by the Ministry of Environment and Forest (MoEF), Government of India, in 2010 concludes, that in future, the number of cyclones hitting the eastern Indian coast including Tamil Nadu is likely to reduce, however, the intensity, i.e., the wind speed of the cyclones may increase.

Projected Sea Level Rise: Using CLIMASYSTEM (a model used for generating sea level rise) with climate inputs from PRECIS it is projected that by the end of the century i.e. by 2100 the Sea level may rise off Tamil Nadu coast up to the height of 1.1 to1.25m. Consequently the increase in sea level rise in 2100 with respect to current levels is likely to range from 0.19 m to a maximum of 0.83 m.

Table 4: Projection of Sea Level Rise based on different IPCC SRES Scenarios

IPCC SRES Scenarios	GLOBAL PROJECTIONS 2100	REGIONAL PROJECTIONS 2100	
		1.097 m	**1.252m**
B1	0.18 to 0.38m	0.19 to 0.41m	0.22 to 0.47m
B2	0.20 to 0.43m	0.21 to 0.47m	0.25 to 0.53m
A1B	0.21 to 0.48m	0.23 to 0.52m	0.26 to 0.60m
A1T	0.20 to 0.45m	0.21 to 0.49m	0.25 to 0.56m
A2	0.23 to 0.51m	0.25 to 0.55m	0.28 to 0.63m
A1F1	0.26 to 0.59m	0.28 to 0.64m	0.32 to 0.73m

Source: Climate Change Action Plan, Tamil Nadu (Draft)

Impact of climate change

Agriculture: The major climate change drivers that could adversely impact agriculture in Tamil Nadu are:

Continuous increase in ambient temperature: It is well known that increase in temperature leads to decrease in yields of majority of the crops. For example, increase in temperature, causes spikelet sterility in rice affecting its productivity. Some crops may gain due to increase in CO2 in the atmosphere, for example maize, but temperature increase beyond 3^0C will reduce maize yields as well.

Increase in frequency and intensity of droughts: Tamil Nadu is prone to droughts in every 2.5 years. As a result of droughts, summer crops are likely to experience enhanced Evapo Transpiration, needing larger, more frequent irrigation. The surface water resources are likely to be depleted, creating pressure on ground water which though may need the needs in the 1st year but recurrent droughts will not enable natural recharge. Further, over extraction of ground water will enhance carbon footprint. The droughts are spread in pockets across Tamil Nadu. A further increase in frequency is likely to lead to increased soil erosion due to long dry spells and increase in fallow land, hampering the food security of the population in these pockets and a large scale migration may happen.

Increase in intensity of cyclones and floods: Along with heavy rains during the North east monsoon in the state, it experiences atmospheric depression and cyclones hit the state. With climate change as the cyclone intensities increase, this has implications on agriculture in the coastal zones. The cyclone frequency though is not noticeably increasing, the wind speed of the cyclone is increasing. This means, a larger area and deeper inland areas are likely to inundate with salt water from the sea as higher storm surge heights form. Districts along the Tamil Nadu coast are at risk.

Increase in heavy precipitation events: This is likely to lead to flash floods, leading to deterioration in soil health due to heavy loss of top soil due to erosion in hilly areas, and decline in soil organic matter content thereby impacting agriculture in these areas. The other risk that the agriculture system may have to deal with is the emergence of new pests and diseases. All this may lead to increased cost of cultivation with more number of irrigation and climate sensitive inputs

Crop specific Impacts

Rice: Increase in temperature at different growth stages of paddy crop influence its yields, with different magnitude. The impact on yields of increase in temperature by 2^0C is minimal during the early vegetative stages and becomes higher as one goes along and is maximum during the flowering and grain-filling stages of rice and this is detrimental to rice production (Priya and Geethalakshmi, 2008)

Another study using projections of PRECIS model (HadCM3) for A1B scenario for Kharif (SWM) indicate that in 2020, a likely decrease by 10 to 15 per cent in rice yield is expected due to increase in temperature and change in rainfall (Geethalakshmi and Dheebakaran, 2008). In 2050, 30 to 35 per cent yield reduction and in 2080, up to 80 per cent yield reduction are expected during this season. Though, the reduction is found in all most all the districts, it is more pronounced in the major rice growing districts of the State such as Thanjavur and Nagapattinam.

The same study for the Northeast monsoon (Rabi season) indicates that there is increase in rice yield up to 10 per cent in 2020. This might be due to the positive effect of slight increase in temperature during the Rabi season, where the crop suffers due to low air and water temperatures at present. As the major rainy season and the winter season of Tamil Nadu fall in the Rabi season, most of the time the water temperatures are lower. Increase of 1 to 2 degree must have created a positive impact during 2020. In 2050, Rabi rice yields expected to be almost same as that of the current productivity and further increase in temperature during 2080 had negative impact and may reduce the yields up to 25 per cent in most of the districts of Tamil Nadu.

Maize: The change in climate is expected to create both positive as well as negative impacts on maize cultivation. Impact of maize yield was studied for major maize growing districts of Tamil Nadu using INFOCROP model for climate change scenarios developed for 2020, 2050 and 2080 (Geethalakshmi, 2009). Analysis projected reduction in yield by 3.0, 9.3 and 18.3 per cent by 2020, 2050 and 2080 respectively from the current yield levels.

Sorghum: Impact of sorghum yield on climate change was studied for major sorghum growing districts of Tamil Nadu using INFOCROP model for the climate change scenarios developed for 2020, 2050 and 2080 (Geethalakshmi, 2009). The results indicate decline in yields by 4.5, 11.2

and 18.7 per cent respectively by 2020, 2050 and 2080 from the current yield levels if no management intervention is made. The yield reduction might be mainly because of more increase in night time temperature (minimum temperature) compared to the magnitude of increase in maximum temperature and variation in the expected rainfall.

To understand the response of cotton and red gram crops to future climate change, INFOCROP model was run using base year weather data and B2 scenario for different time periods starting from 2070 to 2100. The results indicate that the climate change is expected to negatively impact the cotton and red gram productivity.

Water Resources: Tamil Nadu constitutes about 4 percent of India's land area and is inhabited by 6 percent of India's population, but has only 2.5 percent of India's Water resources. More than 95 percent of the surface water and 80 percent of the Ground water have been put into use. Major uses of water include human/animal consumption, irrigation and industrial use. The demand for water in Tamil Nadu is increasing at a fast rate both due to increasing population and also due to larger per capita needs triggered by economic growth. The per capita availability of water resources however, is just 900 cubic meters as compared to all national average of 2,200 cubic meters. Agriculture is the largest consumer of water in the State, using 75 per cent of the State's water resources. Demands from other sectors such as domestic and industries have been growing significantly. The State is heavily dependent on monsoon rains. The annual average rainfall is around 930 mm. (47 percent during the north-east monsoon, 35 percent during the south-west monsoon, 14 percent in the summer and 4 percent in the winter). Actual rainfall for the year 2010-11 is 1165.10 mm, out of which 48 percent is through the Northeast Monsoon, 32 percent is through the Southwest Monsoon and the remaining 20 percent is through summer and winter rainfall. Since the State is entirely dependent on rains for recharging its water resources, monsoon failures lead to acute water scarcity and severe droughts.

Demand- Supply Gap: The total water potential of the State including cross border contribution from Andhra Pradesh, Karnataka and Kerala is 1775.60 TMC (47,680 MCM). This also includes ground water potential of about 20,649 MCM. The sectoral demand for water in 2011 was 49,773 MCM, which is about 2000 MCM more than the potential availability. The demand is projected to increase to 48,766 MCM and 55,649 MCM in 2020 and 2045 respectively. The gap between supply and demand by 2020 is expected to be 5,211 MCM (11 percent) and it is likely to go up to 17 percent by 2050, if there is no intervention. Therefore all possible measures have to be taken to reduce the gap.

Over-exploitation of Ground Water: As per the available data, up to 80 percent of the ground water is being used out of total available. This has led to the decline in ground water table in most of the blocks. According to the estimates for 2009, out of 385+1 blocks, 138+1(Chennai District) are over exploited, 33 are critical, 67 are semi-critical and in 11 blocks the quality is bad.

Decreasing Southwest Monsoon and Increasing Northeast Monsoon: From the Pie chart showing the annual average rainfall of the State, it is evident that the Northeast monsoon rainfall has increased from 34 percent to 63 percent and the Southwest rainfall has decreased from 48 percent to 24 percent, in a span of 10years.

Floods: Tamil Nadu generally receives copious rains during the Northeast monsoon. The heavy downpour in a short duration results in severe flood causing great risk of damage to life and property of the people and to the states assets like irrigation infrastructure, roads, etc. Every year coastal districts such as Cuddalore, Nagapattinam, Thanjavur and Thiruvarur are the most vulnerable to floods. Urban flooding is another significant problem in Tamil Nadu. The capital city Chennai and its suburban areas are worst affected by flood every year because of improper drainage and encroachment of water bodies and waterways. In the last three decades, Chennai Metropolitan Area experienced heavy floods during the years 1976, 1985, 1996, 1998, 2005, 2007 and 2008. The 2005 flooding was caused by torrential rain over four weeks in October and early November, and was compounded by more monsoonal storms that hit the region in late November.

Droughts: Tamil Nadu, a coastal state in south India, is also prone to droughts. The climate of the state ranges from dry sub humid to semiarid. An assessment of droughts in Tamil Nadu from 1977 to 1991 reveals recurrent drinking water shortages in major parts of the state and the Chennai city in particular. The worst drought years in the past 32 years are identified as 1980, 1982, 1983, 1987, 1989, 2002, 2003, 2004, 2006 and 2009. The drought of 1980 destroyed the groundnut crop in over 1, 00,000 hectares in the districts of Chengalpattu and Vellore. According to a study of rain pattern in peninsular India by the Indian Council of Agricultural Research (ICAR), the frequency of deficit rainfall and resultant drought is once in every 2.5 years in Rayalaseema and Telangana, three years in entire Tamil Nadu, four years in Vidarbha and north interior Karnataka, and once in five years in coastal Andhra Pradesh, south interior Karnataka and central part of Maharashtra.

Low Water Use Efficiency: The overall efficiency in surface irrigation like canals and tanks is only 40 percent (as compared to 75 percent in Israel) whereas in well irrigation it is 70 percent. Researchers opine that this level of overall efficiency can be increased to 50 to 60 percent in surface irrigation and to 85 percent in well irrigation. If the overall efficiency were increased in phases from 40 percent to 50 percent and 60 percent, this would annually save about 3,000 MCM for every 10 percent increase in efficiency.

Likely Implications of Climate Change on Water Resources: Evaluating the potential impacts of climate change on water resources (precipitation) requires the application of hydrological simulation modelling techniques, driven by scenarios of changes in temperature, precipitation and potential evapotranspiration derived from global and regional climate modelling studies. Precipitation is one of the least well-represented processes in climate models at present, and the uncertainty in projections of climate change impacts on water resources is therefore high. The following section summarises a review of various studies carried out to understand the likely availability of water in the future in a changing climate scenario.

Rainfall and water balance projections in Mid Century: In support to the National Water Mission's National Action Plan on Climate Change (NAPCC), the Asian Development Bank has carried out a study during 2011, to assess the likely changes in water balance projections for the Cauvery river basin which occupies about one third portion of geographical area of Tamil Nadu and is the main river basin in the state, shared along with the state of Karnataka. The study used SWAT (Soil and Water Assessment Tool) model with inputs from PRECIS Regional Climate Model run on IPCC A1B SRES. One realisation of the HADCM3 QUMP (Quantifying

Uncertainty in Model Predictions, Q14) has provided the boundary conditions for the PRECIS run. The projections under the A1B scenario indicate the following:

Average Annual changes: Annual Rainfall - For the A1B scenario no significant change is forecasted in the annual rainfall to the mid-century. Annual precipitation is highest in the Cauvery delta and in the northwest of the basin where over 1000 mm occurs. Most precipitation in the northwest of the basin is as a result of the southwest monsoon, while in the delta it is largely associated with the northeast monsoon.

Projections for Southwest monsoon: Southwest monsoon Rainfall - For the southwest monsoon, the indications of the PRECIS A1B results are that there will be a reduction in precipitation by up to 10 percent by mid-century. The implications of this projection are increased demand for irrigation water in the upper basin, coupled with a reduction in surface water availability for the delta part. The surface water resource available to the Cauvery delta is likely to decrease during the southwest monsoon under this scenario.
Groundwater demand: Groundwater demand will probably increase to compensate for the estimated weakening of the Southwest monsoon.

Changes in evapotranspiration: Marginal increase have been predicted leading to increase in water demand for crops during Southwest monsoon season.
Surface runoff: Run off is projected to decrease during Southwest monsoon season.

Projections for Northeast monsoon:

1. For the northeast monsoon the PRECIS A1B scenario indicates a 10 percent to 20 percent increase in precipitation in the Cauvery delta. Drainage is already a problem in the lower parts of the delta, and increased northeast monsoon precipitation coupled with higher sea levels will exacerbate the problems.
2. Changes in ground water recharge: The ground water estimation predicts an increase in salinity issues.
3. Flood risk: Increased rainfall, rainfall intensities and sea-level rise will increase flood risk during the Northeast monsoon. Flooding is already a problem and will likely become more significant in the future.

Rainfall Projections in End Century: IIT Madras in collaboration with Tamil Nadu Agricultural University carried out a study to assess the likely rainfall scenario in the mid-century that is likely to emerge due to climate change. This study was part of the CLIMARICE project that was supported by the Norwegian Government. The climate change data used for this study was simulated by the GCM run by the International Pacific Research Centre (IPRC) Hawaii. Climate change simulations were made using GFDL doubling of CO2 concentration in the end-century (A1B scenario) and the GCM results were downscaled to 25km resolution using IPRC-RegSIM model. The results are shown in the following figures.

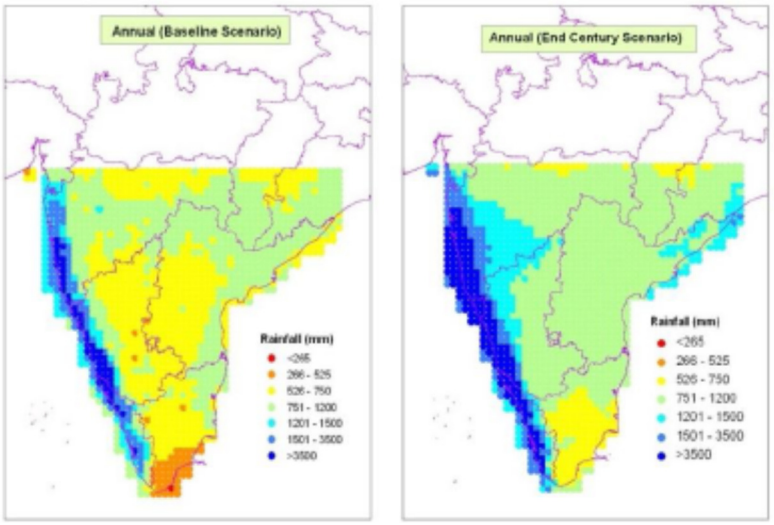


Figure 9: Annual rainfall base line and projections
Source: Climate Change Action Plan, Tamil Nadu (Draft)

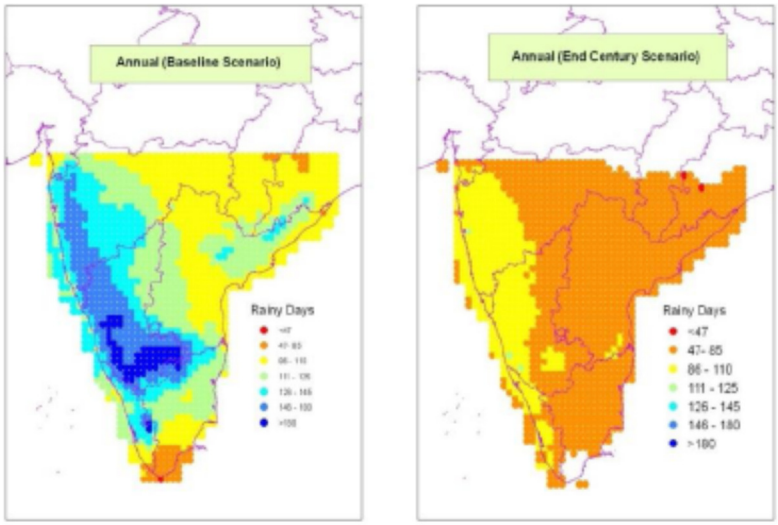


Figure 10: Annual rainfall days in base line and end century scenario
Source: Climate Change Action Plan, Tamil Nadu (Draft)

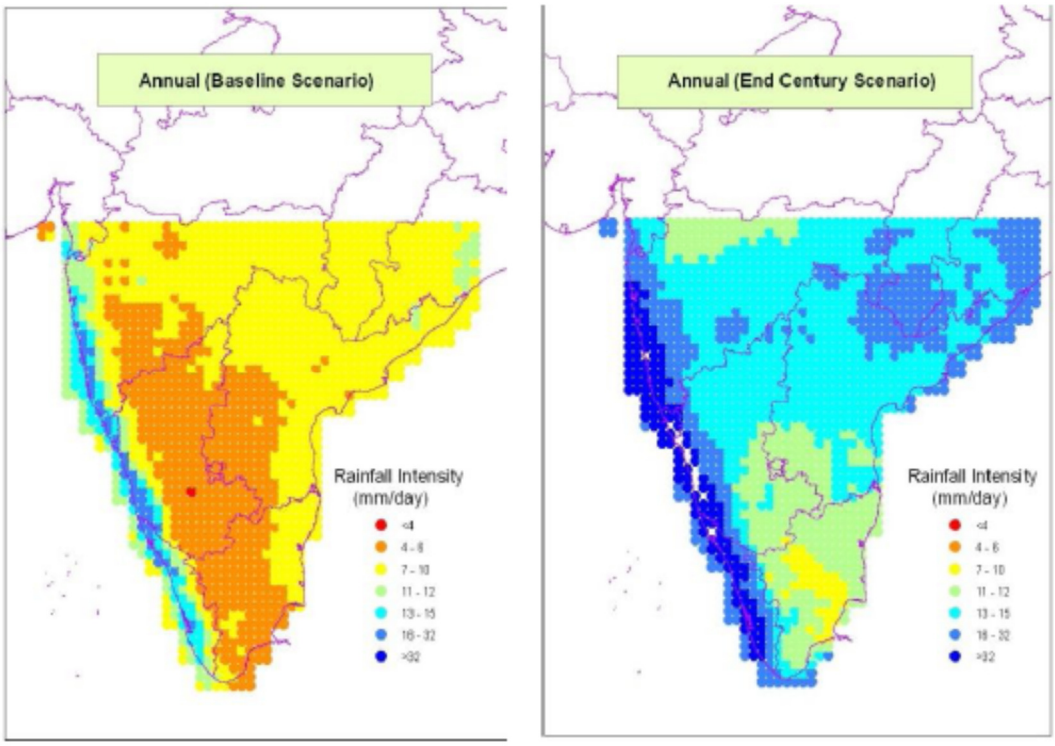


Figure 11: Average rainfall intensity
Source: Climate Change Action Plan, Tamil Nadu (Draft)

From these figures, it can be deduced that;

1. Annual rainfall is predicted to increase considerably towards the end of century (2081-2100) in Tamil Nadu. This is in agreement with the basin level study carried out by ADB (2012) and by Gosain et.al. (2011) and several other studies that project an increase in rainfall for most parts of Tamil Nadu.
2. Though there is likely to be increase in rain fall annually, but, number of rainy days is likely to decrease by half in the end century scenario with respect to the base line
3. Annual rainfall intensities are likely to increase by 7-12 mm/day
4. Rainfall intensities during south west monsoon is likely to remain at 3-6 mm/day in the coastal areas but in the rest of state it is likely to increase to increase to 9-16 mm/day
5. Rainfall intensity during the north east monsoon is likely to increase by 9-22 mm/day by the end of the century across the state, with heavier precipitation towards the coast
6. Annual rain fall intensity is again likely to increase by 8-14 mm/day all across the state by the end of the century.

Ground Water Projections

1. Climate Change is projected to have adverse impact on the ground water resources of the State. The coastal districts and islands are more sensitive to Climate Change than the

inlands. The factors that are likely to create impact on ground water resources due to climate change are as follows:

2. Rise in sea level due to increase in global temperature will result in shifting of shore lines towards inland, thus affecting the freshwater interface in the coastal aquifer. The fresh water resources in thirteen coastal districts in Tamil Nadu are affected due to seawater intrusion. The fresh ground water in Rameswaram and other islands in the State will be affected due to sea level rise.
3. The contribution of rainfall to the ground water recharge determines the quantum of ground water available for various uses. Hence, the occurrence of flood and drought due to climate change affects the ground water recharge.
4. Climate change is likely to induce changes in hydro meteorological parameters like evaporation, evapotranspiration, wind direction and wind speed etc. The changes are likely to have direct or indirect impact on ground water resources. Area irrigated by tanks will get affected severely due to evaporation losses in the tanks, which in turn would result in over dependence on ground water. Since 1980 onwards, number of over exploited blocks has increased from 21 percent to 48 percent over a span of 30 years.

Impact of Climate Change on Forests and Biodiversity: The forest cover in the State is 23625 Km2 (Forest Survey of India [FSI] report 2009), which is 18.16 percent of the total geographical area of the state. The forests are spread along the Western Ghats and in Eastern Ghats in Tamil Nadu. The state ranks 13th among the Indian States and Union Territories with reference to total recorded forest area.

In terms of forest canopy density in 2009, very dense forests occupied 12 percent (2948 sq km) of the total forest area in the state. The medium dense forest covered41 percent (10321 sq km), Open forests covered 46 percent (10356 sq km), and Scrubs covered 5% of the total forest area respectively. Between 2007 and 2009, satellite observations indicate an increase in very dense forest cover by 22 Km^2 (FSI, 2011). Simultaneously there has been an increase in open forest cover by 118 sq km, the medium dense forest cover has decreased by 22 km2 and scrub area has decreased by 40 km^2. FSI estimates indicate that in2009, the growing stock in Tamil Nadu was144.404 million cum of which 48 percent growing stock is in trees outside forests. Nine major forest types exist in Tamil Nadu (2009).

Ecosystems and associated services are sensitive to changes in climate and anthropogenic changes. Forests as discussed earlier are subject to multiple stresses, climate change brings an additional stress that can result in serious impacts on the forests. Increasing temperatures usually result in increase in the frequency of forest fires and pest and disease infestation in forests. Intermittent occurrences of drought and floods also result in increase in soil erosion and degradation of watershed, thereby affecting the forest cover. The changes in characteristics of ecosystems coupled with habitat degradation and fragmentation is likely to further weaken the ability of forests to continue to provision ecosystem goods and services.

Studies on impacts of climate change on India's forests in 2030's and 2080's using IBIS with climate inputs from PRECIS run on A1B IPCC emission scenarios, indicate shifts in forest boundary, changes in species-assemblage or forest types, changes in net primary productivity,

possible forest die-back in the transient phase, and potential loss or change in biodiversity (INCCA, 2010). Enhanced levels of CO2 are also projected to result in an increase in the net primary productivity (NPP) of forest ecosystems over more than 75 percent of the forest area.

It is projected that in 2030's most of the forest biomes in India will be highly vulnerable to the projected change in climate and 70 percent of the vegetation in India is likely to find itself less than optimally adapted to its existing location, making it more vulnerable to the adverse climatic conditions as well as to the increased biotic stresses. An India wide study carried out by Chaturvedi et al (2010), using IBIS with climate inputs from PRECIS run on A2 IPCC emission scenario, indicates, that the forests within the Tamil Nadu state are highly vulnerable due to climate change. The vulnerability index is varying between 4-7, which is associated with medium to low forest crown cover, i.e., fragmented forests making it vulnerable to pest attacks and diseases prone and at risk to frequent fires.

Impacts on grassland, mangroves, wetland, and coral reefs: According Sukumar et al (2004), increasing atmospheric CO2 levels are projected to favour C3 plants over C4 grasses, but the projected increase in temperature would favour C4 plants. C3 plants include cool, temperate grasses and practically all woody dicots, while C4 plants include warm, tropical grasses, many types of sedge and some dicots. The C4 plants that constitute much of the biomass of tropical grasslands, including the arid, semi-arid and moist grasslands in India, thrive well under conditions of lower atmospheric CO2 levels, higher temperatures and lower soil moisture, while C3 plants exhibit the opposing traits.
Mangroves form an important part of the forest ecosystem mainly distributed along the east coast. Studies indicate that the extent and composition of mangroves may undergo major change, depending on the rate of climate change and anthropogenic activities. Impact on mangrove forests will depend upon the rate of sea level rise and sediments supply from rivers, storm surges, and fresh-water flows in rivers. Sea-level rise would submerge the mangroves as well as increase the salinity of the wetland.

Impact on Non-timber forest produce (NTFP): NTFP contributes to about 20 to 40 percent of the annual income of forest dwellers who are mostly disadvantaged and landless communities with a dominant population of tribal. Depleting resource base either because of diversion of forest land for non-forest use, or due to unsustainable harvesting practices has been the major ecological challenge. Various research data suggest change in temperature and rainfall pattern affect the NTFP production-both qualitatively and quantitatively (for example, lac, honey,) which in turn affect the dependent economy of the local people.

Climate Change Scenario in Watersheds:

Climate Related Risk:
Like Rajasthan, risk of occurrence of drought / consecutive drought is common in all the watersheds. While the risk of consecutive drought is observed in three watersheds, occurrence of drought is common in the remaining seven watersheds. Probability of occurrence of drought is likely in 2-3 years with a high risk. Delay in monsoon, shift in rainy days, intermitted dry spell is also common in most of the watersheds, resulting crop failure, less productivity, scarcity in water availability for saving standing crops etc. Occurrence of excess rainfall in short span is also

observed in watersheds like Anjukulipatty – Dinduigal and Ayyampalayam – Dindigul. Excess rainfall in these areas wash out top soil resulting poor nutrient availability for crops. Extreme temperature situation is also reported in most of the watersheds which increases evapo-transmission and minimize soil moisture content. High wind speed and fog is also observed in some of the watersheds.

Table 5: Existing Climate Risk, Impact and Probability of Occurrence Matrix

Risk	Impact of Climate Variability	Likelihood Probability	Risk Category
Drought	Reduction in crop yield	Once in 2-3 years	High
	Migration of community		
	Poor family income		
	Food shortage		
	High plant mortality		
	Drinking water scarcity		
	Fodder shortage		
	Scarce water availability for domestic use		
Intermittent dry spell	Low soil moisture	Almost every year	High
	Livestock affected / low animal productivity		
	Water accessibility / irrigation demand		
	Low crop yield		
Excess rainfall	Soil erosion in sloppy land	Once in 5 years	Medium
	Crop damage		
	Low yield		
	High pest and disease attack		
Delayed on set of monsoon	Shift in sowing and harvesting period	Frequent	High
	Scarcity of fodder		
	Negative effect in crop yield & quality		
	scarcity of water		
Unseasonal rainfall	Damage to standing crops	Once in 3 – 4 years	Medium
	Low production / productivity		
Uncertainty in onset of monsoon	Delay in sowing, shortened LGP	Once in 3-4 years	Medium
High wind speed	Affects vegetable crops	Every year	Medium
	Lowers ground water table		
	Physical damage to crops		
	Soil erosion		
	Reduction in soil moisture content		
	Frequent irrigation need		
	Reduction in yield		
Extreme Temperature	Increased evapo- transpiration	Frequent	High
	Reduced soil-moisture content		
	More crop water demand		
	Frequent irrigation requirements		
	Reduction in crop yield		
Low night temperature and dew	Affects vegetable crops production	Every Year	Medium
	Increased pest / plant disease		
	Reduced flower quality		
Cold wave	High mortality of animals	In the last 4 years	Medium
Hail storm	Destruction at flowering state (mango trees)	Once in 3-4 years	Low
Flood / Flash Flood	Soil erosion	Occasional	Low
	Crop damage / high mortality		
	Low productivity		

Source: Climate Vulnerability Assessment Study in the proposed ten Watersheds of Tamil Nadu.

Community Opinion on Climate Variability and its Impact:

Community oriented participatory assessment reveals that, people in the watershed have been facing severe water scarcity. While excess rainfall hampers the crops during monsoons, water

scarcity pose threat to standing crops. Increase in day temperature with poor water availability induces high crop mortality in the watersheds.

Extreme Weather Event:
The watersheds witness extreme weather events, like drought, flood, high temperature and precipitation in recent years. People in watersheds faced drought situation in different years like drought in 2002-03, 2011, 2012, and 2013. In some watersheds, drought occurred in 1998-2000. About four watersheds witnessed severe drought during 1960-70s. Along with drought, people in the watersheds also experience flood in different years.

Future Climate Projections:
As per the analysis of future climatic situation in the watersheds, the deviation in maximum temperature is expected to be in the range of 0.49^0C to 0.63^0C by 2030 and likely to increase in the range of 0.91^0C to 1.05^0C in different watersheds by 2050. Maximum temperature in the watersheds expected to increase by 2^0C to 3^0C by 2100. Minimum temperature also likely to increase by 3^0C to 3.5-4^0C during the same period of time. Expected deviation from the mean in minimum temperature is likely to be in the range of 0.49^0C to 0.75^0C by 2030 and within 0.91^0C to 1.67^0C by 2050. Likelihood of change in rainfall as projected in 2030 and 2050 scenario, reveals that by 2030, expected change in rainfall will be within -1 mm to 8.34 mm and by 2050 it will be in the range of 3.2 mm to 10.56 mm in different watersheds.

A detailed account of watershed-wise climate change scenarios, in respect of Rajasthan and Tamil Nadu is set out as Annexure-I and II respectively

1.3 Economic, Social, Developmental and Environmental Context:

1.3.1 Project State of Tamil Nadu:

Tamil Nadu, a southern state of India, has 6 per cent of the national population, but has only 4 per cent of land area and 3 per cent of water resources of the country. Tamil Nadu is one of the water starved States, where the per capita availability of water resources is 900 cubic meters per year as compared to all India average of 2,200 cubic meters. The annual average rainfall for the state is around 921.50 mm (48% during north-east monsoon, 35% during south-west monsoon, 14% during summer and 3% during winter). The Gross Cropped Area which was 6.226 million Ha (including area under Horticulture crops) during 2001-02 has come down to 5.753 million hectors during 2010-11. Of this, 3.348 million hectares (58%) are under irrigated condition and 2.405 million Hectors (42%) are rain-fed. The net cultivable area which was 5.172 million hectors during 2001-02 has come down to 4.954 million ha during 2010-11. As against the net cropped area of 4.954 million hectares, 2.912 million hectares (59 per cent) is irrigated through different sources. In the absence of perennial rivers, rainfall is the only source of water in the state and that too inconsistent due to vagaries of monsoon. There is an urgent need for replenishing the ground water aquifer with each and every drop of rain water to ward-off impending severe water scarcity and for sustainable development. Rain water harvesting and run off management structures such as check dams, percolation ponds, farm ponds, Water Absorption Trenches (WATs), recharge shafts etc. are required to be constructed in order to improve the moisture regime of the watershed for increased land use).

Table 6: Land Degradation Scenario of Rajasthan and Tamil Nadu

Land Degradation Scenario	Tamil Nadu
Water Erosion	4926
Wind Erosion	0
Water Logging	96
Salinity / Alkalinity	96
Soil Acidity	78
Complex Problem	138
Degraded Area	5334
Geographical Area	13006
Degraded Area (Percentage)	41.0

Source: Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India

***Note**: There are several estimates for the extent of degraded lands reported by various agencies in the country. These estimates vary largely due to variation in approaches and methodologies of estimation. In absence of comprehensive and periodic scientific surveys, the figures reported by National Bureau of Soil Survey & Land Use Planning, Nagpur based on studies and several estimates (2005) for various land degradation have been considered as logically concluded and are being used for various purposes.*

Tamil Nadu, the Southern state of India, is located between 8.05' and 13.34' North latitudes and 76.14' and 80.21 East longitudes. It covers an area of about 13 M ha and accounts for about 4 per cent of the total geographical area of the country. The State forms part of the peninsular shield and composed of geologically ancient rock of diverse origins, i.e., of different soils. About three – fourth of the area of the state is unclassified crystalline rocks of Archaeon age and the rest is sedimentary rocks. The State can broadly be divided into three major physiographic divisions and 10 land forms. The climate is Semi-arid in the plains and humid to Sub-humid in the hills with annual rainfall from 750 mm in some parts of the plains to over 2400 mm in the high hills. In all 94 soil families, classified into six orders. Soil depth is not a limiting factor for crop growth in Tamil Nadu (14% shallow and very shallow soils). The texture of soils of Tamil Nadu covers a wide range from sand to clay (18% sandy surface 53% loamy and 22% clay). The soil drainage is not a major problem for crop production in the state (14% poorly to imperfectly drained soils, 64% moderately drained to well-drained soil and 15% of TGA excessively drained soils).

The soil calcareousness affects 34 per cent of the area in the Tamil Nadu State. Regarding Land Capability classification in Tamil Nadu, 79 per cent of the area is suitable for cultivation and 21 per cent of the area is not suitable for cultivations. Of the lands suited for cultivation, good land (class II) covers about 34 per cent, moderately good land (class III) covers about 30 per cent and fairly good land (class IV) covers about 15 per cent of the area of the state.

Table 7: Type of Soil and Districts falling under Different Agro-Climatic Zones of Tamil Nadu

Agro-climatic Zone	Districts	Soil Types
North Eastern Zone	Kancheepuram, Tiruvallur, Cuddalore, Vellore and Tiruvannamalai	Red sandy loam, clay loam, saline coastal-alluvium

Northern Western Zone	Dharmapuri, Salem and Namakkal	Non-Calcareousred, non-calcareous brown, calcareous black
Western Zone	Erode, Coimbatore, Tiruppur, Karur, Namakkal, Dindigul and Theni	Red loam, black
Cauvery Delta Zone	Trichy, Perambalur, Pudukkottai, Thanjavur, Nagapattinam, Tiruvarur and Part of Cuddalore	Red loam, alluvium
South Zone	Madurai, Sivaganga, Ramanathapuram, Virudhunagar, Tirunelveli and Thoothukudi	Coastal alluvium, black, red sandy soil, deep red soil.
Hugh Rainfall Zone	Kanyakumari	Saline coastal alluvium, deep red loam
Hill Zone	The Nilgiris and Kodaikanal (Dindigul)	Lateritic

Source: State Agriculture Profile, Tamil Nadu

Physiography: Physio-graphically, the state can be dived into four major regions namely, Coastal Plains, Eastern Ghats, Central Plateau and Western Ghats. The south-west monsoon feeds the Plateau and the retreating north-east monsoon brings rain to the east coast. The temperature in state ranges from 2˚C in the hills to 45˚C in other areas. The average rainfall ranges from 925mm to 1,170 mm.

Geo-morphologically, three major units are recognised from west to east in Tamil Nadu. The western part comprises the Western Ghats roughly trending North-South and marked by a continuous range of Hills, extending from Nagercoil in the south up to Nilgiri-Bilgirirangan Hills in the north and further northwards through Karnataka. The elevation of these Hills ranges between 1275 m and 2637 m. The prominent Hills are Mahendragiri, Agasthiarmalai, Anaimalai, Palani and Nilgiris. Doddabetta with an elevation of 2637 m is the highest peak in the Nilgiri Hills. The east-west trending Palghat Gap is a prominent physiographic break in the Western Ghats. The central part of the state is a vast track of dissected pediments and pediplains. Residual Hills in this part viz., Shevaroy, Kalrayan, Chitteri, Kollimalai, Pachchaimalai and Javadi demarcate the extensions of Eastern Ghats, while Karandamalai, Sirumalai and Kodaikanal Hills form another set of residual Hills, further south. The eastern part of Tamil Nadu and Pondicherry and Karaikkal are marked by a coastal plain with associated landforms like vast tidal flats, continuous beach ridges, estuaries and lagoons and a narrow but fairly continuous beach.

Water Resources: Tamil Nadu accounts for 4 per cent of the land area and 6 per cent of the population, but only 3 per cent of the water resources of the country. Most part of the State is located in the rain shadow region of the Western Ghats and hence receives limited rainfall from the South-west monsoon. The total surface water potential of the state is 36 km or 24864 M cum. There are 17 major river basins in the State with 61 reservoirs and about 41,948 tanks. Of the annual water potential of 46540 million cubic metres (MCM), surface flows account for about half of it. Most of the surface water has already been tapped, primarily for irrigation which is the largest user. About 24 lakh hectares are irrigated by surface water through major, medium and minor schemes. The utilisation of surface water for irrigation is about 90 per cent.

The utilisable groundwater is around 22,423 MCM and current level of utilisation expressed as net ground water draft of 13.558 MCM is about 60 per cent of the available recharge, while 8875 MCM (40 per cent) is the balance available for use. Over the last five years, the percentage of safe blocks has declined from 35.6 per cent to 25.2 per cent while the semi-critical blocks have gone up by a similar percentage. Over-exploitation has already occurred in more than a third of the

blocks (35.8 per cent) while eight blocks (2 per cent) have turned saline. The water level data reveals that the depth of the wells range from an average of 0.93 metres in Pudukkottai district to 43.43 metres in Erode. According to the Central Groundwater Board, there has been a general decline in groundwater level in 2003 due to the complete desaturation of shallow aquifers.

Forests: The Forest cover in the state is about 23,625 km^2 which is 18.16% of the state's geographical area[2]. In terms of forest canopy density classes, the state has 2,948 km^2 area under very dense forest, 10,321 km^2 area under open forest. The protected areas extend to 3305 KM^2 constituting 2.54% of the geographic area and 15% of the recorded forest area. Tamil Nadu ranks 14th among all the States and Union Territories of India in terms of protected area. There are 8 wildlife sanctuaries over 2, 82,685.57 ha and 12 bird sanctuaries over 17,074.59 ha., 5 National Parks over 30784.23 ha., 3 Tiger Reserves, 4 Elephant Reserves and 3 Biosphere Reserves for in situ conservation of wild fauna and flora. The recorded forest area is 22, 877 km^2 which constitutes 17.59% of the geographical area of the state. Reserved Forests comprise 84.75%, Protected Forests 9.54% and Unclassed Forests constitute 5.71%. Forest type mapping using satellite data has been undertaken by Forest Survey of India with reference to Champion & Seth Classification. As per this assessment, the state has 38 forest types which belong to nine forest type groups, viz., Tropical Wet Evergreen, Tropical Semi Evergreen, Tropical Moist Deciduous, Littoral & Swamp, Tropical Dry Deciduous, Tropical Thorn, Tropical Dry Evergreen, Sub Tropical Broadleaved Hill and Montane Wet Temperate Forests. The tree cover of the state has been estimated using trees outside forests (ToF) inventory data collected over a period of six years, i.e., 2004-10. The estimated tree cover in the state is 4,718 km^2 which is 3.63% of its geographical area.

Agriculture: The State has been classified into seven distinct agro-climatic zones based on rainfall distribution, irrigation pattern, soil characteristics, cropping pattern and other physical, ecological and social characteristics including administrative divisions. Agriculture still continues to be a dominant sector and provides livelihood to nearly 45 percent of the people. But its share has eroded to 8.0 percent of GSDP in 2011-12 from 13.0 percent in 2002-03. Global development experience reveals that one percent growth in agriculture is at least two or three times more effective in reducing poverty than the type of same growth emanating from non-agricultural sector. During the period 2000-11, this sector registered negative growth in five years and positive growth in six years shows the vulnerability of the sector and is also a cause of distress arising due to the instability in production and productivity. A comprehensive package combining several components to revitalize the sector should be designed to enhance the productivity working within the water constraints and stabilizing or enabling inter and intra seasonal risk proofing of rain fed production systems.

Diversification of Agriculture into Animal husbandry, Non-food crops, Horticulture, Floriculture and Sericulture has the potential to enhance the farm incomes. The food consumption basket is getting increasingly diversified and though cereal baskets dominate, this dominance is being eroded by rising expenditure on fruits, vegetables, milk, egg, meat and fish, which is the "High Value" segment, and this transformation, is in tune with development expectations. There are 13 coastal districts and 591 fishing villages with a total marine fisher population of about 8.92 lakh, of which 2.60 lakh fishermen are actively engaged in fishing. Hence, it becomes imperative to enhance the incomes of the fisher folk by augmenting marine and inland fish production through

[2] Based on interpretation of satellite data of October 2008-May 2009

innovative technologies. The output from the agriculture sector should be reflected in higher rural incomes leading to improved health and nutrition status. Non-farm income such as post-harvest operations, maintenance of farm equipment, etc. offer a virtuous cycle connecting expansion of farm activity to that of rural nonfarm income opportunities.

Table 8: Agriculture Profile of Tamil Nadu

S. No.	Particulars	2011-12
1	Cropping Intensity	1.18
2	Percentage of Cultivated area to Total area	45.19
3	Net area sown per capita (ha) (2011 Census)	0.07
4	Percentage of area sown more than once to net area sown	18.13
5	Percentage of net area irrigated to net area sown	59.45
6	Percentage of gross area irrigated to gross area sown	59.75
7	Yield-rate per hectare (in Kgs.)	
	Rice	3918
	Cholam	1277
	Cumbu	2452
	Ragi	2716
	Maize	6042
	Cotton (Bales of 170 Kg Lint in terms of Lint)	481
	Sugarcane (Cane in Tonnes/Hect.)	113
	Groundnut (in Nuts per Ha.)	2751
8	Tractors (2007 Livestock Census) per thousand hectare of net area sown 2010-11 (P)	16
LIVESTOCK AND ANIMAL HUSBANDRY (2007 Livestock Census)		
1	Livestock served per veterinary institution in numbers	9160
2	Number of villages served per veterinary institution	5

Source: State Statistical Hand Book, 2013, Government of Tamil Nadu

Economy: It is one of the economically progressive States in the country. During the 10th plan period, the State achieved a growth rate of 9.7 percent. The per capita income at current price estimated to be Rs. 84,496/- and Rs. 54550/- at constant price (NSDP 2011-12, base year 2004-05). The Net State Domestic Product (NSDP) at current price estimated to be Rs. 5, 72, 01, 979 Lakh and Rs. 3, 69, 29, 105 lakh in constant price (2011-12, base year 2004-05).

Natural Disaster Profile: The State with an area of 130, 0582 km, has a coastline of about 1,076 km which is about 15% of the coastline of the country. More than 40% of the fisher population live within 1 km of coast and 50% of them live within 2km of the coast. The geographical setting of the State makes it vulnerable to natural disasters such as cyclones, floods and earthquake-induced tsunami. About 8% of the state is affected by five to six cyclones every year, of which two to three are severe. Cyclonic activities on the east coast are more severe than on the west coast, and occur mainly between April-May and October-November. The State is also subjected to annual flooding, including flash floods, cloudburst floods, monsoon floods of single and multiple events, cyclonic floods, and those due to dam bursts or failure. The State is also prone to very severe damaging earthquakes, and remain more vulnerable to earthquake-induced tsunamis, since 2004 Indian Ocean tsunami, which affected the coast of Tamil Nadu, destroyed much of the marine biology and severely damaging the ecosystem.

Poverty Status: The State is having 44.07 Lakh persons (17.1%) below the poverty line[3]. The State has been successful in reducing poverty from 28.9 percent (2004-05) to 17.1 percent (2009-10) within a period of 3-4 years.

Health Status: The State is having a birth rate of 15.9 (rural-16.0 and urban-15.7, year 2011) per 1000 population which has reduced from the birth rate of 16.5 during 2005. The death rate remains at 7.4 per thousand, which is more or less constant from 2005 to 2011. However, death rate in rural is relatively higher (8.1 per thousand, year 2011) than that of urban (6.4 per thousand, year 2011). Infant Mortality Rate (IMR) remain at 22 per thousand live birth (year 2011) and it has reduced from 2005 figure of 37. Expectation of life at birth, which was 26.21 for male and 27.13 for female during 1891 to 1901, has reached to 67.10 and 70.90, by 2006-10 for male and female respectively. The state is having 30 District Hospitals, 231 Sub Divisional Hospitals, 385 Mobile Medical Units, 1,204 Primary Health Centres, 8,706 Sub-Centres and 385 Community Health Centres (as of March 2011).

Education Status: The State is having literacy rate of 80.3 percent (provisional census 2011). The male literacy rate is about 86.8 percent and the female literacy rate is 73.9 percent. The state is having 34,871 primary schools, 9,969 middle schools and 10,827 high & higher secondary schools (as of 2011-12). In 2011-12, students' strength in the state was about 3.17 million in primary schools, 2.15 million in middle schools and 6.14 million in high and higher secondary schools.

1.3.2 Project State of Rajasthan:

Wastelands cover almost 30 per cent of the total geographical area of the State, with pasture lands as the major land use. As a result, the extent of net area cultivated is about 44 per cent of the total area of the state, which is slightly lower than the national average of 45 per cent. The water scarcity and fluctuations in rainfall across agro-climatic regions are the major constraints for further expansion of area under cultivation. It also points to the necessity of switching from a water-intensive to a less water-consuming cropping pattern. This is important in determining household income and thus access to food. Rajasthan is below the all-India average in agricultural productivity.

[3] Poverty Estimation of 2009-10

Erratic and low rainfall with varying intensity and uneven distribution of heavy intensity rainfall in short spell characterizes this area. In addition, the steep slopes with sandy soils make livelihoods of small and marginal farmers from natural resources a very challenging task. A major portion of rainfall goes off as runoff, which also takes the top layer of soil away from the fields. The water tables in general are very deep and are declining further on account of overdraft. Combination of all these factors makes agriculture a very difficult proposition in the region. Hence, the central focus of this project is on works related to water and soil conservation and watershed development.

Table 9: Land Degradation Scenario of Rajasthan and Tamil Nadu

Land Degradation Scenario	Rajasthan
Water Erosion	3137
Wind Erosion	6650
Water Logging	53
Salinity / Alkalinity	1418
Soil Acidity	-
Complex Problem	110
Degraded Area	11368
Geographical Area	34224
Degraded Area (Percentage)	33.2

Source: Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India
***Note**: There are several estimates for the extent of degraded lands reported by various agencies in the country. These estimates vary largely due to variation in approaches and methodologies of estimation. In absence of comprehensive and periodic scientific surveys, the figures reported by National Bureau of Soil Survey & Land Use Planning, Nagpur based on studies and several estimates (2005) for various land degradation have been considered as logically concluded and are being used for various purposes.*

According to Economic and Human Development Indicators of UNDP, 2011, Rajasthan contributes about 5.67 percent of the total population of the country with a sex ratio of 926 which is below the national average. Under six sex ratio is 883 against the national average of 914. Contribution of Agriculture sector to NSDP has been 19.60 percent (India: 14.62 percent), whereas service sector contribution is about 63.71 percent. The Human Development Index value of the State is 0.434 with a rank of 17 (2007-08). The State is having a literacy rate of 67.06 percent (India: 74.04 percent) with a female literacy rate of 52.66 percent (India: 65.46 percent). About 24.8 percent, i.e., 16.7 million people are below the poverty line (2009-10). The multi-dimensional Poverty Index (MPI) value of the State estimated to be 0.338 with 62.8 percent multidimensional poverty headcount, i.e., 42.5 million multi-dimensional poor in the State (estimation in 2005). Prevalence of calorie malnourishment is 14 percent and about 40.4 percent under five children are underweight (2005-06).

Economy: The Rajasthan economy has shown a healthy growth path during the recent years. GSDP (at current prices) has almost doubled from Rs1, 17,274crore in FY05 to Rs3, 03,358 crore in FY11. This has made Rajasthan one of India's faster growing states with the average growth rate of around 7.43% (real GSDP) during FY05-FY11. The services sector contributes around 47% in GSDP followed by the industry and agriculture sectors at 27% and 26% respectively. Over the last ten year period (FY01-10) the share to the GSDP has changed from 27% to 26%, from 28% to 27% and 45% to 47% in the agriculture, industry and services sectors respectively. Rajasthan stands at 10th in agriculture, 11th in infrastructure, 12th in consumer markets, 14th in macro economy, 15th in investment environment, and 17th in primary education. Rajasthan stands at lower side of the capita income level. Per-capita income in the state is Rs39967 (FY2011) which is much below the national average of Rs54527 (FY2011).

Agriculture: Agriculture and allied sector plays an important role in State's economy. It contributes around 26% in GSDP. Around two third of Rajasthan's population is still dependent on agricultural activities for their livelihood. Agriculture in Rajasthan is largely dependent on rains, only 35% of the total agricultural area is irrigated. Out of the total area irrigated 65 to 70% area is under wells and tube well irrigation.

Table 10: Agriculture Statistics of Rajasthan

Agriculture Indicators	Value
Population dependent on agriculture	Two Thirds
Agriculture GDP at current prices	Rs79994.97 Crore
Growth of Agriculture GDP (Avg. from FY2001 to FY 2011)	8.30%
Agricultural sectors contribution in GSDP	26%
Food Grain production (Thousand Tonnes)	11283.4
State's contribution to national food grain production	5.17%
State's rank in food grains production	7th
Yield Kg/Hectare (of total food grains)	890
Total agricultural area irrigated	35%
Area under wells and tube well irrigation	60-70%
Rice Production (Thousand Tonnes)	228.3
Wheat Production (Thousand Tonnes)	6326.5
Coarse Cereals Production (Thousand Tonnes)	3828.1
Pulses production (Thousand Tonnes)	900.5
Oil Seeds production (Thousand Tonnes)	4469.2
Cotton production (Lint)	284.4
Sugarcane production	135.4

Source: PHD RESEARCH BUREAU, Compiled from RBI and Economic Review of Rajasthan 2009-10
Note: The data above pertains to 2009-10

Rajasthan is the leading producer of coarse cereals, pulses, gram, oilseeds and seed spices. It ranks first in the livestock population in the country and third in terms of per hectare yield of Mustard.

Table 11: Food Grain Production Scenario of Rajasthan

Year	Rajasthan	Rajasthan's Share in India
2001	10.04	5.10
2002	14.00	6.58
2003	7.54	4.31
2004	17.99	8.44
2005	12.15	6.13
2006	11.45	5.49
2007	14.21	6.54
2008	16.06	6.96
2009	16.68	7.11
2010	11.28	5.17

Source: PHD Research Bureau, Compiled from RBI, Ministry of Agriculture

Rajasthan's production of food grains has increased from 10.04mn tones in FY2001 to 16.68mn tonnes in FY2009 however; production has declined to 11.28mn tonnes in 2010. The share of Rajasthan's food grain production in India's total food grain production has shown a downward trend in the recent years.

Poverty: Rajasthan has been able to reduce its poverty by substantial amount over a period of time. Its overall poverty is less than the national average i.e. 22.1% as against 27.5% respectively. Its poverty in rural sector i.e. 18.7% is far more less than the national average of 28.3%. But the situation is opposite when it comes to urban poverty, Rajasthan has 32.9% as against the national average of 25.7%. Several projects have been initiated to eradicate poverty in the state.

Education: Rajasthan's literacy rate according to 2011 census was 67.06%, male and female literacy rates being 80.51% and 52.66% respectively. Although the female literacy rate has improved over the last decade, it lags behind the national average of 65.46%, whereas the male literacy is close to the national average of 82.14%.

Health: The Health infrastructure in the state comprises of 127 hospitals, 199 dispensaries, 1504 Rural PHCs, 37 Urban PHCs, 368 CHCs, 118 Maternity and Child Health Centres, 13 Urban Aid Posts, 11487 Sub Health Centres and 43864 inpatient beds as on December 31st 2009. There is a provision of Rs 663.53 Crores for medical and health sector including Ayurveda in the Rajasthan budget FY12.

Table 12: Health Indicators of Rajasthan

Indicators	Value
Life Expectancy at Birth (2002-06)	62 years
Infant Mortality Rate (2008)	63 per 1000 live births
Maternal Mortality Rate (2008)	388 per 1,00,000 live births
Total Fertility Rate (2008)	3.3 children born per woman
Per Capita Health Expenditure NHA-04-05	Rs. 761

Source: PHD Research Bureau, PHD Chamber of Commerce and Industry, April 2011.

There is low per capita health expenditure in Rajasthan and a high IMR (Infant Mortality Rate). This is not a very good sign; its per capita expenditure is greater than that of Bihar and Jharkhand only. It has the third highest IMR in the group. Its performance is not that impressive. In terms of life expectancy at birth of major states in India, Rajasthan is amongst the bottom states. Although there have been various efforts towards improving health standards yet this low longevity levels indicate much more effort needs to be put in. In terms of availability of safe drinking water in urban Rajasthan it stands good with 93.5% of its urban population having an access to safe drinking water unlike the rural Rajasthan where only 60% of its population has an access to safe drinking water. On an aggregate, 68.2% of its people have an access to safe drinking water.

1.4 Project / Programme Objectives:

List the main objectives of the project/programme

The overall objective of this program is "**to improve climate resilience and build adaptive capacities of the communities to climate change in the rain-fed areas of Tamil Nadu and Rajasthan**".

The program will deliver this objective and will have these four outcomes

Objective 1: Improving adaptation to climate variability / change in farm sector with better management and maintenance of soil and water regime enabling better crop / pasture land productivity and resultant increase in income of small and marginal farmers.

Objective 2: Promoting climate resilient farming system and diversification of livelihoods engaging community and their associations in the concrete adaptation pathway.

Objective 3: Reducing climate change vulnerability and process of marginalization with integration of risk mitigation products, like crop, weather and market advisory; insurance coverage and other financial products and information system.

Objective 4: Creation of knowledge management system on climate change adaptation and sharing the learning to wider audience for replication and technology cascading.

1.5 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.

Table 13: Project / Programme Components

Project / Programme Component	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
Component 1: Improved soil and water regime for better crop productivity	**Output 1.1**: Soil health improved through summer / deep ploughing **Output 1.2**: Increased water availability through farm pond, catch pit, well recharge pit and other water harvesting structures	**Outcome 1:** Soil and water regime improved and crop productivity enhanced	170,588
Component 2: Increased adaptation to climate change through climate resilient	**Output 2.1**: Increased availability of fodder/fuel through afforestation & pasture land development	**Outcome 2:** Improved climate resilient farming system and	673,670

farming system approach and diversification of livelihoods	**Output 2.2**: Improved resilience through adoption of climate resilient farming/livelihood systems **Output 2.3**: Better energy management through adoption of energy efficient systems	increased livelihood security	
Component 3: Integration of risk mitigation products like crop, weather and market advisory / insurance and other financial products for the farmers	**Output 3.1**: Installation of Automatic Weather Stations and generation of agro-advisories **Output 3.2**: Geo-hydrological study and crop-water budgeting	**Outcome 3:** Reduced climate change vulnerability with improved risk mitigation measures	195,917
Component 4: Creation of knowledge management system for climate proofing of watersheds	**Output 4.1**: Government takes up certain prescriptions and project learning for large scale implementation. **Output 4.2**: Cross learning and replication of practices and lesson learnt with improved knowledge and understanding by stakeholders	**Outcome 4:** Project learning and created knowledge base benefitted similar projects implemented in other States.	109,283
5. Project / Programme Execution Cost			120,600
6. Total Project / Programme Cost			1,270,055
7. Project/Programme Cycle Management Fee Charged by Implementing Entity			109,955
Amount of Financing Requested			**1,378,010**
Amount in US $ Million			**1.378**

1.6 Projected Calendar:

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

Table 14: Projected Calendar

Milestones	Expected Dates
Start of Project/Programme Implementation	June 2015
Mid-term Review	January 2017
Project/Programme Closing	June 2018
Terminal Evaluation	January 2019

PART II: PROJECT / PROGRAMME 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. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

In India, watershed programmes in rainfed and drought prone areas have been emphasized and both the proposed project States for concrete adaptation, i.e., Tamil Nadu and Rajasthan have been implementing watersheds under different schemes, including Integrated Watershed Management Programme (IWMP). However, the proposed adaptation project / programme will add value to the current initiative without duplication of the current scheme based support system. Improved resilience to climate variability and adaptation to climate related unfavourable situation remain to be the core of the proposed intervention. Characteristically, these value added watersheds will be distinct and model of replication in three ways, i.e., **Firstly**, it takes *into account resilience factors and lessons of climate variability and change* piloted in different locations, more specifically in a rainfed condition and corroborating with community perception and requirement; **Secondly**, *bridging the identified gaps in order to arrest / minimize the impact of drought / dry spells* and improve resilience; **Thirdly**, *it models the future climate scenario to factor in sensitivity, exposure as well as mal-adaptation: to design climate proofing measures for the watershed.* In this way it is going to enhance the adaptive capacity of the community in general and farmers in particular. The project looks at resilience of the watersheds much beyond the usual soil and water conservation focused drought proofing measures and is beyond the business-as-usual practice and can be considered as concrete adaptation. The justifications by each project / programme outcome are discussed below.

Outcome 1: Improved soil and water regime for better crop productivity and resultant increase in income of farmers.

The discussed analysis clearly shows that there is likelihood of more water scarcity and incidence of drought in the coming decades apart from delay in onset of monsoon most of the time (current monsoon of 2014 is the bright example). This will significantly reduce crop production and productivity, affect household food security and increase poverty. The non-climatic stress will be over grazing, higher bore-well density and indiscriminate ground water extraction. There will be lowering of water table and reduction of vegetation cover during climate stressed scenario. The eco-system services will have severe constraints and low or no return on agricultural investment will prompt large scale migration and over exploitation of available resource base, leading to non-recoverable resource depletion stage. Current practice of over dependence on water intensive crops, methods of flood irrigation will enhance the vulnerability further. So, adaptation to such situation by the farming community, especially small and marginal farmers is essential. In order to improve the climate resilience and better adaptation to the situation, the projects looks at improving soil and water regime through various vegetative and

mechanical measures. The suggested following measures, adhering to the technical specifications, will minimize water stress situation, enhance water availability in the watersheds and make it climate resilient and adaptive to the situation.

a. Farm pond:

High intensity rains falling in a shorter period would lead to higher runoff. Farm pond helps in arresting / storing the runoff water locally that can be utilized during critical water need of the crop or for livestock during dry periods. Farm ponds will be useful in maintaining soil-moisture regime. Size of the farm pond depends up on the size of the farm, slope of the farm land and amount of rainfall received during one rain spell. Normally, 0.1 acre area could be allocated for farm pond and depth could be 4 to 5 feet. Normally farm ponds are created on the low lying area of the farm to facilitate the collection of run off water.

b. Drainage system in crop cultivation area:

Problem of water logging in crop cultivation area was detected during problem analysis through PRA in one watershed. Open drain of total 1500 m length of 0.60 sq m c/s has been planned to mitigate the problem.

Diversion drain in crop cultivated area

c. Catch Pit

During monsoons, runoff water is collected in the Catch Pits along with silt. This will enhance the moisture availability to the crops. The capacity of a Catch pit is determined depending upon the expected runoff or water yield from the catchment. Catch Pits of size 3 x 3 x 1.2 m are dug at many places in the corners of the fields / suitable place in slope areas. From economic point of view, a catch pit should be located where the adequate volume of water can be stored with least earth work and the sub-soil should allow minimum seepage as far as possible and should also have a favourable outlet for excess runoff disposal from the pits.

d. Well recharge pit

Dug well recharge pits support Ground water recharge through existing dug wells in favourable catchments like agricultural fields, facilitate improvement in groundwater situation in the affected areas, increase the sustainability of wells during lean period and also increases overall agricultural productivity and drinking water availability. Created at the lowest point of the farm and connected to the well through pipeline. This would help in collecting the runoff water from the entire farm and diverting into the existing well and would aid in increasing the water level and water yields in the well. Circular pit of 5 m dia can be made with a depth of 4 feet. Inside the pit circular rings made up of cement are placed. Inside the pit filtration materials are placed to filter the soil as well as impurities. The clean water is let into the existing wells through the connection pipes

e. Summer ploughing:

Scientific rationality of summer ploughing and the evidence of long-term impact on soil fertility and productivity : After the harvest of the crops raised during monsoon season, the bulk density of the soil increases due to soil compaction. This impedes the movement of air, water, and nutrients in the soil profile. Ploughing in advance, i.e., in the mid-summer for kharif crops is known as summer ploughing. Summer ploughing helps to kill weeds, hibernating insects and disease-causing organisms by exposing them to the summer heat. Summer ploughing for groundnut found to be advantageous. From the climate analysis, it could be seen that the quantum of rainfall received during the SWM is slightly increasing over time. To capture the increased amount of rainfall effectively in the soil column, the hard topsoil should be opened up. Ploughing the soil in advance of the start of the monsoon season (summer ploughing) would help in opening the hard topsoil, which would lead to increased rate of infiltration besides reducing the soil borne pests, diseases and weeds and controlling soil erosion. The farmers in the watersheds will be oriented on beneficial dimensions of summer ploughing and its benefit will be optimized with their involvement. Advantages of summer ploughing in improving the productivity of land water and crops was also reported by Khan *et al*. (2002)

Khan etal (2004) has reported reduction in weed incidence, pest and disease attack, in the summer ploughed field. The weed load in terms of weed number/m^2 and weed weight was lower by 64.243% and 62.543% respectively in summer ploughed field compared to conventional field. It was also reported that soil Nematodes growth was adversely affected due to summer ploughing and there was a reduction of 61.3 – 64 per cent of plant parasitic nematodes. Additional income achieved due to higher yield of monsoon season crops.

Barriers that farmers currently face in adopting summer ploughing: In both Tamil Nadu and Rajasthan states, due to extremely dry condition in the summer season, the soils become too hard to operate. Hence there is need for heavy machines such as high power tractor with strong disc plough to work on the soil, which are not readily available in the villages when it is needed. As the farmers are resource poor, they also do not have adequate resources to take up this operation

f. Deep Tillage:

Performing tillage operations in the summers below the normal tillage depth (>25 cms) to modify adverse physical and chemical properties of the soil is termed as deep tillage. In most of the dry land regions, there exist a hard pan below 15 or 20 cms of soil depth, which limits the infiltration of rainwater as well as the moisture holding capacity to support for crop production. One of the reasons for low yields in the dry lands is the limited amount of moisture available at crop root zone. From the examination of Length of Growing Period (LGP) and the dry spells within the LGP, it could be understood that, whether it is early /

normal / late onset of growing season, the cessation happens towards the end of December and the number of dry spell week's ranges from 3.25 to 3.85. Under such situation, the LGP can be increased by one week to 10 days, if deep tillage is done as it helps in increasing the rooting depth of the plant. The available moisture to the plant will be increased if the rooting depth is increased and would help in supporting for the crop development for more number of days after the cessation of rainfall. In a situation of increasing intensity of rainfall during SW monsoon deep tillage will help in retention of higher moisture in the root zone for a longer period of time.

Deep tillage helps to disrupt dense subsoil layers and increase infiltration and root distribution for more soil water. A study reveals that the mean annual grain yield increases approximately by 10% in deep tilled plots compared with stubble mulch tillage because of increased infiltration and, possibly, rooting. Increased yields with deep tillage for two of 14 crops accounted for > 50% of the cumulative yield benefit, which was attributed to improved drainage of rain that flooded untilled plots. **Deep plowing may be an economical soil profile modification treatment to use with conservation systems**[4].

g. Earthen Embankments with spillway:

These structures are constructed across natural drainage line to collect and impound surface runoff from the catchment during monsoon. These also facilitate percolation of stored water into the soil substrata for raising the groundwater level. Three units are proposed each with Full tank reservoir level of 1.5 m and average dead storage capacity of 2700 cu m.

An earthen embankment with spillway

h. Masonry Gabion:

[4] R.L. Baumhardt and O.R. Jones, Long-term Benefits of Deep Tillage on Soil Physical Properties and Crop Yield.

Masonry gabion structure

The gabions are constructed with stones/ rubbles bound together with binding wire. An apron is made on the downstream side of the gabion to resist scouring. Concrete masonry work is done on apron and foundation for stability of the structure and maximum groundwater recharge. 20 m long structure is proposed with 1 m height and 1m keying on each side.

i. L.D.P.E. sheet lining for seepage control in existing structures:

LDPE lining is proposed on the upstream side of water impounding structures like earthen embankments to control seepage and percolation losses. The stored water could be utilised for critical irrigation to crops. Polyethene sheets of ~200 micron would be used as lining material for the purpose.

LDPE lining in earthen embankment structure

j. Masonry check dam/ Water Harvesting Structure:

The activity shall include (a) desilting of submergence area of anicuts (1500 cu m) for maximizing water storage capacity and (b) repair/ construction of low cost masonry check wall/ sub-surface dykes (7) - The sub-surface dykes have an advantage that they do not cause land submerge or obstruct flow/silt spread along the drainage line.

k. **Recharge pit on upslope side of gully plugs/ Open Recharge Pit in drainage line:**

The upslope side of silted up gully plugs and drainage lines of higher order offer good scope for undertaking recharge pits. The excavated earth is deposited beside the gully plug across the gully with side spillway or deposited on the bank sides. Open recharge pits are made with 4:1 (H:V) u/s slope and 2:1 d/s slope. Recharge pits of 6300 cu m length and 2880 cu m of open recharge pits have been planned in the project. These low cost measures would help in effective recharge of ground water

Specific Activities to implement the measures:

1. Site selection and technical feasibility for construction of percolation pond and other recharge/ harvesting structures - completed;
2. Construction of farm pond/tank in feasible areas within the watershed;
3. Orientation of farmers on periodicity and timing of field operations like deep tillage, crop planning, maintenance of structures, etc.

Activities proposed above will facilitate improvement in soil and water regime, better crop productivity and resultant increase in income of farmers, which is the main outcome envisaged. Activities which envisage harvesting of run-off water like farm pond, earthern embankment, masonry check dam etc., would be beneficial for providing life saving irrigation to crops during critical periods. Small structures like recharge pit, catch pit and well recharge pit would enable recharging of ground water by catching rain water. Summer/deep ploughing would maintain the soil moisture and prevent excess evaporation.

Outcome 2: Increased adaptation to climate change through climate resilient farming system approach and diversification of livelihoods

The programme envisages improving in existing cropping system to reduced dependency on water intensive crops and introduction of hardy varieties apart from introducing farming techniques that are efficient in the water scarce situations.

a. Afforestation and Pasture land development:

There is a tendency with the farmers to bring pasture land under tillage in Rajasthan. Preserving and promoting pasturelands and upgrading their productivity could be an important climate proofing tool. Pasture models like community pastures and group pastures are being promoted in the watersheds. Three types of intervention approach are being followed presently in the projects, viz. (i) Silvopastoral model in which there would be 150~200 plants per hectare primarily to source tree-fodder for small ruminants apart from good quality grass; there is a total ban on grazing, (ii) pasture land under controlled grazing/deferred grazing (protection for around eight months in a year) and (iii) pasture under open grazing - plantation, especially of non-palatable species being taken up in natural notches and thorny bushes (*thoor*, *ber*, etc.); the area would be brought under controlled grazing/deferred grazing model in parts by the community in due course.

In this scenario, rigorous tree seeding at 2 m interval on contour is proposed in place of conventional silvopastoral model with 150~200 plants per hectare; tree rotation policy would be introduced in these patches in due course to meet the need for fodder, fuel wood and timber at local level. The seeds of local tree species will be sown to increase vegetation canopy and minimize erosion. The partly-filled CCTs (with silt, fallen tree leaves and other biomass/ humus) and around would be preferred for tree seeding/ planting. Site-specific pits of 1 cft are planned to ensure better survival and growth of seedlings. In one watershed, water absorption granules would be tried out for better survival under moisture stress. Refilling of alternate CCTs and tree seeding is proposed for higher slopes in 3 watersheds. Tree seeding is considered highly cost effective compared to planting. Palatable and less palatable species would be promoted in completely protected and open/ deferred grazing areas respectively.

Other activities in the proposal include the following:

- Gradonies proposed in 4 watersheds- A gradonie is a bench terrace with inverse slope of around 1.5 m width. Creeper vegetables (Pumpkin,

Bitter/Ridge/Bottle gourd, etc.), Castor seeding, Cow pea, good-quality grasses, etc. would be grown on gradonies.

- 11500 (stone pitched) *thanwla*/ Crescent Bund for supporting existing tree vegetation/ rootstocks – the activity is all the more significant in areas where there is high risk of grazing and establishing vegetation through planting or seeding is a big challenge.
- Plantation of fuel/fodder trees in silvipasture sites, beside stone bunds and on upstream of gully plugs for gully stabilizationand to strengthen/ protect the structures from sudden flush/ storm water.
- Introduction of high palatable grasses like Dhaman,Karad, Deenanath through grass seeding in 162 ha area;
- Avenue Plantation: 1000 nos. of species like Ardoo, Neem, Sesam, Pongaemea, etc. planned along road side, school premises, etc.
- Pitcher irrigation (*Gheda*): *Gheda* is a locally fabricated earthen pot with good porosity. *Gheda* is installed as a single unit or in pair with an inclination towards the plant root. It is filled with water that either passes through a hole on the *Gheda* or seeps through and moistens the root zone.
- Fencing: To protect the pasture land from grazing round the year (complete protection) or during the 6~8 month period of grass-growth (deferred grazing), the locally available thorny xerophytes, viz. *Thoor Euphorbia caducifolia)* would be planted along the boundary as bio-fencing. Total unit is 11200 RMT proposed in 3 watersheds. Where Thoor is not available in plenty, but stones are locally available, stone fencing is proposed for protection of pasture**.** Total unit is 1840 RMT is proposed in the project.
- Creation of pasture group as an institution mechanismfor conservation and sustainable use of pasture land resources, e.g. grass, timber, fuel, etc. The fodder bank is planned to cover likely deficit in fodder availability during the drought period or summer season in the area.

b. Agro-forestry:

Agro-forestry is a collective name for land use systems and practices in which woody perennials

are deliberately integrated with crops and/or animals on the same land management unit. The integration can be either in a spatial mixture or in a temporal sequence. Agro-forestry systems offer and facilitate the framer with the extra earning because it enhances the production ability of the land. Diversification of forest and cultivating crops also reduces resources and labor costs and also minimizes the risks involved in the cultivations of crops. Mix up of long lasting forest crops with annual agricultural income creates big profits on the annual basis too. Agro-forestry system increases the fertility of soil and also helps in preventing soil erosion. Special attention to be given in Rajasthan for forage crops and that grasses that bind the soil. Agroforestry systems are believed to provide a number of ecosystem services. Four major ecosystem services and environmental benefits of agroforestry are (1) carbon sequestration, (2) biodiversity conservation, (3) soil enrichment and (4) air and water quality maintenance/improvement[5]. Past and present evidence clearly indicates that agroforestry, as part of a multifunctional working landscape, can be a viable land-use option that, in addition to alleviating poverty, offers a number of ecosystem services and environmental benefits. This realization should help promote agroforestry and its role as an integral part of a multifunctional working landscape. State of the World's Forest, 2005 highlights a number of experiences on economic benefit of agroforestry[6].

The activity would include bund planting and tree seeding of species like bamboo, drumstick, neem, sesam, etc.

c. Fodder Development

Fodder is an important component in any dairy unit for the sustainability of the unit. During drought, animals are sold as the farmers are unable to maintain the same due to non availability of fodder. Hence the fodder development is very important. Napier grass, also called as elephant Grass due its tallness and various vegetative growth, tiller freely and a single clump produces more than 50 tillers under favorable climate and soil conditions. Unfortunately, the grass has coarse-textured leaf blade and sheaths hairy, leaf margins sharply serrated and stems less juicy and fibrous. In 1953, a cross was made in India between Bajra which is more succulent, leafy, fine textured, palatable, fast growing and drought resistant and Napier to combine these Qualities with its high yielding potential. Hybrid Napier is a Perennial grass, which can be retained on field for 2-3 years. Compared to Napier Grass, Hybrid Napier Produces numerous leaves. It has Larger leaves , softer and less persistent hairs of leaf blades and sheaths and less sharp leaf edges .The stems are also less fibrous than Napier, tillers are more numerous and grow faster.

d. RWHS for Backyard plantation:

A rain water harvesting system with 17600 l masonry tank and pitcher/ bottle irrigation for 16 horti plants of mixed species like mango, papaya, custard apple, lemon, etc. has been designed. It would meet need for critical irrigation to fruit plants in the initial years and can be used for growing vegetables, for cattle use or alike. Mix of fruit species would be promoted to ensure better survival of the small orchard; select plants could be eliminated in case of severe drought. To augment water table in open wells, well recharge pits are planned.

e. Vegetable cultivation with trellis:

[5] J. Shibu, Agroforestry for ecosystem services and Environmental Benefits: an overview, Springer Science, 7 April 2009.
[6] Realising the economic benefit of agroforestry: experiences, lessons and challenges.

Trellis 76 No. are proposed in the project(Trellis area designed and proposed in two sizes ~0.1 ha and 54 sqm area)…Vegetables are cultivated in a compact area using trellis mode by guiding/ training the creeper vegetables. Tubers/ rhizomes are cultivated underneath. Thus, it facilitates 2/3 – tier cropping system.

Farmers in Kajili watershed of Pratapgarh district are increasingly taking up vegetable cultivation through trellis and reaping handsome profits. Twenty trellis units, each covering 0.25 bigha (0.05 ha) area were installed in the watershed. Farmers are earning handsome amount by selling vegetables at Pratapgarhmandi which is at a distance of 25 km from the watershed.

Sh. Dinesh Kumawat, a progressive farmer from Chamlawada village, is growing bitter gourd, cauli flower, capsicum, snake gourd and lady finger on trellis. In August 2015, Dinesh got a good produce (1 q of bitter gourd, cauliflower 3.1 q, pepper 0.6 q, snake gourd 1.5 q and tomato 6 q) and earned an amount of Rs.18050/- over a period of 25 days.

Farmers are earning Rs.800/- to Rs.1000/- in a day almost throughout the year from vegetable growing. The look of vegetable is so good that farmers are able to sell the produce as soon as they reach the market, that too at a premium price.

Bankers are coming forward to extend finance for setting up trellis units.

In order to ensure nutritional security of the households, vegetables are cultivated in the backyard as kitchen garden. Five to six selected vegetables, as per farmer's preference are grown in the kitchen garden.

f. Seed Bank :

Maize, Wheat and Soybean are the major crops in the project areas of Rajasthan. Seed Replacement Rate (SRR) in the project areas is lesser than the State average (25, 36 and 12 for the said crops). Seed Bank is planned to increase the SRR and also to act as a source for planting in case seed reserves elsewhere are destroyed. The seed bank will be managed by the community. It would store quality seeds including local species like a gene bank. This would help in conserving the biodiversity in the project area and around.

Other climate resilient farming systems would include:

- Promoting varieties of maize and wheat of short duration and low water requirement, promotion of improved Farm Implements and equipment (BBF implement, Zero Tiller, Weeder, Fertigation, Reaper, Thresher, etc.) through custom-hiring so as to reduce exposure/ vulnerability to bad weather and to reduce drudgery;
- **Use of high yielding and drought tolerant varieties**: High yielding varieties with drought resistant and temperature tolerant character are highly suitable for the selected watershed as it experiences frequent droughts.

- **Need based fertilizer application**: Soil test based and crop requirement based fertilizer application would improve the crops yield besides maintaining the soil health.

- **Growing alternate crops / fodder sorghum during SWM**: Using the quantum of rainfall received during the SWM, minor millet crops like barn yard Millet can be grown which

are drought hardy and needs less water. Instead of keeping the land fallow, a fodder sorghum crop can be grown to create fodder reserve for the animals.

- **Inter-cropping / Mixed Cropping / Rotational Cropping**: Intercropping is the practice of growing two or more crops in proximity. The most common goal of intercropping is to produce a greater yield on a given piece of land by making use of resources that would otherwise not be utilized by a single crop. Planning will be done carefully taking into account the local soil, climate, crops, and varieties.

- promoting package of practices incl. seed treatment, INM, IPM, organic farming, etc.
- Crop insurance awareness:
  Insurance penetration is poor in the project areas. The insurance premium/ claim window remains open for short periods. In order to promote crop insurance in the project areas, awareness programmes are proposed with an amount of Rs.50000/- in each watershed. This would help in transferring the risk from weather aberration to a good extent.

g. Promotion of Alternate Fodder:

The land area available per household / per capita for cultivation is expected to decline in the future years due to change in socio economic characteristic and induced impact due to climate variability. Under such context, allocating sizable area of land for fodder production would lead to addition stress on cultivation of food crops. Hence, alternate (conventional and non-conventional) fodder crops will be promoted to meet the challenges in fodder requirement of the future. Azolla will be promoted as alternate fodder which doubles its biomass in 10 days with very less water requirement. Its consumption will also increase omega fatty acid content in the animal products.

Azzola as an Alternate Fodder

h. Integrated Farming System:

Under changing climatic condition frequent crop failures can happen due to increased frequency of extreme weather events. Growing crops and animal (goat/sheep/dairy/poultry) together will help in increasing the adaptive capacity of the community by raising the productivity, profitability and sustainability of the farm. Integrated farming system will help in efficient recycling of by-products from one component to another which will lead to environmental safety. Apart from that, it will support in income and employment generation throughout the year.

i. Soil Nutrient Management:

Variability in rainfall and intense rain in short duration leaves the top soil eroded. As a result, soil organic matter content goes down and imbalance in soil nutrient affects crop production and productivity. The project will minimize this risk and adapt to the situation by managing organic matter content in the soil through application of vermin-compost and/or bio-fertilizers at a frequent interval. Vermin-compost contains adequate quantities of N, P, K and several micronutrients essential for plant growth (Bana*et al.,* 1993) which will maintain the soil health.

Vermicompost pit

Vermicompost

Sesbania (Green Manure)

Vermi compost is a preferred nutrient source for organic farming. It is eco-friendly, non-toxic, consumes low energy input for composting and is a recycled biological product (Edwards, 1998). In case of requirement, bio-fertilizers such as *Azospirillum* / *Phospobacterum* will also be applied to the soil to increase the availability of nutrients to the plants. Alternatively, green manure crops such as *Sesbania* will be grown during the SWM period with minimum rainfall and incorporated into the soil at the age of 40 days when the crop is in peak flowering stage. This will increase the water holding capacity of the soil by increasing organic matter content.

j. Micro Irrigation (Drip irrigation / Micro sprinklers):

Micro-irrigation refers to low-pressure irrigation systems that spray, mist, sprinkle or drip. Drip irrigation is the targeted application of water directly to the root zone, fertilizer, and chemicals that when used properly can provide great benefits such as: increased revenue from increased yields (up to 80%), increased revenue from increased quality, decreased water costs, decreased labor costs, decreased energy costs, decreased fertilizer costs, decreased pesticide costs and improved environmental quality. Micro irrigation reduces water use by 40 – 60 % and enhances efficient use of available water minimizing losses. In a water scarce situation, which is more frequent in rainfed condition, water efficient management of available water is highly essential and adoption of micro irrigation will be helpful contextually. It will reduce wastage of water, keep standing crop survive and increase production in an environmental friendly manner.

Drip Irrigation

Sprinkler Irrigation

k. Fertigation:

Increase in temperature would result in increasing the soil temperature and soil microbial activity, which would lead to quick decomposition and release of greenhouse gases such as Carbon dioxide, Nitrous oxide, and Methane besides reducing the nutrient use efficiency. Application of liquid fertilizer through drip irrigation, popularly known as fertigation will be helpful to supply required nutrient to the plant. This method will improve nutrient use efficiency, minimise waste of fertiliser and hence reduced cost of production and increase yield of crops.

l. Tank silt /Farm yard manure application

Application of tank silt will help for in situ moisture conservation by improving the soil structure, texture and infiltration rate. It will also improve the available soil nutrient status that would lead to increased crop yields.

m. Vegetable Cultivation in poly houses

Poly house Technology is the technique to protect the plants from the adverse climatic conditions such as wind, cold, precipitation, excessive radiation, extreme temperature, insects and diseases. It is also of vital importance to creating a Green houses, where the environmental conditions are so modified that one can grow any plant in any place at any time by providing sustainable environmental conditions with minimum labour. Green houses are framed or inflated structures covered with transparent or translucent material large enough to grow crops under partial or fully controlled environmental conditions to get optimum growth and productivity This technology is useful in improving the productivity of crops qualitatively and quantitatively by 3-5 times as compared to open environment. These polyhouses help to facilitate round the year production of desired crops and permits off-season production by way of controlling light, temperature, humidity, carbon dioxide level and nature of root medium.

n. Backyard poultry

Backyard poultry production is an age old practice in rural India. Most of the backyard poultry production comprises rearing of indigenous birds with poor production performances. The potentiality of indigenous birds in terms of egg production is only 70 to 80 eggs/ bird/ year and meat production is also very less. However, the backyard poultry production can be easily boosted

up with improved varieties of chicken and can promise better production of meat and egg. To improve the socio-economic status of the traditional farmers and resilience to climate change, backyard poultry is a handy enterprise with low-cost initial investment, but high economic return along with guarantee for improving protein deficiency among the poor. In this system of rearing, the birds are kept inside sheds for the first four months and later are allowed to forage in the morning till they attain good weight after which they are sold.

o. Compost Pit

Through composting complex materials are converted into simple inorganic element as available nutrient. This conversion process takes away all energy and available nutrients from the soil affecting the crop. Composting is beneficial to farmers for several reasons. It allows for the recycling of kitchen scraps and the creation of a natural fertilizer for garden plants and vegetables. Composting is an effective and environmentally friendly solution for turning yard waste and kitchen scrap into a beneficial soil amendment.

o. Kitchen Garden

A kitchen garden is where herbs and vegetables are grown around the house for household use. Since early times a small plot near to the house has been used for growing a variety of vegetables according to the season. Local varieties such as radish, broad leaf mustard, chilli, beans, pumpkins etc. are all grown in the kitchen garden.

p. Bio Gas

Biogas is a clean, non-polluting and low - cost fuel. It contains about 55 to 75 per cent methane. The dung is mixed with water (4:5) and loaded into the digester in a biogas plant. The gas generation takes place slowly and in two stages. In the first stage, the complex, organic substances contained in the waste are acted upon by a certain kind of bacteria, called acid formers and broken up into small-chain simple acids. In the second stage, these acids are acted upon by another kind of bacteria, called methane formers and produce methane and carbon dioxide. which is inflammable. Biogas can be produced from cattle dung, human waste and other organic matter by a process called "anaerobic digestion" in a biogas plant. The digested material, which comes out of the plant is an enriched manure. The initial investment is low for the construction of biogas plant. Biogas reduces the rural poor from dependence on traditional fuel sources, which lead to deforestation.

Specific Activities to implement the measures:

1. Selection & finalisation of species for agro-forestry and forage crops in consultation with farmers

(consultation meetings in every watershed villages) and technical feasibility study;

2. Selection & finalisation of species for agri-horticulture in consultation with farmers (consultation meetings in every watershed villages) & Technical feasibility;
3. Technical and Financial Feasibility Assessment for mixed cropping / crop diversification etc.;
4. Promotion of mixed cropping/crop diversification / integrated farming covering
5. Soil treatment through organic means ;
6. Demonstration of micro-irrigation operation system in-situ;
7. Grass seeding in pasture+slivi-pasture system;
8. Creation of pasture group and fodder bank

Increased adaptation to climate change through climate resilient farming system approach and diversification of livelihoods is envisaged through afforestation & pasture land development, climate resilient farming/livelihoods and energy efficient systems. Activities proposed under afforestation & pasture land development would facilitate regeneration of pasture/fodder land in the watershed area and would provide continuous supply of fodder to the animals reared by the farmers in the project area. This would act as a major driver in diversification of livelihood from the climate sensitive cropping alone and provide the community with supplementary source of income. Promotion of climate resilient farming system is expected to be attained through demonstration of short duration and low water required varieties of maize and wheat; best package of practices including seed treatment, integrated nutrient management, integrated pest management, organic farming; demonstration of minor millet which are hardy species against adverse weather; establishment of seed bank especially for minor millets; demonstration of superiority of water conservation technologies etc. Livelihood diversification is a proven method for climate resilience among communities who are dependent on climate sensitive sectors like agriculture for their livelihood. Activities proposed under this include promotion of vegetable/kitchen garden, tree based wadi, animal husbandry, backyard poultry, mushroom etc. Energy efficient systems like biogas provide energy to poor household particularly for cooking while improvised system like cook stove reduces cooking time and the resultant time and energy saved especially of women could effectively be channelized for productive works in agriculture and other livelihoods. Most of the project villages are either not grid connected or power supply is irregular. Demonstration of solar pump is definitely helpful in lifting water for life saving irrigation.

Evidence of scientific-based benefits from major proposed activities and current drivers that prevent adoption together with sustainability measures overtime are set out in the below given table

Activity	Evidence of scientific-based benefits	Current drivers that prevent the adoption	Sustainability measures overtime
Agro-forestry	Woody perennials are deliberately integrated with crops and/or animals on the same land management unit. The integration can be either in a spatial mixture or in a temporal sequence. - Extra earning for the farmer - Enhances the production ability of the land. - Diversification of forest and cultivating crops also reduces	Forestry takes atleast 3 – 5 years to give returns. Non-availability of suitable forest genotypes for agro forestry condition	Selection & finalisation of species for agro-forestry and forage crops in consultation with farmers (consultation meetings in every watershed villages) and technical feasibility study

	resources and labor costs - Minimizes the risks involved in the cultivations of crops. - Mix up of long lasting forest crops with annual agricultural income creates big profits on the annual basis too. - Increases the fertility of soil and helps in preventing soil erosion. - Special attention to be given in Rajasthan for forage crops and that grasses that bind the soil. - Provides following ecosystem services such as carbon sequestration, biodiversity conservation, soil enrichment and air and water quality maintenance/improvement.		
Agro horticulture	Growing fruit crops such as Amla, Pomegranate, Guava, Sapota, Mango, etc. in between the annual crops is known as agri-horticulture. It provides better microclimate for the annual crops besides providing off season employment and income to the farm family	Consecutive drought for more than three years becomes an issue in maintaining the horticulture saplings alive	Selection & finalisation of species for agri-horticulture in consultation with farmers (consultation meetings in every watershed villages) & Technical feasibility
	Climate Resilient Farming System for Crop productivity / Farm income,	Lack of investment power	Soft loans to the needy farmers
High yielding and drought tolerant varieties	High yielding varieties with drought resistant and temperature tolerant character are highly suitable for the selected watershed as it experiences frequent droughts	High seed cost and unavailability of seeds when the farmers need it	Making the seeds available linking the Department of Agriculture Extension system
Need based fertilizer application	Soil test based and crop requirement based fertilizer application would improve the crops yield besides maintaining the soil health.	Lack of knowledge on the nutrient requirement of the crops	Sensitization progrmmes organized at the beginning of the cropping season. Organizing soil testing campaigns to test the soil and give the farmers soil health card with recommendation for the nutrient application for the crops they plan to grow.
Cultivating alternate crops	Growing alternate crops / fodder sorghum during SWM in Tamil Nadu. Using the quantum of rainfall received during the SWM, minor millet crops like barnyard Millet can	Influence of market demand Low profits	Identification suitable alternative crops that are specific to the location that can provide fodder and grain

	be grown which are drought hardy and needs less water. Instead of keeping the land fallow, a fodder sorghum crop can be grown to create fodder reserve for the animals.		and popularizing it among the farming community
Inter-cropping / Mixed Cropping / Rotational Cropping	Intercropping is the practice of growing two or more crops in proximity. The most common goal of intercropping is to produce a greater yield on a given piece of land by making use of resources that would otherwise not be utilized by a single crop. Planning will be done carefully taking into account the local soil, climate, crops, and varieties.	Lack of knowledge	Technical and Financial Feasibility Assessment for mixed cropping / crop diversification etc
Promotion of Alternate Fodder	Azolla is one of the potential alternative fodder which doubles it biomass within 10 days with very less water. It improves the Omega fatty acid content in the egg and meat which is good for health	Availability of azolla seed inoculums. Lack of knowledge to cultivate azolla	Capacity building programmes organized to teach the farmers the cultivation techniques of Azolla. Developing mother inoculums nurseries in the village itself in progressive farmers fields. Creation of pasture group and fodder bank Grass seeding in pasture+slivi-pasture system
Integrated Farming System	Integrating animal component with agriculture. Provides additional income and employment throughout the year. Serves as alternative livelihood option for the farmers in the crisis time	Lack of funds to establish the IFS at their own fields	Provision of interest free soft loans
Soil Nutrient Management	Improves crop productivity	Less importance given under rainfed lands	Balanced fertilizer application, controlling erosion and addition of organic manures to the soil
Micro Irrigation	Drip irrigation / Micro sprinklers with fertigation	Maintenance of the micro irrigation system	Demonstration of micro-irrigation operation systems

Outcome 3: ***Reduced climate change vulnerability with improved risk mitigation measures***

Specific Activities to implement the measures:

1. Installation of Automatic Weather Station and
2. Dissemination of crop advisory services.
3. Sediment Observation Unit
4. Geo-hydrological study and crop water budgeting

Installation of Automatic Weather Station and dissemination of crop advisory services

Installation of Automatic Weather Station on a cluster basis and dissemination of crop-weather advisory to farmers based on real time data, are the major components proposed. It is proposed to disseminate the advisories through mobile with a tie-up with a suitable Technology Service Provider. For this purpose the information generated from the automatic weather stations from the project area will be linked to the TSP for agro advisory services. Accordingly, farmers will be able to take suitable decision with regard to input planning and farm management. From adaptation point, it will be one of the project input to cope with the situation and remain better prepared. In addition, it is also proposed to undertake crop-water budgeting with an objective to utilize the available water in the watershed area most judiciously. For this purpose, suitable equipments like run-off measurement device, sediment observatory etc., will be installed in the watershed area.

As per "Economic Impact of Agromet Advisory Services (AAS)" published by Agricultural Meteorology Division, India Meteorological Department, Shivajinagar, Pune in its quarterly Newsletter April-June 2013,

"The agromet advisory services rendered by India Meteorological Department (IMD) through various channels have resulted in significant increases in farm productivity resulting in increased availability of food and higher income generation. The services helped the farmers not only in increasing their productions but also reducing their losses due to changing weather patterns and others problems. Economic assessment by the National Centre for Agriculture Economics and Policy Research (NCAP) on AAS estimated 10-25% economic benefit obtained by the farmers. The economic benefit of the agromet services runs in crores. The Ministry of Earth Sciences (MoES) had engaged National Council of Applied Economic Research (NCAER) to carry out a comprehensive study on "Impact Assessment and Economic benefits of Weather & Marine Services." This study was carried out during September & October 2010 and restricted to main end users i.e. farmers for Agrometeorological Advisory Services. The field study was carried out in 12 states and 1 Union territory. According to the report only 10 to 15 percent of the farmers are benefitting from the SMS services and about 24% farmers are aware about Agromet Services. It was revealed that economic profit estimates can vary between Rs. 50,000 Crore (where 24% farmers receive weather information) to 211,000 Crore (where all farmers receive weather information). This shows that its economic returns depend on the proportion of farmers receiving information."

A pilot study was conducted to assess the economic impact of weather forecast-based advisories issued to 15 of the 127 Agrometeorological Advisory Service (AAS) units of the Ministry of Earth Sciences, Government of India. Six seasons comprising three Kharif (summer) and three Rabi (winter) during 2003–2007 were chosen. The major crops chosen for the study included food grains,

oilseeds, cash crops, fruit and vegetable crops. The sample set consisted of 80 farmers, comprising 40 responding and 40 non-responding farmers. The main aim was to study the percentage increase/decrease in the yield and net return due to AAS. Results obtained suggest that the AAS farmers accrued a net benefit of 10–15% in the overall yield and a reduction by 2–5% in the cost of cultivation over the non-AAS farmers. Courtesy: Parvinder Maini* and L. S. Rathore, Economic impact assessment of the Agrometeorological Advisory Service of India, CURRENT SCIENCE, VOL. 101, NO. 10, 25 Nov 2011.

In order to penetrate the weather/ agro advisory services in the field and with more accuracy, the proposal includes installation of Automatic Weather Station (AWS) in select watersheds on a cluster basis and dissemination of agro advisory issued by a Technology Service Provider based on the weather forecast. The weather forecast would be more realistic with data input from the AWS installed in the watershed. Agro advisory customized accordingly would equip the farmers better to plan/ time field activities and adapt to climatic aberration. The selection of watersheds for the activity has been done also considering post-project O & M concern.

Weather Advisory subscription (3 years) on crop, weather & market information

In order to help the farmers in taking timely decisions in crop planning, timing field operations and marketing the produce, it is proposed to promote Weather Advisory services in the project area. The Weather Advisory subscription would offer:

- Daily Market Prices and Arrivals Update for two Crops and three Markets for each crop; Highest, Lowest prices and Arrivals covered;
- Crop Advisory/Best Practices for two Crops; Relevant timing on Sowing, Growing, Harvesting, etc.;
- Weather Forecasts on Temperature, Rainfall Probability and Relative Humidity; Additional weather bulletins in case of sudden events;
- Agriculture & Rural News - Daily news update and crop specific events;
- relevant news at Local, Regional, National, International level.

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Sediment observation unit and data analysis

Sediment monitoring would help in

- Sequential monitoring of runoff and sediment losses to check the effectiveness of various soil and water conservation measures;
- getting basic information for planning of water resources for their optimal utilization; and
- monitoring the environmental changes due to natural/ biotic interferences.

The SOP would be installed considering the following:

- preferably at the exit point of watershed.
- site should be accessible, free from back water effects.
- There should be no turn on upstream and downstream of the structure.
- The section should be straight at least up to 30 m and control section should be masonry structure.
- The site should be stable and not subjected to degradation.
- The site should have a stream length stretch of 150 m both in upstream and downstream.

The instrumentation shall include the following:

Sl#	Parameter	Instrument/ Methodology
1	Rainfall measurement	Tipping bucket type automatic rain gauge
2	Run-off measurement	Automatic Stage Level Recorder with USB type data logger 1. The data collected is accurate with high precision. 2. There is no temporal variation of data. 3. The USB type data logger is easy, user may directly put the same in USB port of PC/Laptop. The data is available in MS excel sheet format. 4. The lithium battery is easily available.
3.	Sediment Measurement	Automatic Suspended Sampler 1. The data collected is highly accurate; no chances of human error as sediment collection is automatic. 2. There are no chances of the temporal variation of the data, as the timing is fixed from minutes to year. Besides, it is reprogrammable. 3. Suitable for even the most remote locations. 4. Very simple and easy to operate. 5. Applicable for small to medium watershed.
4.	Monitoring Station	Silt Observation Post with stilling basin. 1. The stilling basin provided in the SOP compensates the effects scouring and surface water waves due to wind movement. 2. The SOP represents the actual flow through the stream. The length of at least 30m converts the flow from to laminar flow (flow having no turbulence) & steady state condition. 3. There is no storage effect in SOP, as the discharge flows through the SOP and hence gives the accurate data of stage (level of water) and sedimentation. 4. Safety House provided is safe from social problems like theft of machine etc. (if any)

Geo-hydrological study and crop water budgeting

An in-depth study of hydro-geological regime for a watershed helps in proper treatment planning/reorientation based on the need and potential for runoff harvesting/ recharge. In most of the watersheds, there has been a significant change in cropping practice with much dependence/

exploitation of ground water resources. A crop water budgeting based on hydro-geological study with community participation could ensure sustaining positive impact from the watershed development programme on a long run. If adopted in the watershed area and around, it could lead to better aquifer management.

The activities would broadly include the following:

- Define and map the hydro-geological regime based on the geological features of the watershed;
- Analyse the present and past meteorological parameters;
- Analyse the demand, supply and groundwater balance in the area;
- Assess the impact of project interventions on local groundwater system;
- Chalking out a sustainable water management plan/ crop calendar;
- Developing a tool on crop planning on the basis of rainfall;
- Share the study results with the watershed community and train/ sensitise them on water management issues along with the NGO (EE) concerned.

Generation of weather information is pre-requisite for developing weather based agro advisory system. Based on the past weather data as well as weather forecast for next one week to 10 days, considering the stage of the crop, weather based agro advisories are issued. Hence establishment of weather stations become mandatory. *It is proposed to disseminate the advisories through mobile with a tie-up with a suitable Technology Service Provider. For this purpose the information generated from the automatic weather stations from the project area will be linked to the TSP for agro advisory services. Accordingly, farmers will be able to take suitable decision with regard to input planning and farm management. From adaptation point, it will be one of the project input to cope with the situation and remain better prepared.*

Geo-hydrological studies will be undertaken in the watershed area by means of the data generated through installation of equipment like run-off measurement device, sedimentation observatory etc. Together with the data on rainfall, crop-water requirement etc., crop-water budgeting will be prepared and crop planning will suitably be done

Outcome 4: Creation of knowledge management system for climate change adaptation in rainfed areas

The project will have a strong knowledge management system which would enable documentation and large scale dissemination of knowledge and lessons learned from the project to different stakeholders, including policy makers and planners. Based on the project learning, operational manual, policy briefs, audio visual materials, etc. will be developed for knowledge dissemination. Project will organize seminars, interactive workshops, exposure visits, etc. for cross learning and dissemination of information. The operational manual will be developed both in English and local language with illustrations so that it can be used as training instrument to train different stakeholders. Policy brief prepared as part of the knowledge management system will help policy makers to be sensitive to climate change adaptation in rainfed areas on watershed basis and help in mainstreaming such adaptation initiatives in natural resource management projects/programmes. This output will extend over the life time of the project and will highlight the impact of climate change on natural resources and agricultural development in Tamil Nadu and Rajasthan.

Specific Activities to implement the measures:

1. Design workshop for the development of operational manual
2. Developing appropriate knowledge products, including photo stories, presentations and briefing notes, etc. for use in policy advocacy activities aimed at policy makers
3. Conducting exposure visits to the project areas to enable sharing between stakeholders, farmers, and local communities.
4. Producing audio-visual material describing the projects' products and results.
5. Disseminating knowledge products, targeting outlets that are relevant for policy makers
6. Ensuring good media coverage for programme activities.
7. Conducting regular policy advocacy activities throughout the life of the programme, including at relevant national and regional events.

1. Grassland Ecology study:

The grass and herbage standing crop on pasture lands / grazing /grasslands lands are valued for multiple uses such as livestock production, wildlife food and cover, and soil protection against erosion (Benkobi *et al.* 2000). In Rajasthan, which is part of the arid and semi- arid region, agriculture is predominantly rain fed and livestock rearing is one of the primary livelihoods. However, in the districts like Udaipur, which is mainly mountainous, and semi - arid, fodder for livestock is comparatively scarce mainly due to over grazing and regular fire in these pasture/ grazing/ grass lands and forested areas. Another major reasons being disappearance or lack of proper management, protection and conservation practices. This has led to not only lack of fodder, but also heavy degradation in quality in the form of less or non palatable fodder species, predominance of less nutritive grass or other fodder species, invasion of exotic species, loss of soil due to poor or no ground cover in the pasturelands.

All types of pasture lands/ fodder producing areas within each of the selected watersheds are proposed to be ecologically assessed through systematic random sampling. The pasturelands would include common grazing/ pasture land, community/ group protected pastureland (group of private land owners getting together and protecting their land for fodder) and private pastureland and other revenue waste within the watershed. Since most of the pasture lands are on hilly and

Biomass assessment and sample collection of grass productivity

undulating terrain/ topography, the initial step would be to stratify these into hill top, top slope,

middle slope, lower slope and foot hills / flat areas. The sampling would be done covering all terrain and topography types, starting from hill top to the foot of the hills. The interval or distance between two samples would be minimum of 50 m on either side. Care would be taken to cover the entire pasture land type and have a spatially distributed sampling in addition to sampling areas at sites with variation from the general terrain and topography, viz. water bodies, streams, agriculture edges and others.

In order to draw a proper and practical pasture development and management plan, to identify appropriate indicators for monitoring and also develop appropriate monitoring protocol, it is important to carry out assessment of the pasture land areas both during the end of monsoon/ post monsoon season (September, October, November) and in June before monsoon or end of summer. This proposed ecological assessment would cover both the seasons, in order to prepare good, practical and implementable plan that would provide maximum benefit to the livestock *vis-à-vis* local community dependent on it. Grassland Ecology Studies are proposed in six watersheds with a prospective of pasture land development, management and monitoring.

Soil sample collection & weighing of grass sample collected

Mass awareness: The following activities are proposed to create awareness in the community on climate change issues and necessary adaptation measures:

- ✓ Educational kit – Manual on climate change
- ✓ IEC material – poster, pamphlet, etc.
- ✓ Community sensitization programme
- ✓ Audio – visual tool, short films, etc.
- ✓ Exposure on climate change Adaptation measures
- ✓ Training on Adaptation measures

Community sensitization through village meetings

Specific Activities to implement the measures:

1. Grassland Ecology study for pasture land development, management, monitoring prospective.
2. Design workshop for the development of operational manual
3. Developing appropriate knowledge products, including photo stories, presentations and briefing notes, etc. for use in policy advocacy activities aimed at policy makers
4. Conducting exposure visits to the project areas to enable sharing between stakeholders, farmers, and local communities.
5. Conducting training on adaptation measures needs to be implemented.

For selection of beneficiaries, initially PRA exercise had been conducted in the project area followed by the meeting of all the villagers. Thereafter, net planning has been prepared, survey number - wise, for the additional works proposed under AFB assistance and based on this the beneficiary selection has been done for each of the proposed activity. During the selection of beneficiaries all the villagers including the people from vulnerable groups were consulted for beneficiary selection. There is no risk of marginalization of minority groups in the project as the beneficiary selection includes all the categories of people in the project area

B. ***Describe how the project / programme provides 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.***

The project would be implemented in resource poor rainfed regions of Tamil Nadu and Rajasthan. Community in this region are dependent on agriculture with mostly grow single crop in a year due to limited rainfall. Hence, most of these farmers are financially very weak thereby making them vulnerable to the impact of climate change. The major beneficiaries of the project will be small and marginal farmers (with less than 2 ha of land holding), besides landless labourers and women living in the identified project locations spread over in about 25, 000 ha. The equitable distribution of benefits to the eligible beneficiaries out of the project components will be ensured through prioritization of beneficiaries for each activity (need based) on the basis of detail livelihoods profile, vulnerability mapping / assessment, housing index and need assessment. People belonging to different socio-economic categories, those will be benefitted from the intervention, are as follows.

Table 15: Beneficiary Category of the Project

Name of the Watersheds by State	Small Farmer	Marginal Farmer	BPL Households	SC Households	ST Households	Women Headed Households
Rajasthan						
Dhuvala	206	295	78	122	5	25
Nayagaon-I	134	144	85	47	98	8
Nayagaon-II	139	224	164	71	37	13
Balua	146	644	680	20	798	8
Vagda	335	5	240	14	132	70
Jhabla	107	108	80	0	219	20
Malvi	773	4	543	0	729	30
Mandli	64	534	422	55	346	42
Chainpuria	219	208	298	67	403	55
Khad	123	185	326	0	301	6
	2246	**2351**	**2916**	**396**	**3068**	**277**
Tamil Nadu						
Chithalai Thirumangalam	69	98	52	39	-	57
Bettamugilalam	100	225	25	60	150	22
Chinnapoolampatti -Kalligudi	106	27	25	38	-	14
Srirrampuram-Malvarpatty	565	286	109	10	-	22
Vannikonendal-Kurukkalpatti	215	210	1905	625	0	159
Anjukulipatty	522	108	826	340	-	32
Ayyampalayam	729	298	653	103	-	26
Peikulam-Kalligudi	70	107	33	8	-	25
Salivaram	200	82	249	107	33	-
Thally Kothanur	350	345	152	128	-	-
	2926	**1786**	**4029**	**1458**	**183**	**357**

Grand Total	**5172**	**4137**	**6945**	**1854**	**3251**	**634**

Source: Beneficiary Mapping during Participatory Field Survey

Note: BPL-Below Poverty Line; SC-Scheduled Caste; ST – Scheduled Tribe

Sustainability Development Criteria:

The project meets various sustainability development criteria such as social wellbeing, economic benefit, environmental advantage, institutional and financial benefits. With the restoration of local eco-system, eco-system services are expected to contribute building better resilience. Detail of benefits envisaged from different sustainability criteria is discussed in the table below.

Table 16: Sustainability Parameters of the Project and Key Benefits

Sustainability Criteria	Key benefits	Baseline scenario
Social	Agri-horticulture provides Off season employment and income to the farm family and reduces the vulnerability of the poor and also enhances their nutritional security	Reduced agriculture (production) threatens food security in the region.
	The necessary labour for watershed rehabilitation and protection will be from the location itself	Landless labour and marginal farmers migrate from rural areas.
	Since SHG / JLG will be linked to SHG groups where women membership is high gender equity will be maintained.	Gender inequity
Economic	Drip irrigation will reduce the cost of production as labour for weed control and reduce water consumption	Poor water use efficiency and high input cost.
	Intercropping method will produce a greater yield on a given piece of land and enhance the farm income	Mono cropping, mixing different crop seeds and sowing by broadcasting
	Through fertigation, nutrient use efficiency is increased, cost on fertilizer is reduced and yield of most of the crops are increased.	Indiscriminate use of fertilizers.
Environmental	Deep tillage is done as it helps in increasing the rooting depth of the plant. The available moisture to the plant will be increased if the rooting depth is increased and would help in supporting for the crop development for more number of days after the cessation of rainfall.	Poor root penetration and low LGP
	Agro forestry also helps in sequestering atmospheric carbon dioxide and helps in reducing emission and global warming	High level of vulnerability
	Some of the trees / shrubs suitable for agro forestry in the study region which are creating favourable micro climate for the crops in addition to minimizing soil erosion.	Lower water table negatively impacting water quality, increasing soil pollution.
	Production and use of organic manures like vermi-compost reduces use of high cost chemical fertiliser	Indiscriminate use of fertilizers.
Institutional	Creation of community based organisation such as village watershed committee (VWC), SHG, user groups, farmer interest group oriented towards climate changes adaptation scenario	Low level of awareness on climate change adaptation among watershed community.

As discussed above on different sustainability criteria, implementation of the project will not cause any negative social and environmental impacts. Local communities have been consulted in design of the project and components proposed are in line with the prevalent regulations, policies and standards of National and Sub-national (State) Governments. Components proposed under the project have been

designed with consideration towards the environmental and social principles as outlined in the Environmental and Social Policy of Adaptation Fund.

Project activities for addressing the climate threat have been identified based on the recommendations of the climate expert validated through series of community consultations. Most of the activities proposed are based on low cost technologies and the cost for majority of activities are in the range of US $ 125 to 200. Only very few activities which are included with the purpose of demonstration such as vegetable cultivation in poly house (US $ 1250), solar pumpsets (US $ 2083), drip/sprinkler (US $ 667), improved farm implement bank (US $ 4167), gradonis (US $705) etc., are slightly expensive activities. Watershed-wise and activity-wise details of physical quantity, design, unit cost etc., are presented in Annexure IV A & IV B. Majority of the activities with AF support are individual farm based activities aimed at improving resilience of farmers against the climate variability/change and implementation of them are not expected to have any significant adverse impact on environment and society. On the contrary, the activities are meant for betterment of the community and improvement of the environment. Notwithstanding the above, as an abundant precaution, suitable mechanism will be put in place to identify and assess risks during project implementation and a management plan will be worked out in case significant risks warranting suitable mitigation, are identified at implementation stage.

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

Component/sub-component	Current addressing mechanism and shortcomings	How this project trying to address this	Cost effectiveness
Improved soil and water regime for better crop productivity			
Soil health improved through summer / deep ploughing,	Technologies like summer/deep ploughing, are not being adopted by farmers due to lack of proper guidance and awareness on their benefits	The project would motivate farmers, whose land are unproductive on account of compaction and poor fertility status, by providing support for undertaking the activity for one year, so that farmers could adopt the same perpetually	The cost of summer/deep ploughing is a nominal US $ 33 per ha
Increased water availability through farm pond, catch pit, well recharge pit and other water harvesting structures	Since these investments are low cost are not supported under any of the Government programme, despite being highly beneficial.	Considering the immense benefit of such low cost structures in conservation of water, the project would support these structures	Large number of small and low cost structures like well recharge pit/ catch pit are proposed, with an average cost of US $ 100 per structure as against high cost surface water structures

Component/sub-component	Current addressing mechanism and shortcomings	How this project trying to address this	Cost effectiveness
			like farm pond (US $ 1567). Only limited number of farm ponds are proposed that too in three watersheds in Rajasthan, owing to the grave water situation in such areas.
Increased adaptation to climate change through climate resilient farming system approach and diversification of livelihoods			
Increased availability of fodder/fuel through afforestation & pasture land development	Conscious interventions are not being done in regeneration of fodder/fuel in large tracts of common pasture land available especially in Rajasthan	Project proposes to regenerate fodder/fuel in the pasture land through a variety of interventions such as construction of stone pitched thawla/crescent bud, grass seeding, planning of fodder trees, establishment of fodder bank etc	In the natural pasture eco-system, through adoption of good management practices, regeneration of existing root stocks of many wild fodder/fuel species would easily be possible. This could be supplemented through planting/seeding with extra saplings/seeds.
Improved resilience through adoption of climate resilient farming/livelihood systems	Integration of climate concerns in farming systems is absent in the project villages. Further, integrated and holistic approach is totally lacking in the existing schemes of Government, which mostly addresses crop specific issues only	The project proposes to demonstrate climate resilient technologies like micro-irrigation, soil fertility improvement, tolerant varieties, seed bank, nutritional security, livelihood diversification etc., as models.	The approach is basically intended to enhance skill and knowledge of farmers so that they will be able to adopt their production system according to climatic situation.
Better energy management through adoption of energy efficient systems	Penetration of energy efficient systems like solar pump, bio-gas etc., are very low in watershed areas.	The project proposes to popularise energy efficient systems like solar pumpsets, bio-gas etc., by demonstrating its efficacy.	Energy security and clean energy are important for rural household. The energy saving devices will reduce the recurring expenditure for fuel and will not pollute the environment
Integration of risk mitigation products like crop, weather and market advisory / insurance and other financial products for the farmers			

Component/sub-component	Current addressing mechanism and shortcomings	How this project trying to address this	Cost effectiveness
Installation of Automatic Weather Stations and generation of agro-advisories	Crop-weather advisories although are available, it is not based on local real time data and are beyond means of ordinary farmers.	The project proposes to install Automatic Weather Station on a cluster basis and provide real time data to Technology Service Provider for analysis, interpretation and dissemination back to the farming community in the very same cluster of watersheds.	Timely advice related to agriculture and other natural resource dependent livelihood will reduce chances of greater cash loss due to adverse weather and disaster.
Geo-hydrological study and crop-water budgeting	There is a tendency to exploit the water conserved in the watershed area, particularly by the large farmers who have access to financial resources	It is proposed to install equipments for run-off measurement, soil moisture tension etc., and carry out watershed specific Geo-hydrological studies and come out with crop-water budget appropriate to the watershed based on the existing cropping pattern	The scientific approach of crop-water budget could ensure equitable distribution of the public good (water) amongst the farmers depending on the proposed cropping pattern
Creation of knowledge management system for climate proofing of watersheds			
Government takes up prescriptions and project learning for large scale implementation.	Presently, no suitable models for climate proofing of watersheds are available in the country. Further, location specific information related to climate resilient farming systems are not available for large enough scale	Information and knowledge dissemination materials would be published and circulated. Sensitisation meetings, training and network meetings would be conducted.	The wide range experience sharing will be made through circulation of low cost public education materials like pamphlets, posters, manual etc. Exposure visits and peer learning also will be encouraged.
Cross learning and replication of practices and lesson learnt with improved knowledge and understanding by stakeholders			

The cost of implementation of watershed project including climate proofing components in Tamil Nadu (NABARD and AFB components put together) is estimated to be $2,636,488 whereas in Rajasthan the same works out to $3,006,919. Based on the coverage of watershed area, per hectare cost comes to $194.19 for Tamil Nadu, while for Rajasthan it is $253.49. In order to demonstrate cost effectiveness of climate proofing of watershed projects, the cost has been compared with alternative options available in the project area. Taking up of minor irrigation projects is one of the alternatives which can results in insulating the project area from the adverse impact of climate change. One such minor irrigation project in Rajasthan namely Earthen Dam with Spillway is found to be costing $4366.67 per hectare. Similarly in Tamil Nadu, construction of check dam is observed to have per hectare cost $4900. Thus it is amply clear that cost of climate proofing of project works out to hardly around 5% of cost of alternatives options, thus proving to be highly cost efficient.

An assessment of the cost effectiveness at the level of activities proposed in the project is given below:

Sl.No	Description of treatments	Cost Effectiveness
I	**Improvement in soil water regime**	
A	**Area Treatment-Crop Cultivated Area**	
1	Farm Pond	The cost of farm pond is about USD 250 (15mx 20mx 1m) and would result in conservation of3.0 lakh litre of water in one filling. Farm ponds are very effective for water conservation and providing life saving irrigation (2 to 3 irrigation), tackle the problem of water availability in climate change scenario. The same would also help in reducing the top soil loss from the farmers field and same can be reapplied in the field. This in-situ water conservation measure is effective as compared to ground water harvesting structures (wells and borewells) and lined tanks. Works for farm pond construction are mainly manual one and very cost effective.
2	Drainage system in crop cultivated area	The activity is proposed in one watershed Chainpuria (Rajasthan) and controlling excess runoff and crop damage due to the same. The measure is a low cost one and would constructed along the contour lines with minor gradient. The activity primarily earthwork and done with manual labour is very cost effective without any material requirement. The cost of the measure is USD 1560 and would be useful for about 15 ha of cropped areas (i.e. USD 104)
3	Catch pit	The average cost of these structure is US$ 17 and is constructed with manual labour and local material i.e. stone and gravels.
4	Well recharge pit	Well recahrge pits are effective means of insitu water conservation and diversion of surface runoff into open wells through filtrations. All the material except for pipe inlet to the well is locally available and the cost of each stature is about USD 75. The approach is well tested and has found to be effective in safe recharge of groundwater as compared to more cost intensive approaches like recharge shaft for artificial ground water recharge.
5	Summer ploughing	This includes ploughing the soil in advance of the start of the monsoon season. This will help in opening the hard top soil which would lead to increased rate of infiltration besides reducing the soil borne pests and diseases. Soil erosion will also be controlled and will also control the weeds. The cost of the intervention is USD 29 per ha and creates conducive atmosphere for crop growth.
6	Deep tillage	Performing tillage operations below the normal tillage depth to modify adverse physical and chemical properties of the soil. One of the reasons for low yields is the limited amount of moisture available to crop roots. The available moisture will be increased if the rooting depth is increased. The intervention is very cost effective @ USD 3 per ha.
B	**Drainage line treatment**	

1	Earthen Embankment with spillway	Earthen embankment normally constructed across small streams / gullies helps in arresting flow of water and create water storage which helps in recharge the downstream area. Excess water during heavy rainfall is safely conveyed through spillway without causing damage to the main structure. Since the embankment is constructed with earth dug-up from the site duly compacted, the structure is inexpensive compared to stone pitched / cement check dams.
2	Masonry Gabion	The structure help in reduction of stream velocity and thereby the erosion. Over the period the growth of vegetation around the structure helps stabilization of gullies and streams as well as conservation of water and soil. The construction is done by the local masons and the average cost is USD 1000 to 2500 depending on the dimensions of stream / gully
3	L.D.P.E Sheet lining for seepage control in existing structures	The use of LDPE for lining of water bodies helps in control of seepage and extend the availability of water for crop cultivation. The measure is proposed for existing structures and major component is material component (LDPE).
4	Masonry Check Dam/ Water Harvesting structure	Constructions of check dams help in controlling gully erosion. It serves to slow the movement of water, allowing increased percolation into the soil.
5	Recharge pit on upslope side of gully plugs	The intervention has observed to be very effective for found water recharge, soil conservation and stability of structure. It cost about USD 2 /- structure and only involve manual labour for construction
6	Open Recharge Pit in drainage line	Open Recharge Pit in drainage line (~ 4 x 1 x 0.45 m) helps in water harvesting in case of seasonal streams as well as conservation of soil within the catchment. These structures shall intercept excess runoff from high intensity rainfall events that are on a rise. The intervention cost is USD 2 /- per structure and only involves manual labour
II	**Climate Resilient Farming System and improved livelihood**	
A	**Afforestation & Pasture land development**	
1	Gradonis (bench terracing) - demo	The structure helps to reduce run-off or its velocity and to minimize soil erosion. To conserve soil moisture and fertility and to facilitate modem cropping operations i.e. mechanization, irrigation and transportation on sloping land. USD 705/- per ha. The same is planned for demonstration purpose.
2	Refilling of alternate CCTs and tree seeding	This RCCT Technology reduces soil erosion to minimum level and the plant growth on such trenches is very promising with very high survival rate (90% to 95%) with increase in height of plant from 45 cm basic height to 2m within only 6 months. This method can be adopted in low rainfall area. This method is suitable for plantation of all species and easy, simple for laborers.
3	(Stone pitched) Thawala/ Crescent	The bunds helps in water conservation upto 10 cum and help in reduction of surface runoff to the extent of 70%. Construction involves manual labour only.

	Bund for regeneration of plants	
4	Tree seeding	The intervention helps in improving vegetative cover and very cost effective. The intervention proposed would cost about USD 2.9 per 100 m of plantation.
5	Plantation of fuel/fodder trees in SP site/ stone bund	The intervention helps in bund stabilization as well as for fodder availability
6	Grass seeding in pasture + silvi pasture land	The methods proposed involves direct seeding and would help in ensuring fodder security. The cost proposed is USD 9.0 which would ensure fodder availability of minimum of 2 cattles for one season.
6	1 cft (0.3x0.3x0.3 m) pitting and tree seeding	The cost proposed are mainly towards the labour component for pit digging and for 100 such units the same is about USD 75.8 which include seed cost component of USD 1.67
7	Plantation of fodder trees for gully stabilization	the intervention would help in gully stabilization and soil conservation. The damage to the surrounding areas and land degradation would be halted due to the same. Further same would provide the fodder.
7	Use of Water absorption Material during plantation	The same is proposed as demonstration in one watershed (Mandali Watershed in Rajasthan). The same is proposed as 10 g material per plant @ Rs200/- per kg (i.e. USD 3.3 per kg). This would help in moisture conservation.
8	Thoor bio-fencing/ barrier	This intervention effectively uses locally available plant material and has found to be useful as bio-fence. The barbed wire fence costs about US$ 3.3 per running meter, whereas the biofence costs about US$ 0.3 per running meter
9	Stone Fencing bund	This intervention effectively uses locally available plant material and the cost proposed is at USD 4.6 per cum. The construction does not involve in material cost as proposed cost is only towards lobour cost.
10	Creation of Pasture group and fodder bank	The proposed activity is planned at group level and their by is very cost effective the cost proposed is US$ 833 per group
11	Bund planting/ Tree seeding	The intervention would help in bund stabilization and protect the bund and reduce the cost for its reconstruction
12	Korangad development	The Korangad system proposed aims to revive traditional fodder cultivation practices in southern India (Tamil Nadu). The system uses marginal / fallow lands for fodder cultivation, creates sustainable availability of fodder, conserves soil moisture and is very effective pasture management system. The cost of Korangad Development is proposed as US$ 41.6 per acre (i.e. US$ per ha)
13	Nursery for forestry species	The intervention would promote local availability of planting material and reduce transportation cost. Create livelihood opportunity for self help groups in the watershed areas.

14	Green coverage (Gliricidia sepium)	Gliricidia sepium is a fast growing, tropical, leguminous tree. The tree leaves are useful for green manuring and tree can be pruned to provide fodder, green manure, firewood or stakes for new fences. The intervention would help in promoting the plan species in the watershed areas.
15	Azolla development	Azolla can be promoted as alternate fodder which doubles its biomass in 10 days with very less water requirement. It also increases omega fatty acid content in the animal products. Each unit of the same would cost about USD 25 to 70/- depending on the size of unit and cattle feed requirement. Compared to other nutritional supplementation it is one of the most cost effective method.
16	Agro-forestry in channel/castor seeding	Intervention planned is to reduce the erosion in the channel for stabilization of gullies and channels. Local plant species suitable for agro-climatic region would be selected for the purpose.
B	**Other Climate resilient farming/ Livelihood Support**	
1	Wadi/ Horti-Plantation	Horticulture plantation comprising of 2 to 3 plant species are taken in a single parcial of land measuring about 0.4 ha as against monocropped orchard. Staggering of harvesting season coupled with availability of produce during the extended period helps in insulating the farmer from the price fluctuation. Plantation of forestry species around the wadi makes micro climate suitable for better growth and higher productivity.
2	Vegetable cultivation with Trellis	Perennial vegetables which are creeper in nature are cultivated by making trellis consisting of metal wire tied to poles in between every rows. The vegetable crop is allowed to creep on to these trellis and spread out so that plants are in a better position to absorb sunlight and resultant higher photosynthesis. This system has proved to be superior to the conventional system of growing vegetable on a pendal. higher yield and better income are assured through these systems. These are proposed as demonstration models for scaling up.
3	Kitchen Garden	The intervention would be helpful in providing nutritional security for the farming community.
4	RWHS for Backyard plantation	The interventions are planned for roof water harvesting and are low cost interventions for fulfiling needs of plantation crops in the backyards.
5	Well recharge	The proposed intervention in Rajasthan Watersheds would channelize surface runoff for well recharge. The per structure cost is USD 133.33.
6	Enhancing water use efficiency by use of micro irrigation/ UG pipes & outlets	The intervention planned area for demonstration purpose and would help in improving water use efficiency

7	Seed bank	Seed bank promotes seed availability at the watershed level thereby reducing cost of seed, maintain quality parameters and ensure timely availability. The cost proposed is US$ 3000 per seed bank. The activity is planned at group level thereby making it cost effective.
8	Short duration and low water required variety of maize and wheat promotion of mixed cropping	Due to early maturity of these crops which are grown in the winter season, the water requirement would be lower. Due to early maturity these crop escape the likely drought like situation during harvesting period.
9	Improved Farm Implements and equipment (BBF implement, Zero Tiller; Weeder; Fertigation; Reaper, Thresher etc.)	The Broad Bed and Furrow system is a modern version of the very old concept of encouraging controlled surface drainage by forming the soil surface into beds. The recommended BBF system consists of broad beds about 100 cm wide separated by sunken furrows about 50 cm wide. The preferred slope along the furrow is between 0.4 and 0.8 percent. Two, three, or four rows of crop can be grown on the broad bed, and the bed width and crop geometry can be varied to suit the cultivation. BBF helps in draining off excess water in the field and soil, provides congenial condition for the plant growth and development. These systems along with other measures such as zero tillage practices promote conservation tillage and improve crop productivity
10	Best package of practices incl. seed treatment, INM, IPM, organic farming, etc.	The purpose of these measures of reduce the use of chemical fertilizer, reduce cost of production and make farming more sustainable. The measures would help promoting organic and non chemical measures of nutrient and pest/ disease management
11	Crop insurance awareness programme	Penetration of crop insurance is still low in many part of watershed areas. The awareness programmes would help in popularization of insurance as risk transfer mechanism particularly under climate change scenario.
12	Silage making demo	
13	Improved animal husbandry practices including feed management, mineral bricks, silage, AI services of improved desi breed, etc.,	The same would be very useful for cattle health management requirements and providing veterinary services.
14	Backyard Poultry units	The proposed intervention is for demonstration purpose for depicting of alternative livelihood options
15	Vermicompost	Production of organic manures using earthworms is found to be very effective in improving the soil productivity due to its physico-chemical properties coupled with enzymatic actions. Compared to chemical fertilizers vermi compost is cheaper and could be produced by the farmers in their own farms. Further, vermi-compost is environmental friendly and does no harm to the ecosystem as against chemical fertilizers.

16	Integrated Farming System	Farming system wherein series of crops integrated with other compatible activities like animal husbandry, fisheries, etc. helps in judicious use of resources while augmenting financial returns from all the activities. The system having symbiotically related activities enables in reducing cost of cultivation / recurring cost thereby maximizing profit as compared to mono-cropped / single activity based system
17	Tank silt application	Application of tank silt will help for insitu soil moisture conservation by improving the soil structure, texture, and infiltration rate. It will also improve the available soil nutrient status that would lead to increased crop yields.
18	Demo plot on minor millet	The proposed intervention is for demonstration purpose
19	Herbal garden	The proposed intervention is for demonstration purpose
20	Cattle tank/trevis	The same would be very useful for cattle health management, water requirements and providing veterinary services.
21	Organic farming	The intervention is planned for creating awareness on organic farming practices to help in resource conservation, reduce chemical fertilizer use, improve soil health, reduce cost of cultivation and profitability of farming activities.
22	Mushroom	The proposed intervention is for demonstration purpose for depicting of alternative livelihood options
23	Pitcher irrigation	Pitcher irrigation is economical and environmentally sustainable approach for irrigating horticulture plantations. The costs proposed are at USD 0.334 as per the local rate for one watershed in Rajasthan (Mandali).
C	**Energy Efficient System**	
1	Improved cook stove	The interventions proposed are for creating awareness among watershed dwellers about use of renewable energy, effective natural resources management and resource conservation. Interventions like biogas would not help in energy supply it would also promote organic agriculture
2	Biogas unit	
3	Solar Light (home lighting)	
4	Solar Pump	
	Sub Total – Climate Resilient Farming System and improved livelihood	
III	**Risk Mitigation**	
1	AWS and agro-advisory	The location of weather stations are planned such a way to generate representative observations of climatic parameters. The same is as per the prescribed norms of

2	RML subscription (3 years) on crop, weather & market info	The advisory services planned are proposed to be integrated with the AWS system and advisory would be disseminated for selective farmers and same would be displayed at public places for information of other farmers. The cost of the proposed service is proposed as USD 8.33/- per year for 3 years. The cost of these services commercially is about USD 16.5/- per year.
3	Sediment Observation Unit and Data Analysis	The sediment observation units would help in the study of effectiveness of soil conservation measures as well as agronomic interventions.
4	Geo- hydrological study and crop water budgeting	The systems would be installed for selective location and would be of immece help for crop water planning and budgeting
IV	**Knowledge management**	Knowledge Management Components proposed in the project helps in taking the learnings from project to the larger community thereby enabling them to adopt such practices demonstrated by the project. This creates a multiplier effect in technology adoption, income augmentation, and finally resulting in larger community adapting to climate change. Viewed in this context, the cost proposed for this component in the project not only gets recovered in the system immediately.

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.

India is having both National and International obligations for taking up climate change adaptation and mitigation strategies and minimizing negative impact of climate change and disaster. India, apart from being a developing country party to the Kyoto Protocol, is also vulnerable to the adverse effects of climate change and hence eligible to receive funding from the Adaptation Fund Board. The proposed location of the project, as discussed in this proposal, is climatically vulnerable to a number of factors and hence central and state Government priorities have been to improve the adaptive capacity to cope with the situation.

The National Action Plan on Climate Change recognises the threat of climate change and has identified the agriculture sector as heavily affected by the predicted impacts of climate change. In addition, a large proportion of the rural population, particularly the poor, depend on agriculture and livestock for their livelihood. Accordingly, the Government of India has developed a "sustainable agriculture mission" committed to promote and implement all measures that would increase the resilience of agriculture to climate change, focusing on watershed development as a thrust area. The plan mainly aims to support climate adaptation in agriculture through the development of climate-resilient crops, expansion of weather insurance mechanisms, and agricultural practices.

The National Action Plan on Climate Change (NAPCC) has identified eight core national missions, under which "National Mission for Sustainable Agriculture" aims to support climate adaptation in agriculture through the development of climate-resilient crops, expansion of weather insurance mechanisms, and agricultural practices. The "National Mission on Strategic Knowledge for Climate

Change" looks to gain a better understanding of climate science, impacts and challenges. It also encourage private sector initiatives to develop adaptation and mitigation technologies. The Outcome 4 of current proposed project is having a direct linkage with the "National Mission on Strategic Knowledge for Climate Change" and "National Mission for Sustainable Agriculture" is having a direct linkage with the project outcome-1, project outcome-2 and project outcome-3.

In line with the NAPCC, State Action Plan on Climate Change (SAPCC) also have strategy outlines, focusing on adaptation and mitigation strategies along with dealing with disaster. As per RAPCC (Rajasthan Action Plan on Climate Change), Rajasthan is having a vision of enhancing resilience in the State for addressing current and likely impacts of climate change on key sectors, enhance adaptive capacities of the vulnerable communities while tapping potential opportunities for mitigation[7]. The strategies adopted by Rajasthan, looks at knowledge creation and its management / dissemination which fulfills Outcome-4 of this project[8]. The proposed Project Outcome 1-3 best fit to the RAPCC broad strategies under Agriculture and Animal Husbandry[9].

Tamil Nadu State Action Plan on Climate Change (TNSAPCC) is having a vision to foster an integrated approach to inclusive, sustainable, and climate resilient growth and development. The State aims at achieving this vision through pursuing (a) mainstreaming of climate concerns into all aspects of development policy and implementation, and (b) ensuring complementarity with and contributing to the national agenda on climate change. Keeping in mind the overall motto of the TNSAPCC – 'Inclusive Growth for Improved Resilience', different approaches and strategies are suggested for the achievement of the Vision[10]. All the Outcomes, proposed in this proposal well align with the State Vision and Mandate. The Outcome-4 of this proposal well in line with the State mandate for Knowledge Management[11] and Outcome 1-3 aligns with the proposed State strategies for Agriculture and Allied Sectors[12] and Water Resources[13].

Apart from action plans and strategies for its realization, Government of India has been taking measures for adaptation and mitigation through watershed development which confirms that it has been a national priority. Integrated Watershed Management Programme (IWMP), Desert Development Programme (DDP) and Integrated Wastelands Development Programme (IWDP) of the Department of Land Resources, Govt. of India are some of such interventions that bears the similar objectives like this project. Key Policies of Central and State Government, which supports such interventions and on which this project is based are as follows.

Table 17: Project Consistency with National and State Sustainable Development Strategies

SN	Central/State Government Policy	Responsible Agency	Project Component Consistent with the Policy
1	12th Five year plan	Planning Commission, Govt. of India	Twelfth Five Year Plan lays considerable focus on climate change adaptation in agriculture sector (para 7.85 of 12th FYP document). The plan identified some policy and programmatic interventions which can help farmers and other stakeholders adapt to climate change and reduce the losses. Amongst the key actions for

[7] Rajasthan Action Plan on Climate Change, Chapter 2: RAPCC Vision and Approach.
[8] Rajasthan Action Plan on Climate Change, Chapter 12: Strategic Knowledge on Climate Change.
[9] Rajasthan Action Plan on Climate Change, Chapter 7: Agriculture and Animal Husbandry.
[10] Tamil Nadu State Action Plan on Climate Change, Chapter 3: Overarching State Framework.
[11] Tamil Nadu State Action Plan on Climate Change, Chapter 11: Knowledge Management.
[12] Tamil Nadu State Action Plan on Climate Change, Chapter 5: Agriculture and Allied Sectors.
[13] Tamil Nadu State Action Plan on Climate Change, Chapter 6: Water Resources.

			adapting Indian agriculture to climate change are improved land management practices, development of resource conserving technologies, development of crop varieties that can withstand climate-stress, effective risk management through early warning, credit-insurance support to farmers. The proposed concept is in-line with the adaptation strategies contained in the 12th Five Year Plan.
2	National Water Mission	Ministry of Water Resources, Govt. of India	Key Consistencies: 1. Designing incentive structures to promote water neutral or water positive technologies; 2. Integrated water resource management helping to conserve water 3. Optimise water use by increasing water use efficiency by 20% 4. Enhancing storage, both above and below ground, special effort to increase water storage capacity;
3	National Mission on Strategic Knowledge for Climate Change	Cross cuts all the Ministries & Department	Key Consistencies: 1. Identifying challenges of and response to climate change 2. Research on socio-economic impacts of climate change, including impact on health and livelihoods 3. Development of innovative technologies for adaptation and mitigation; 4. Research to support policy and implementation
4	Second National Communication on Climate Change (May 2012)	Govt. of India	The suggested strategies as per the Second National Communication on Climate Change (May 2012) indicates that "adaptations can be at the level of the individual farmer, society, farm, village, watershed, or at the national level." Some of the possible adaptation options suggested include, agronomic adaptation/ crop adaptation, crop diversification, water harvesting and recycling, awareness creation among farmers, resource conservation technologies, augmenting production and its sustainability and improved risk management through early warning system and crop insurance. As may be seen from the project components that majority of them are aligned to the adaptation options suggested in the Second National Communication on Climate Change
5	National Mission of Sustainable Agriculture (NMSA)	Ministry of Agriculture	The NMSA aims to promote and implement all measures that would increase the resilience of agriculture to climate change, focusing on watershed development as a thrust area. The plan mainly aims to support climate adaptation in agriculture through the development of climate-resilient cropping system, expansion of weather insurance mechanisms, and agricultural practices.
6	National Action Plan on Climate Change and State Action Plan on Climate Change	Various Ministries with Government of India and State Government (Tamil Nadu and Rajasthan)	The National Action Plan on Climate Change and the State Action Plans on Climate change recognises the threat of climate change and has identified the agriculture & water sector as heavily affected by the predicted impacts of climate change. In addition, a large proportion of the rural population, particularly the poor, depend on agriculture and livestock for their livelihood.
7	Integrated Watershed Management Programme (IWMP)	Ministry of Rural Development	The main objectives of the IWMP are to restore the ecological balance by harnessing, conserving and developing degraded natural resources such as soil,

	vegetative cover and water. The outcomes are prevention of soil erosion, regeneration of natural vegetation, rain water harvesting and recharging of the ground water table. This enables multi-cropping and the introduction of diverse agro-based activities, which help to provide sustainable livelihoods to the people residing in the watershed area.

Source: Various Documents (published/Web) of Government of India, Government of Rajasthan and Government of Tamil Nadu.

Success of climate change adaptation in rainfed areas on watershed basis with fund support from AFB would add value to the on-going programme of Govt. of India in terms of making it adaptation focused and improving the resilience to climate variability.

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

The overall objective of the project is in line with the National Action Plan on Climate Change (NAPCC) and the State Action Plan on Climate Change (Tamil Nadu and Rajasthan). Secondly, the project will be governed as per the policy and preference of State Governments in adherence to all the specific local criteria. Apart from that the project would also adhere to the national scientific criteria with regard to adaption such as economic, social and environmental benefit etc. The involvement of the key stakeholders in the project formulation and the Project Management / Implementation Mechanisms ensures compliance with the policy of participatory implementation of the project. Relevant technical standards that are related to proposed project activities are highlighted in the table below. However, detail technical standards / sub-standards for each activity is worked out for implementation during the assessment stage.

Table 18: Relevant Technical Standards proposed by Different Technical Institutions of Government

Activity	Applicable Standards	Application to Project	Monitoring
Improvement of soil and water regime for better crop productivity			
Farm pond, drainage, earthern embankment with spillway, gabion, check dam, recharge pit	Applicable standards prescribed by Central Research Institute for Dry Land Agriculture (CRIDA), Hyderabad	Design specifications for various soil and water conservation structures in the manual will be adopted in the project areas.	Measurement made by the Work Supervisor will be checked by Agri Engineer attached to Executing Entity and test checked by Consultant attached PMU of NABARD
	Standards prescribed by Central Soil and Water Conservation Research and Training Institute (CSWCRTI), Dehradun	Recommendations of CSWRTI will be adhered to	
	Relevant Standard Schedule of Rates (SSR) of	Cost norms for various treatment measures will be as per the SSR	Payment to the labourers will be made as per the cost norms adopted based on SSR. All

	prrespective state / region as approved by State Governments		payments will be duly recorded in the register, which will be verified during monitoring visits
Summer ploughing and deep ploughing	Recommendations of Tamil Nadu Agriculture University (TNAU)	Summer ploughing/deep tillage will be undertaken as per TNAU recommendations	Coverage of area under summer ploughing/deep tillage and number of machinery usage recorded Work Supervisor will be checked by Agri Engineer attached to Executing Entity and test checked by Consultant attached PMU of NABARD
Climate resilient farming system approach and diversification of livelihoods.			
A.Afforestation and Pasture land development			
Gradonis (bench terraces), refilling CCT, stone pitched tawla, etc	Applicable standards prescribed by CRIDA and CSWCRTI	Design specification and recommendations will be adopted	Measurement made by the Work Supervisor will be checked by Agri Engineer attached to Executing Entity and test checked by Consultant attached PMU of NABARD
Tree seeding, plantation of fuel/fodder, grass seeding, thor fencing, nursery for forest sp, agro-forestry etc	Prescribed Standards of Forest Departments of Tamil Nadu and Rajasthan	Fuel/fodder plants, agro-forestry, nursery etc., will be developed as per the specifications of the respective Forest Departments	Coverage of area, type of species, cost of saplings under agro-foresty, grass seeding, fuel/fodder etc., recorded Work Supervisor will be checked by Agri Engineer attached to Executing Entity and test checked by Consultant attached PMU of NABARD
B. Other Climate Resilient Farming/Livelihood			
Demonstration of short duration crops, improved farm implements, best package of practices, drip, micro sprinkler, demo plot on minor millets, seed bank, vegetable, kitchen garden	Prescribed Standards by Indian Council of Agriculture Research (ICAR) and Package of practices of the respective States	Prescriptions of ICAR and package of practices of respective Agriculture Universities will be adhered to	Dedicated staff in the Executing Entity will motivate the identified beneficiaries to undertake demonstration activities. Records of all activities undertaken will be maintained by the EE.
Animal Husbandry, backyard poultry, silage etc	Package of practices of Animal Husbandry Departments of respective States	Recommendations of AH Department will be adopted	Dedicated staff in the Executing Entity will motivate the identified beneficiaries to undertake demonstration activities. Records of all activities undertaken will be maintained by the EE
C. Energy Efficient Systems			
Biogas, solar pump, solar lighting	Relevant Indian Standards (IS) coded as prescribed by Bureau of Indian Standards (BIS)	The relevant prescription on standards by BIS for pumpsets, solar lighting etc	Activities undertaken will be recorded and maintained by the EE
Risk Mitigation			

Automatic Weather Station, Equipments for sediment monitoring, run-off measurement	Relevant Indian Standards (IS) coded as prescribed by Bureau of Indian Standards (BIS)	Equipments conforming to relevant standards will be procured	EE will ensure procurement of equipments conforming to relevant standards and same will be verified by PMU during monitoring visits

There has been detailed scanning of the policy environment existing at the national and state level. Major acts and policies of Government are in line with the project demands and no such deviation is marked at this stage, after detail analysis of Government policies and priorities. Existing policies and different standards of Government are reviewed, and, for this project it can be ensured that the proposed strategies/interventions will be in line with the national technical standards and Environment and Social Principles underlined in the Environmental and Social Policy of Adaptation Fund. Further, during implementation, required social and environmental safeguard measures will be taken to meet the AFB requirements.

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

Different projects of similar nature are under implementation in both the proposed States, with the support of different Government agencies and international supporting agencies. The major adaptation projects / programmes under implementation in the states of Tamil Nadu and Rajasthan are given below:

i. Climate proofing of rainfed areas on watershed basis in co-operation with GIZ in Tamil Nadu and Rajasthan: two watershed projects each in both the states are under implementation.

ii. Indo- German Watershed Development Programme (IGWDP) Rajasthan in collaboration with KfW : 31 projects under implementation

iii. Watershed Projects under Watershed Development Fund of NABARD: In Tamil Nadu 154 projects (with State Government collaboration) and in Rajasthan 17 projects are under implementation.

iv. Improving Pasture Management and Livestock rearing, by AFPRO / GIZ in Rajasthan

v. Sustainable Livelihoods and Adaptation to Climate Change, implemented by World Bank / GEF.

vi. Climate Change Adaptation in Rural Areas of India, commissioned by BMZ

The present project area covering 25, 000 ha has been delineated separately with the consent of the respective State Governments (State Level Nodal Agency-SLNA). While selecting the project areas it has been ensured that the same is not having other overlapping with any of the on-going climate change adaptation programmes indicated above.

The present project concept has been designed based on the learnings from the Climate proofing of rainfed areas on watershed basis implemented in collaboration with GIZ by NABARD in Tamil Nadu and Rajasthan. The pilot project undertaken with GIZ followed the climate proofing tool developed by GIZ for integrating climate change adaptation into the development planning. Some of the lessons learned are outlined below.

1. Scientific assessment of climate change and its impacts and future projections coupled with discussion with community (timely line analysis with elderly population of villages), PRA made meaning impact to understand the community's perception on climate change and design the participatory strategy for adaptation measures.
2. The entry point for integrating an adaptation strategy was a difficult decision in the beginning. After deliberation with the community and other stakeholders, it was decided to integrate adaptation strategy during the Full Implementation Phase (FIP) after the capacities of the all the stakeholders are built to the same level during the Capacity Building Phase (CBP).
3. Planning and designing of water harvesting structures taking into account the spatial and temporal distribution of rainfall of the areas rather than total rainfall was also another learning point.
4. Integration of climate resilient low cost agricultural practices such as deep ploughing, summer tillage, grass seeding, etc. in the watershed projects together with capacity building of the community on adoption of climate resilient farming.

The pilot project learnings after implementation at Rajasthan and Tamil Nadu will be now up scaled under the AFB support for large scale impact and transformation. As such there are no duplications of projects/ programmes with other funding sources in the proposed project area.

The proposed project will be immensely benefitted from convergence approach which is mostly related to different services, established learnings and experiences and policy measures that have been taken by Government. The 12th Plan document of Government of India also urges for building synergy among different implementing bodies, foster convergence for inclusive growth and sustainability of the initiatives. This project will adhere to this national principles and take measures accordingly, without duplication of funding sources. Some of the schemes / programmes that are under implementation and having convergence potential with the proposed adaptation project are as follows.

On-going /Proposed Project	**Objectives**	**Complementarities**	**Geographical coverage**	**Concerned Agency**
National Rural Employment Guarantee	To introduce actions for soil and water conservation in a landscape with an aim of creating local employment	The scheme envisages creation of l land based assets/structures aimed at soil & water conservation	All over India	Ministry of Rural Development
Integrated Watershed Development Programme	To restore ecological balance in a watershed by harnessing, conserving and developing degraded natural resources	The present project supported by AFB on a pilot basis could be upscaled through out India through IWMP, owing to the high budgetary support it	All over India	Ministry of Rural Development

On-going /Proposed Project	Objectives	Complementarities	Geographical coverage	Concerned Agency
	such as soil, water and vegetative cover and thereby help provide sustainable livelihoods to the local people	receives (US $ 897 mill during 2013-14)		
National Rural Livelihood Mission (NRLM)	Creat efficient and effective institutional platforms of the rural poor for enabling them to increase household income through sustainable livelihood enhancement and improved access to financial services	Self Help Groups (SHGs) of women in the watershed area could be linked to NRLM for sustainable livelihood support	All over India	Ministry of Rural Development

Co-ordination with Ministry of Rural Development during the implementation stage is utmost important for realizing the full potential of synergy/complementarity indicated above. This will be achieved through regular interaction in the Project Sanction Committee (PSC) at national level in which MoRD representative is a member. Similarly, State Level Nodal Agency (SLNA) representative is a member in the State level PSC.

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

Component 4 of this project describes both the cross-cutting and specific knowledge management functions that will be undertaken in this project. The transfer of knowledge generated through the project is crucial since this will be the first of climate change adaptation project targeting the agricultural sector in both the states that takes into account current as well as future climate change scenarios. The projects is expected to generate crucial learnings in terms building climate resilient agriculture adaptation options. The knowledge will include adaptation techniques at the farm level, best practices, benefits of early warning information through mobiles, sustainable agricultural practices that improve adaptation ability and resilience; and other policy recommendations and technical guidelines produced by the project.

The project will have an internal Knowledge Management System (KMS) which will generate scientific data, analyse it and build up the knowledge base. During the project cycle, developed knowledge could be “tacit” and also “explicit”. Direct involvement of different personnel will get the benefit of acquiring tactic knowledge whereas generated explicit knowledge will be dissemination for replication of promising practices and benefit of larger mass. Data related to different aspects of the project (by

activity, outcome, benefit, impact etc.), focusing on adaptation and resilience parameters, will be captured through various means like (1) systematic independent studies like grass land ecological study, mid-term impact study etc, (2) periodic data on weather and crop advisories generated by service provider (3) monitoring reports generated by internal and external monitors (4) feed back during exposure visit/training and (5) regular review meeting. Generated knowledge / learning will be scientifically recorded on regular basis in the form of reports, data, proceedings, registers, photo, video clippings etc Generated knowledge / learning will be disseminated in the following ways:

a. Peer learning seminars / workshops in both the project states and at National level;
b. Wider dissemination of the operational manual in English and local language of both the states;
c. Producing audio visual materials and its circulation to different stakeholders for learning;
d. Hosting best practices in the existing national websites on climate change adaptation and resilient measures.
e. Establishing Village Knowledge Centres

Present KM system in the project location is basically driven by Government Departments like Agriculture, Animal Husbandry, Tamil Nadu Agriculture University etc., particularly focusing on package of practices of crops/animals, agro-advisories etc. The knowledge inputs from these Departments will be captured by the Project team of EEs, who are working in close co-ordination with local Agriculture/Animal Husbandry Departments. Officials of these Government Departments will be invited to seminars, workshops, review meetings etc., on an on-going way. Sustainability of the Knowledge product over a period of time will be ensured by the Village Watershed Committee (VWC) in association with EE. The service provided will ensure sustainability of crop-weather advisories, through levying the required subscription fees from the farmers.

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.

State Level Consultation: In each proposed watershed area, stakeholder consultation meetings were organised. Apart from that, the concept of climate change adaptation in rainfed area on watershed basis was discussed in the workshops organized at Chennai (Tamil Nadu) & Jaipur (Rajasthan). Stakeholders participated in the consultation and discussion process are state watershed department (SLNA), technical institutions like agricultural university, civil society organisations, bilateral agencies, state department of environment etc. Inputs were given by all the stakeholders who participated in the workshop. To understand the climate variability, trends observed already in the proposed area as well as climatic trends expected in the next 30 years were discussed based on learnings from pilot areas. State level workshop in Rajasthan was organized on 19th to 21st July 2014 where participants from various disciplines attended and provided there inputs. Similarly, on Dt. 25.7.2014 and 26.7.2014, State level consultation workshop was organized in Tamil Nadu for the same purpose. A combined workshop of NGOs, Climate Expert, NABARD officials involved in implementation of the projects from both the States (Rajasthan and Tamil Nadu), was held during 11-12 September 2014 at Madurai and items of investments and budget were finalized during this consultation meet. Detail list of the participants is annexed to this proposal for reference.

Table 19: Consultation Meetings Organised with different stakeholders in Rajasthan & Tamilnadu

Activity	Completed on
Stakeholder analysis with NGOs (EEs)	12 May 2014
Strategy Meet with PMU, RO and lead NGOs	13 May 2014
1-day strategy meet with selected NGOs (EEs)	22 May 2014
Orientation workshop for field teams (with specific focus on PRA/ FGD)	24 May 2014
Field visit by Climate Expert and meeting with NGO representatives in watersheds	Meeting of climate expert with NABARD PMU/ RO/ HO, Lead NGO and EEs done on 19-20 July; field visit with lead NGO and select EEs made on 21 July 2014.
Workshop to finalise the (AFB) project activities – with participation of VWCs, EEs and IE	19-21 July, 2014
Workshop to finalise the project activities with VWCs, EEs and IE in Tamil Nadu	12 September 2014

Sl. No	Project	Date of PRA exercise	Outcome
1	Sriramapuram Malvarpatti	26.5.14	Participatory Rural Appraisal (PRA) exercise was completed. This had helped in identification of climate changes, events, resources in the project area etc., over a period of time and discussing solutions to mitigate adverse climate conditions.
2	Ayyampalayam	8.6.14	
3	Anjukulipatti	27 and 28.5.14	
4	Vannikonendal Kurkalpatti	27.5.14	
5	Peikulam	29.5.14	
6	Chinnapoolampatti	28.5.14	
7	Chithalai	30.5.14	
8	Thalli Kothanur	30.5.14	
9	Salivaram	29.5.14	
10	Bettamugilalam	28.5.14	

Details on the participants are presented in the Annexure V.

Watershed Level Consultation: In the proposed project area, series of consultations with farmers and landless persons have been carried out for understanding the problems of degradation of natural resources, low productivity of crops, issues connected with livelihood and to arrive at appropriate treatment measures. These consultations have been undertaken in the month of May 2014 in Tamil Nadu. On the basis of these information detailed projects report have been formulated.

During the above consultation climate change related issues affecting the community also have been brought forth. Detailed climate analysis and focused discussions with the community with reference to climate change scenario have been undertaken with multi-stakeholder participation. Detailed community assessment through participatory techniques like PRAs, FDGs etc. was conducted in each watershed along with climate analysis by an expert. During these consultations, any potential environmental and social impacts and risks in compliance with the environmental and social policy of Adaptation Fund were identified and this proposed developed based on such findings.

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

General Baseline Scenario

The traditional soil water conservation measures and farming have been followed in India for rainfed areas based on the current climate scenario. The farmers generally adjust the sowing date for adapting to moisture stress or try sporadic measures to save the crop which result in failure. In most cases they migrate to nearby towns/cities, during years of crop failures keeping the land barren. This completely makes the investment in watershed structures infructuous.

Justification

The project will support farmers in applying appropriate water management practices, ensuring that agricultural production can withstand the stresses caused by climate change. This includes upgrading of rainfed and irrigated agriculture through applying rainwater harvesting systems and complementary interventions-climate resilient agronomic practices / techniques etc. The programme also envisages crop diversification and diversification of livelihood and risk transfer through insurance as additional measures. These components are not traditionally part of the conventional programme and the assistance is sought for such additionalities for climate change adaptation.

The implementation of the proposed project would form part of the ongoing watershed programme (each watershed about 1,000 ha) for each of 20 watersheds for which funding is provided by NABARD for business as usual activities from its dedicated funds like Watershed Development Fund in Tamil Nadu and funds under Indo-German Watershed Development Programme in Rajasthan. It may be noted that full implementation phase of all the 20 projects has already been sanctioned and fund commitments to the extent of USD 2.85 million has been made. On the basis of this experience, it is now proposed to upscale to an area of about 25,000 ha, in 20 watersheds, 10 each in Tamil Nadu and Rajasthan. Interventions proposed from Adaptation Fund Support are designed in such a manner to deliver the expected outcomes independently, irrespective of the outcome of co-funded components. The proposed interventions to be funded from the Adaptation Fund would therefore be in a position to deliver the major outcomes such as: improved soil and water regime for better crop productivity and resultant increase of income of farmers; Increased adaptation to climate change through climate resilient farming system approach & diversification of livelihoods; and integration of risk mitigation products like Weather Advisory/insurance and other financial products for the farmers. The list containing major components and budget thereof to be funded by NABARD and AFB are given under Part III (Para E).

Summary of component-wise baseline scenario and additionality components proposed to be funded under AF is given in the table below:

Table 20: Justification for Funding Request-Project Additionality

Component	Baseline (without AF)	Additionality (with AF)
Outcome 1: Improved soil and water regime for better crop productivity and resultant increase of income of farmers.	With increasing impact of climate change on the weather parameters the traditional business as usual treatment measures and livelihood in the watershed will get affected.	The interventions and structures are designed with a climate change consideration, resulting in better adaptation to the short term climate variability and long term climate change. The interventions include, deep tillage, summer ploughing, application of tank silt, farm pond, check dam, recharge pit, gully plugs, etc

Outcome 2: Increased adaptation to climate change through climate resilient farming system approach and diversification of livelihoods	An increased risk owing to mono cropping, intensive input application, in efficient water use etc. in the context of increasing evidence of changes in climate variables. This will bring in a scenario of over exploitation of the natural resources.	Climate resilient cropping system with strong elements of diversification leading to sustainable livelihoods for the grass root communities. Agro-forestry, agro-horticulture, silvi-pasture, drought tolerant varieties, inter-cropping, alternate fodder, integrated farming system, micro irrigation, organic farming, energy efficient systems etc.
Outcome3: Integration of risk mitigation products like weather advisory/insurance and other financial products for the farmers	Unpredictable and short term climate variability leading to loss of crop and livestock (e.g. extreme events like drought, late onset of monsoon etc.). Inefficient water management with very poor climate considerations	Reduced risk due to dissemination of timely weather based crop advisory based on real time data and crop-water budgeting based on geo-hydrological studies.
Outcome 4: Creation of knowledge management system for climate change adaptation in rainfed areas	Lack of climate consideration in development planning. Rural livelihood programmes without climate consideration leading to maladaptation during programme implementation.	Mainstreaming climate proofing into development planning of watershed projects. Operational manual, peer learning, audio visual tools, policy brief etc.

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

During designing of the project, taking views of different stakeholders consulted in different phases of proposal development, sustainability parameters are taken in to account. Sustainability of the project outcomes, beyond the life of the project is ensured through different strategies that are proposed in this project. The strategies, to be taken up (as discussed in this proposal) focus on different sustainability parameters and it is assumed to be achieved through participatory and community ownership approach. Capital investments, to be incurred under the project will have revenue generating options for its sustenance. The community infrastructures will be managed and maintained by the community, once they realise the benefits of the initiatives. For sustainability, the project will take two prong approach, i.e., sustenance of the process by the community, realising the benefits of adaptation measures and secondly, accessing resources from Government and other agencies, under different schemes / programme and managing / maintaining the project outcome and building upon it further.

Further, study reveals that long term sustainability of the watershed program can be achieved if there is improvement in the level of income of the beneficiaries. The dynamic model developed by the authors show that it is possible to achieve this if the watershed can generate a profit over its lifespan of the net present value. Study further emphasizes the importance of comprehensive approach of watershed development for its long term sustainability and significant impacts on the society[14]. Examining contextually, the proposed intervention will sustain for a longer period as it is going to benefit the target mass, both directly and indirectly, supporting them enhancing their income. Apart from that, as the strategy to be adopted is comprehensive and integrated, it can be safely said that project will sustain after its life. However, sustainability parameters of the project and key elements that would contribute towards sustainability of project outcomes are discussed below.

[14] G. Kausik, B. Anindya, G.S.Prasanna, G.Abrita; Sustainability of Watersheds in India: A Dynamic Analysis

Environmental Sustainability

Environment of the watershed will gain from this intervention due to several environmental protection measures for developing resilience and adaptation to climate variability. The soil health will improve through application of organic manure, which is a key input for maintaining plant nutrient. Carbon sequestration through agro-forestry models will have positive impact and sustainable source of eco-system service for the community. So, its management and maintenance will be done by the community. The water harvesting structures, percolation tanks, sunken ponds etc. will help not only to arrest run off and minimise water loss, but also will main the soil moisture regime and hence reducing plant morbidity and mortality. With better harvest, even during dry spells, return on investment will be higher for the farmers and hence asset maintenance will continue. Agri-horticulture will add value, having both environmental and economic benefit for the target mass.

The project activities will prepare the watershed area to be better resilient and adaptive to the extremes of climate change. Here the adaptation activities will not only result in better water availability and ground water recharge, it will also concentrate on sustainable water use in the form of micro irrigation, community based irrigation management etc. With optimisation of available water utility through scientific water management practices and increment in ground water level, it is expected that in due course, water availability in the area will increase substantially, benefitting to the local environmental concerns. Agro-forestry will help to minimise community dependency on the local forest and support long term eco-system services. The traditional watersheds only look at current Soil Water Management (SWM) measures. The climate forecast data obtained by setting up Automatic Weather Station and crop advisory based on the weather data, will be integrated in the design parameters so that the watershed remains resilient in aggravated climate scenario.

Social & Institutional Sustainability

Social and Institutional sustainability, revolves around the community living in the watershed and their institutions / organisations. From the inception of the project, these communities have been involved, even in the design stage, as discussed earlier. As the project aims at building the institutional / organisational capacity to adapt to the climate change situation and ensures their involvement in different stages of implementation, it can be assumed that the initiated process will be continued by the communities. Apart from this, for institutional sustainability, there will be resource generation and management strategies which will help the institutions to grow in the longer run and sustain the process.

Project design, implementation and monitoring would involve community based organizations (CBOs) like Village Watershed Committees (VWCs), Self Help groups (SHGs), Water User Associations (WUA) etc. The technology, knowledge and skill for management of project would be transferred to these community based organisation by project executing entities. After implementation is completed these organisations would be able to take forward the maintenance and management of the resources and structures created.

For better function of the community organisations / institutions, there will be guiding principles, in shape of bye-law. Some of the community organisations (apart from SHG and similar organisations) will be registered under appropriate State law and governance mechanism will be developed as per the legal framework suggested under the law. However, for informal bodies like SHG, norms of best / promising operational practices will remain applicable with contextual modification.

Economic and Financial Sustainability

Economic / financial sustainability is a major attribute to the overall sustainability framework of the intervention. Economic and financial sustainability will be maintained by two means, i.e., generation of financial resources from the current community asset base, through user fee / eco-system service fee. Secondly, creating a community corpus, based on community contribution and mobilisation of additional external fund after the completion of the project. This community resource base, created through these means, will help to maintain and sustain the process in the longer run.

Along with this, the project envisages constitution of a dedicated maintenance fund contributed by NABARD as part of co-funding. From the initial stages of the project implementation all the beneficiaries in the project area contribute to the corpus i.e., Maintenance Fund. NABARD also contributes to the corpus to the extent of contribution made by beneficiaries. This corpus will be used for maintenance as well as addition of the activities as required in the post watershed period.

Village Watershed Community (VWC) is the main CBO involved in maintenance and management of the project along with EE. Right from identification of the watershed, capacity of the VWC is built by NABARD through exposure visit, series of structured capacity building programmes aimed at provision of technical inputs, management inputs, accounts related inputs etc. A well laid down training module is in place for this purpose. This mechanism of built in arrangement for maintenance coupled with VWC empowered in undertaking post watershed activities is expected to sustain the project activities over a longer period of time.

Policies and governance arrangement will be developed for fund generation and its management, in line with the statutory norms of the Government. The financial management practices will be in line with the rules that are applicable for registered bodies. The office bearers of community organisations will be trained / oriented on such aspects so that they can discharge their responsibility efficiently.

Scope for Replication and Scaling up

The biggest up scaling platform of at the level of government of India is the Integrated Watershed Management Programme (IWMP). The IWMP programme also works under the similar guidelines and thus will be the most plausible next step for up scaling. As may be seen from there the community based institutions will be empowered taking forward the benefits achieved during the project period in a sustainable manner.

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

The proposed project falls under "**Category C**" as it has no adverse environmental or social impact. The suggested measures are time tested, contribute to enrich the environment and help to improve the socio-economic condition of people living in the project area. Project dimensions contribute towards environmental promotion, restoration and improving overall ecosystem services in the watershed. Apart from that, in social front, it collectivise the operation, making it participatory and community oriented. Promotion and strengthening of people's institutions / organisation will help to improve responsibility sharing, collective action and taking up common issues in the watershed for its mitigation. So, in social front, it will help in community building and safeguarding / promoting community environment. As the project will be implemented in a rainfed semi-arid condition, risk of climate variability and its impact is always there during the project period. Proposed resilience and adaptation measures require some time to be stabilised and any such prolonged variability (for 2-3 years) during the project cycle

may put certain degree of risk in achieving the project objectives and may have adverse effect on the outcome. However, project will take alternate strategy like taking up certain activities like weather insurance, crop insurance, livestock insurance, credit provision etc. on priority basis as a part of immediate risk management strategy. Along with that, other activities will be taken up so that community will not be under pressure and project will be implemented smoothly.

Table 21: Potential Impact, Risk of the Project and need of further assessment

Checklist of environmental and social principles	Adherence of the Project to Environmental and Social Principles	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law	• The project complies with Environment (Protection) Act, 1986 and Forest Conservation Act, 1980. • Further the project complies with state specific Panchayat Raj and Gram Swaraj Act (local governance); and other administrative orders of Subnational Government. • Further fallowing land tenancy laws are also complied with o Tamil Nadu Cultivating Tenants Protection Act, 1955 – tenural rights are assigned to the cultivating tenants based on tenancy agreement entered with land lord in the prescribed form. Names of the tenant farmers are recorded in the revenue records along with the name of land lord. The state government also enacted Rent Relief Act 1990, providing relief to the cultivating tenants in the event of natural calamities. o Land Tenancy Act Rajasthan: provision for long term tenure/ lease period up to 30 years. **No further assessment required for compliance**	None
Access and Equity	• The project provides fair and equitable access to the project beneficiaries and 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. • The proportion of benefits that will flow to each category of landholder will be determined in consultation with the Village Watershed Committees. **No further assessment required for compliance**	None
Marginalized and Vulnerable Groups	The Technical assessment and Baseline and Project Benefit Assessment includes identification of impact on marginalised groups. Project activities are so designed that marginal and landless would also derive benefits from the proposed projects. **No further assessment required for compliance**	None
Human Rights	The project does not foresee any violation of human rights **No further assessment required for compliance**	None

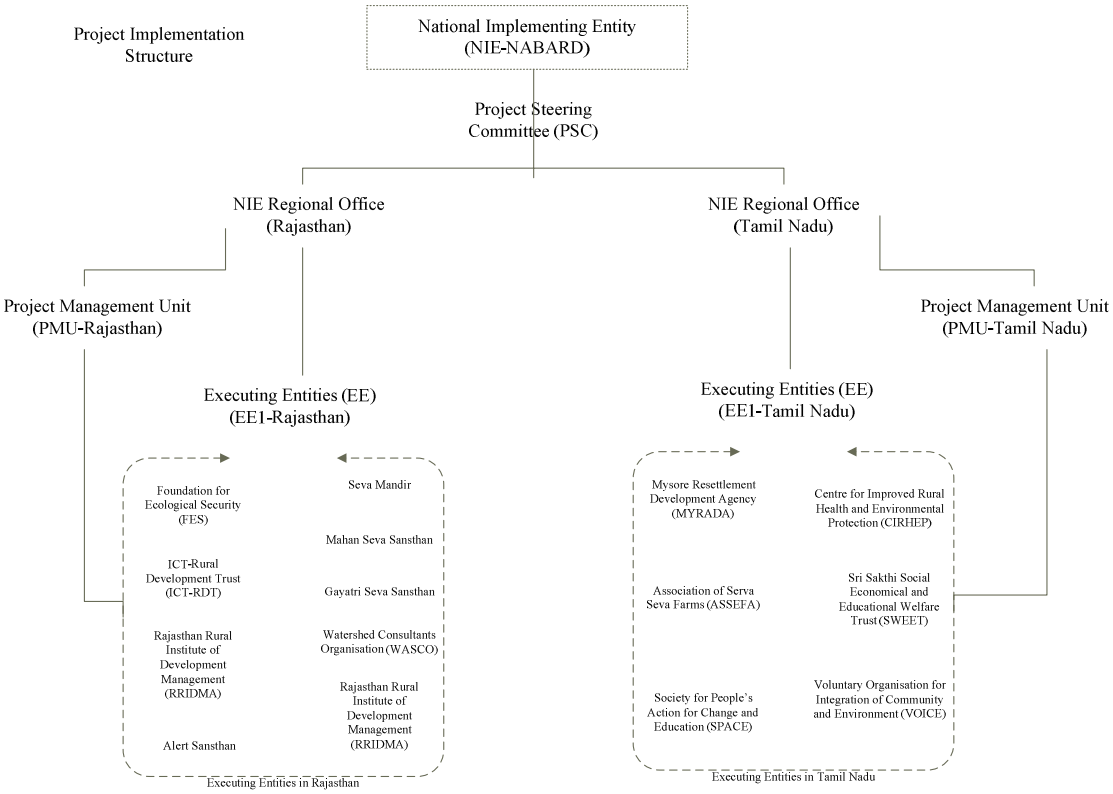
Gender Equity and Women's Empowerment	Project would ensure participation by women fully and equitably, receive comparable socio-economic benefits and that they do not suffer adverse effect. The beneficiary related activities, e.g. training, exposure visits, will include women so as to enable them to develop their capacities and strengthen their skill base. In addition the Village Watershed Committees (VWCs) that will be formed will have representation of women so that they also participate in the project related decision making process. **No further assessment required for compliance**	None
Core Labour 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. **No further assessment required for compliance**	None
Indigenous Peoples	Not applicable to this project **No further assessment required for compliance**	None
Involuntary Resettlement	The project does not displace any community and hence issue of resettlement does not arise **No further assessment required for compliance**	None
Protection of Natural Habitats	Project does not affect any of the natural habitats. **No further assessment required for compliance**	None
Conservation of Biological Diversity	The project would not cause any impact on bio-diversity values. **No further assessment required for compliance**	None
Climate Change	The project is basically for enhancing the adaptive capacity of the rainfed farming systems and livelihoods against adverse impact of climate change and is not expected to contribute to GHG emissions. **No further assessment required for compliance**	None
Pollution Prevention and Resource Efficiency	Project is not expected to create any environmental pollution and aims for higher resources efficiency for better management of available natural resources like water, soil, plantation species (locally available), etc. **No further assessment required for compliance**	None
Public Health	No adverse impact on public health related issues is envisaged. **No further assessment required for compliance**	None
Physical and Cultural Heritage	No adverse impact on cultural heritage related issues is identified. **No further assessment required for compliance**	None

Lands and Soil Conservation	Catchment area treatment is envisaged to help in land and soil conservation and will not create any damage to land & soil resources. **No further assessment required for compliance**	None

PART III: IMPLEMENTATION ARRANGEMENTS

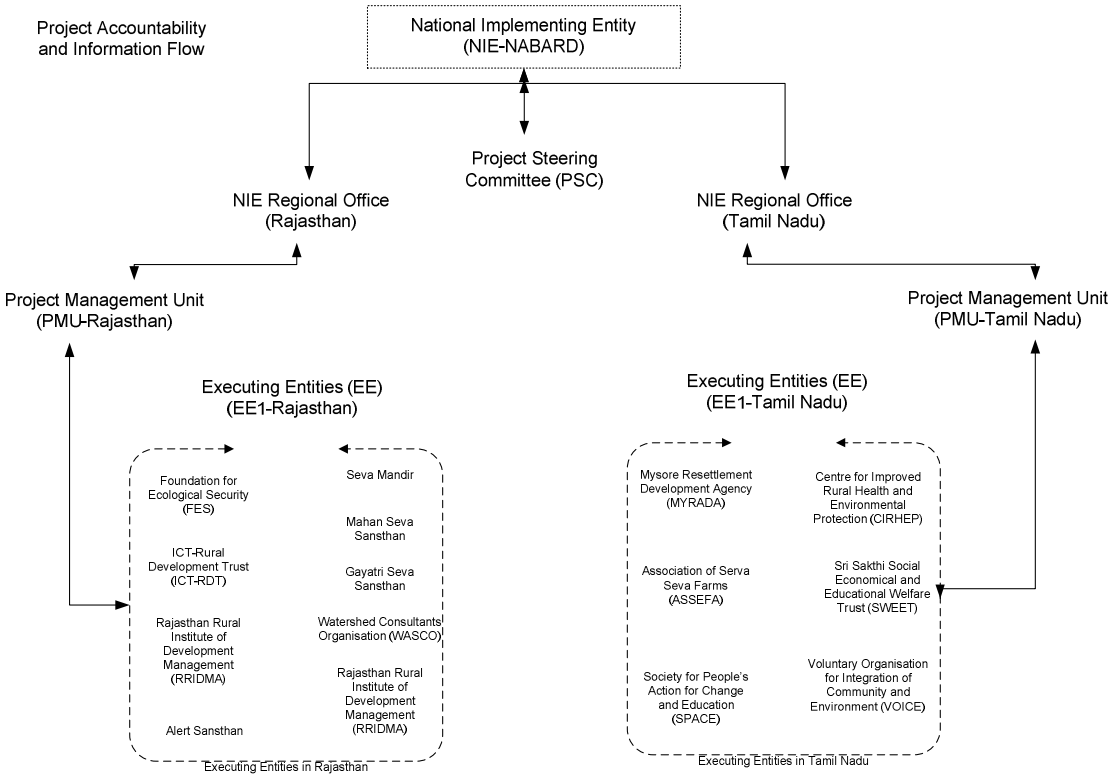
A. Adequacy of project / programme management arrangements.

For this project, National Bank for Agriculture and Rural Development (NABARD) will be the implementing entity (NIE) and would not function as Executing Entity (EE). For the execution of the project, NIE has identified EEs in each proposed State who have required experience and expertise in watershed management and climate change adaptation. The identified EEs have years of experience in watershed management and actively involved in participatory community development process in their respective operational States. NABARD has identified the EEs through rigorous institutional appraisal system. NABARD as NIE will oversee the implementation of the additional climate proofing measures under the programme. Required technical support and guidance to the EEs will be provided by the NIE for qualitative execution of the project in order to realize adaptation and resilience objective.



The arrangement for collaboration and project execution is driven by the use of existing institutions / organisations and their experience and capabilities. As per the project management arrangement, the ground level project implementation will be taken up by the NGO partners, identified by NABARD based on pre-defined selection criteria. The Executing Entities will be supported by a dedicated Project Management Unit (PMU), established at the concerned NABARD Regional Offices at the State level (one in Rajasthan and one in Tamil Nadu). The PMUs will be staffed with technical and managerial human resources from different disciplines, i.e., NRM, agriculture, engineering, project management, social development and finance. The implementation will be

guided by a Steering Committee consisting of Heads of respective NABARD Regional Offices, Development Policy Department of NABARD Head Office, experts in climate change adaptation and civil society representatives.



Role of NABARD as NIE:

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. Periodicity and structure of monitoring is given below:

1. On-site detailed round of monitoring would be done on a quarterly basis by Programme Monitoring Units (PMUs), located at Udaipur (Rajasthan) a Madurai (Tamil Nadu).
2. In addition, six monthly basis monitoring would be done by NABARD Regional Offices (Rajasthan and Tamil Nadu). The frequency of monitoring would be increased if considered necessary
3. The Project Sanctioning Committee (PSC) as constituted under WDF and IGWDP would function as State Level Review Committee (SLRC) for guidance and review of implementation of projects at State Level. The PSC will have State Government representatives from Agriculture/Horticulture

Department, Dept of Rural Development, State Level Nodal Agency (SLNA) for watershed, etc., and would convene meetings on half-yearly basis.

4. 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
5. Progress reporting would be done to AFB each half year or more frequently as per the requirement of AFB

Role of Executing Entities

Executing Entities shall ensure that

1. The works are executed in accordance with the sanctioned project document and other conditions stipulated at the time of sanction or from time to time by NABARD.
2. The Village Watershed Committee (VWC) and the EE shall be jointly responsible for satisfactory work execution.
3. The EEs shall maintain competent technical staff for project implementation.
4. The VWC will obtain in writing the concurrence and agreement of all parties on whose lands the treatments or any conservation measures are to be undertaken according to the work plan.
5. The VWC shall review the progress of work at least once every month in a formal meeting convened for that purpose.
6. At least once every quarter the VWC shall present to the entire Gram Sabha convened for the purpose a report on the progress of work as well as utilisation of funds.
7. The VWC and the EE shall be jointly responsible for maintenance of all records relating to the watershed development project.
8. The EE/VWC is also required to collect, maintain and furnish specific information for the purpose of monitoring the impact of various project measures on the cropping pattern, ground water recharge and its use, survival of sapling planted etc. in the watershed.

B. Measures for financial and project / programme risk management.

During the project selection and assessment stage, utmost care was taken to map the associated risk to the project (inception to exit) at different stages. Some specific geographical area related risks, which were expected to affect the project, were excluded and areas that are suitable for implementation (geographically and socio-politically) were selected. Interest of the community, their aspirations and need of the project in that locality were also mapped so that project deliver in a requisite manner. With due consultation with different stakeholders and based on the experience of the NIE and EEs, associated risks to the project can be categorized in to (1) risk from within and (2) risk from external sources

Risk from Within: Internal risk can be assumed from (1) capacity gap, (2) poor internal project management, (3) inadequate project progress tracking and (4) lack of mid-course correction. As the project will be executed by the expert agencies with the support and guidance of NIE, capacity related risks to the project is negated. Apart from this, there will be trained and experienced human resources from different disciplines will be associated in project execution, at EE level. So, capacity related issues will not be observed during execution. To strengthen the internal management and support system, three tier project monitoring and supervision structure is proposed, i.e., at the VWC level, at the PMU level and at PSC level. VWC will review the progress on a monthly basis and report to the Gram Sabha on a quarterly basis. While PMU will take stock of the project output at quarterly basis, PSC, with high level technical expertise will keep an eye on project direction, outcome of the intervention and critical gaps. From time to time, steering committee members will review and take necessary corrective measures. Thirdly, project progress will be tracked at three different levels, i.e. at the EE level, at the PMU level and also at the PSC level. Any deviation from the plan will be identified and corrective measures will be initiated on immediate basis. All these efforts will help to keep the project on track and do the required mid-course correction for achieving the suggested outcomes.

Risk from External: External risk to the project assumed to be basically from the socio-political situation in the intervention area and Government policies. At present, Government policies are favourable to such interventions and expected to continue for a longer period due to national and international obligations. As watershed as a medium for promotion of resilience and adaptation is well recognized by both State and central Government, proposed project will able to harness the benefit of the current policy and likelihood of its change, affecting the initiative can be overruled. Looking at current socio-political situation of the intervention area, major changes are not expected due to stable Government in both the State, pro-poor initiatives of both State and central Government, high focus on climate change and promotion of development agenda. So, Socio-political situation is expected to be favourable to the project and will become more suitable when results of the project become visible.

At the design stage, project has controlled the “scope” and “schedule” related risk whereas resource related risk seems a less possibility due to the expected support of Adaptation Fund Board. If any such resource related risks appears during the implementation like funds flow, adequacy of funds for the planned activities etc., it will be taken up at the NIE level and if required, support of AFB will be sought. At the design stage of the project, measures taken to manage the expected “constraints” related risk through exploring opportunities (Government schemes, credit support from bank, insurance services for risk sharing etc.), framing realizable objective and related outcome, removal of cost intensive and low output activities, identifying feasible alternatives wherever it is required etc.

The concerned State Government department has expressed its interest and commitment for this project as a pilot programme for adaptation to climate change. There are however political, institutional and technical risks associated with the implementation of the project at a very low degree. The assessed risks at this stage is based on the assumptions of different stakeholders associated in designing of this project, careful analysis of the socio-political environment of the project area and based on existing policies of State and central Government. Some of the major perceived risks and mitigation strategies are as given under.

Table 22: Level of Risk and Mitigation Strategy

Risk	Level	Mitigation Strategy
Lack of adequate human capital and skills at implementers level	Low	Sensitization and capacity building at various levels of implementation
Adequacy of funding support to the suggested additional measures	Low	Expected funding from Adaptation Fund Board would meet the requirement.
Unforeseen events that affect the crops like locust and extreme weather which could not be forecasted.	Medium	Risk mapping with in the project boundaries using the various climate scenarios to cover all contingencies.
Regulatory risk in case of credit and insurance, common land development etc.	Medium	Mainstreaming of climate change adaptation into the development planning and liaisoning with the regulators
Lack of coordination and consultation among the project partners	Low	Information and Knowledge management and periodic stakeholder interactions and feedback mechanism. The proposed PMU will act as connecting hub and coordinate with the partners as well as with the NIE.
Implementation delays	Low	Intensive monitoring mechanism and mid-term evaluation missions

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

The proposed project area, in both the State, share certain common characters of varied degree like, fragile and degraded environment, dry land cropping system with low resilience to climate variability, poor adaptive capacity, high incidence of poverty and lack of water resources. Farmers with small and marginal holding continue to remain vulnerable to climate and other risks in these areas. In Rajasthan, agriculture is declining and in Tamil Nadu, agricultural growth has come to a stage of stagnation. Situation in both the states is basically related to availability of low water resource and impact of climate variability in more recent decades. In agreement with other dry land areas, adaptation strategies and interventions are vital to improve productivity, sustain income, reduce vulnerability, minimise rural poverty and improve resilience.

The project, with the discussed scope, will promote better understanding of the root causes of the problems and ways to address it. It will support in the promotion of recommended scientific practices and adaptation strategies / approaches, based on the findings of agricultural research institutions. In addition, learning from other national and international research and implementation initiatives, work of international agricultural research institutions, such as the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), and other research groups doing local adaptive work (e.g. NGOs, private sector, and other initiatives, including those of NABARD and GIZ), will be promoted.

With regards to environmental and social impacts and risks and ways to mitigate and manage these, preliminary work has been done by the NIE and its partner agencies. In Tamil Nadu a random sample of 80 farmers/landless villagers have been interviewed through participatory rural appraisal techniques. In Rajasthan key informants and 25 other farmers have been similarly interviewed. As indicated under ***Stakeholder consultation in the proposed project area (Part II- H):*** "In the proposed project area, a series of consultations with farmers and landless persons have been carried out for understanding the problems of degradation of natural resources, low productivity of crops, issues connected with livelihood and to arrive at appropriate treatment measures. During the above consultation, climate

change related issues affecting the community also discussed at length. On the basis of these information detailed projects report is formulated.

As indicated under section 1.4: ***Climate Change Adaptation in Watersheds:*** NABARD has supported 16 states with watershed development interventions, implemented through state governments, voluntary agencies/corporate entities. These have focused on resource poor areas, vulnerable groups and have sought to introduce mitigation measures to adjust to climate change. GIZ has assisted with technical support. These pilot projects have provided considerable experience in how best to implement a successful project, the expected timing and sequencing of actions, cost and technical norms, and the expected benefits. This experience has also provided us with good understanding of the complexity of working with marginal and vulnerable people, including those from ethnic minority groups, landless groups, and others with marginal capacity to participate in rural life or to take up new opportunities. On the basis of this experience it is now proposed, through the project, to upscale to an area of about 25,000 ha, in 20 watersheds, 10 each in Tamil Nadu and Rajasthan.

As per the potential impact and risks with reference to Environmental and Social Policy (November 2013) of the Adaptation Fund Board, the project is categorized as "**Category C**" with no adverse Environmental or Social Impacts. Project strategy for risk management in line with the environment and social policy is discussed in Table 20.

Table 23: Risk Management in line with the Environmental and Social Policy

Environmental and Social Principles	**Compliance Measures**
Compliance with the Law	The project is in compliance with major domestic environmental law / policies / rules like (1) National Forest Policy-1988, (2) The Water (Prevention and Control of Pollution) Act, 1974, (3) The Water (Prevention and Control of Pollution) Rules, 1975, (4) The Air (Prevention and Control of Pollution) Act, 1981 and Rules, 1982, (5) The Environment (Protection) Act, 1986 and Rules, 1986, (6) The Forest (Conservation) Act, 1980 and Rules, 1981, (7) The Wildlife Protection Act, 1972. India as a party to various international declarations, this project is in line with the international laws.
Access and Equity	By design, the project is inclusive in nature and meant to minimise the misery of vulnerable segments and improve their adaptive capacity. Inclusive strategy of the project will ensure fair and equitable access to benefits. Going by the nature of the project, its scope to impede basic services is remote. Rather, the project will facilitate in improving basic services, through collaboration and convergence, like health care, provision of clean water and sanitation, energy, education, housing, safe and decent working conditions, and land rights.
Marginalised and Vulnerable Groups	Impact of the project on marginalised and vulnerable segment is assessed and observed that this project will create a scope for their upliftment. The project looks at participatory approach of implementation rather than any imposition on any segment of the population. The project is planned to benefit the disadvantage section more by involving them in the process.
Human Rights	The project is supportive to human rights and will continue to promote human rights in the project locations.
Gender Equity and Women Empowerment	Project has special focus on women empowerment and certain activities are directed towards social and economic empowerment of women.
Core labour Rights	Project will follow labour standards during their engagement in different project activities.
Indigenous People	Current project is consistence with applicable international and national instruments and looks at benefiting the indigenous people through project inputs.
Involuntary Settlement	Project does not have any such scope to promote involuntary settlement.
Protection of Natural Habitats	Objectively, project looks at restoration and promotion of natural habitats as a strategy for greater resilience and adaptation capacity.
Conservation of Biological Diversity	Conservation of biological diversity is an integral part of the project. Only the tested and approved species will be promoted under alternative / mixed cropping system. Project will not introduce any known invasive species.

Climate Change	Project is for improving climate resilience and building adaptive capacity of the community. The suggested measures under the project will minimize greenhouse gas emission in the longer run.
Pollution Prevention and Resource Efficiency	Proposed adaptation measures are environmental friendly and release of pollutant is having limited or no scope in the project. For construction related activities, material resource use is also limited and project is not energy intensive.
Public Health	Project is not having any negative impact on public health
Physical and Cultural Heritage	Because of the project, physical cultural heritage / resources at the community level is not going to be affected.
Land and Soil Conservation	Proposed project is having ample scope of promoting land and soil conservation as it will be a major part of the overall intervention framework.
Environmental and Social Policy Delivery Process	
Screening of Environmental and Social Risks by the Implementing Entity	The proposed project is screened and potential environmental and social risk is not identified, rather project will improve the environmental condition of the locality. Based on the screening, the project is ranked to be of "**Category C**".
Environmental and Social Assessment	The proposed project does not have the potential to cause environmental or social harm, rather it will support in improving the current environmental and social status. The project is of "**Category C**" and hence, environmental and social assessment and related management plan may not be a prerequisite.
Environmental and Social Management Plan	Current environmental and social assessment does not identify any environmental or social risks at impactable level. The project is of "**Category C**" and hence, environmental and social assessment and related management plan is not a necessity.
Monitoring, Reporting and Evaluation	The monitoring framework will have scope for measuring key environmental and social indicators, in terms of both qualitative and quantitative for measurement of outcomes and reporting. The reduction in the identified social and environmental risk (though such risks found not prevailing at present), identified during implementation, will also be mapped. Apart from physical and financial achievements, progress in addressing environmental and social management plan will also be captured in the monitoring system and reported. Apart from regular monitoring, mid-term and terminal evaluation will also evaluate the project performance with respect to environmental and social risks.
Public Disclosure and Consultation	Different stakeholders, in each project location, have been identified and involved in the project design stage. This project is finalised based on the inputs received from different stakeholders during different rounds of meetings / consultations. In the State and watershed level project inception workshops, the results of the environmental and social screening and environmental and social assessment findings will be shared. The project management plan will also be shared with different stakeholders and documents will be in public domain for easy reference of stakeholders. Apart from this, project performance reports including the status of implementation of environmental and social measures will be available for stakeholder's review. Apart from executing entities, community and other stakeholders will be intimated about any significant change in the project plan.
Grievance Mechanism	Though, project will not have negative impact or affect people negatively. Still, a grievance mechanism will be in place so that people can share their concerns and it can be addressed amicably. The mechanism will be project-specific adhering to Government norms. The mechanism will be at both at NIE and EE level.

D. Monitoring and evaluation arrangements including budgeted M&E plan.

The project has been designed based on the standard result framework and indicators have been identified. It would introduce a monitoring, evaluation and knowledge management system to facilitate compilation and dissemination of relevant project knowledge about issues, experiences and insights to all stakeholders.

The project would introduce vulnerable group specific disaggregated system of data collection and reporting for each project component, based on the requirement of AFB. The monitoring system would be designed to meet the requirement of capturing implementation progress against planned targets as set out in the Annual Work Plan and Budget (AWPBs). The monitoring system will periodically look in to (1) quality of inputs, (2) adequacy of the inputs, (3) physical progress of activities, (4) financial achievement, (5) project outputs, (6) project outcomes etc. Overall, the monitoring and evaluation frame of the project will examine the formative aspect (process monitoring) and summative aspects (impact monitoring) of the project.

The Monitoring and Evaluation of the project and knowledge management component would be the responsibility of the Project Management Unit (PMU) and Regional Offices of NABARD. The results-based approach will be adopted, involving regular recording of, and accounting for progress against AWPB targets; and routine, periodic assessments of movement towards impact. The same would be achieved through on-site and off-site monitoring by a dedicated team. Three tier project monitoring and supervision structure is proposed, i.e., at the VWC level, at the PMU level and at PSC level. VWC will review the progress on a monthly basis and report to Gram Sabha on a quarterly basis. While PMU will take stock of the project output at quarterly basis, PSC, with high level technical expertise will keep an eye on project direction, outcome of the intervention and critical gaps. From time to time, steering committee members will review and take necessary corrective measures. Thirdly, project progress will be tracked at three different levels, i.e. at the EE level, at the PMU level and also at the PSC level. Any deviation from the plan will be identified and corrective measures will be initiated on immediate basis.

Budgeted M&E Plan:

Budgeted M&E plan and indicators to be monitored in different period is presented in the Table 24.

Table 24: Budgeted M&E Plan of the Project

Monitoring and Evaluation Plan			
Type of M&E Activity	**Responsible Parties**	**Budget (US$)does not include staff time**	**Time Frame**
Project Inception Workshop	EE/NIE	800	Within first three months
Half-yearly report	EE/NIE	200	End of every six months
Annual report	EE/NIE	200	End of each year
Project review & monitoring Meeting	Dept. of Govt /EE/NABARD	0	Monthly
Mid-term evaluation	External Evaluator/ Representatives of MOE/ Dept. of Govt / Technical Consultants/ Project Director	2,000	At mid-point of project execution (2nd year)
End term evaluation	External Evaluator/Representatives of MOE/ Dept. of Govt / Technical Consultants/ Project Director	3,000	At end of Project cycle
Final Audit	EE/NIE	400	3 months after end of the Project
Total Amount		**6,600**	

Considering large number of EEs, it is proposed that the entire M& E cost of US $ 6,600 will be born out of the NIE cost as given in the break down budget of NIE indicated under table 30.

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

Table 25: Project Result Framework of activities supported by AFB

Outcome/Output	Indicator	Baseline	Target	Source of Verification	Risks and Assumptions
Component 1: Improved soil and water regime for better crop productivity and resultant increase of income of small and marginal farmers					
Outcome 1: Soil and water regime improved and crop	Livelihood vulnerability of percentage of farmers reduced through increased water availability	Farmers are vulnerable due to poor soil water regime and crop productivity	At least 60% farmers living in the project villages directly benefited from reduced	Measurement Book Micro plans prepared	***Assumptions*** **:** VWC takes active interest in project execution

productivity enhanced			vulnerability to climate change related impacts	by the VWCs Progress Report	***Risks:*** Availability of the labour during the working season due to competing demands
Output 1.1: Soil health improved through summer / deep ploughing,	Area covered under summer ploughing / deep tillage Number of farmers using vermicompost and tank silt	Summer ploughing /deep ploughing not done	2363 Ha is covered under summer/deep ploughing	Measurement Book Progress Report	Farmers understand the importance and adopt the practice sustainably
Output 1.2: Increased water availability through farm pond, catch pit, well recharge pit and other water harvesting structures	Number of farm ponds/check dam/WHS constructed Number of catch pit, well recharge pit constructed	Poor soil moisture and less number of water harvesting structures	29 nos. of farm ponds /check dam/RWHS constructed 10027 CuM. of catch pit, well recharge pit constructed	Measurement Book Progress Report	Farm pond and other WHS are constructed as per approved design
Component 2: Increased adaptation to climate change through climate resilient farming system approach and diversification of livelihoods;					
Outcome 2: Improved climate resilient farming system and increased livelihood security	Number of farmers adapted climate resilient farming system	Farmers are not following climate resilient farming systems	At least 50% farmers adopt climate resilient farming system	Progress report Surveys and interviews	***Assumptions*** **:** Farmers willing to adopt climate resilient technologies ***Risks:*** Lack of capacity and resources for adoption

Output 2.1: Increased availability of fodder/fuel through afforestation & pasture land development	Area covered under structures like Gradonis, crescent bund etc for regeneration of plants Number of fodder/fuel trees planted Area covered under grass seeding	No systematic efforts in afforestation and pasture land development	2500 M of Gradonis, 11500 nos crescent bund etc 25892 nos. of fodder/fuel trees planted 162 ha covered under grass seeding 10 nos of fodder banks established in Rajasthan	Progress report Surveys and interviews	Saplings of fodder/fuel trees and grass seeds are available in required quantity
Output 2.2: Improved resilience through adoption of climate resilient farming/livelihood systems	Area covered under Integrated Farming Systems/organic farming Area covered under micro-irrigation Area under horticulture/vegetables/ kitchen garden Number of livelihood activities supported Number of demonstrations undertaken	Farming system not diversified and hence not resilient to climate change	353 ha covered under Integrated Farming Systems/ organic farming/ cropping pattern change 165 ha covered under micro-irrigation 559 Nos of vermicompost units & 1183 Nos of compost pit established 447 ha covered under tank silt application 3800 nos of horticulture plants on bunds, 8 ha wadi (mixed horti plantation), 86 units of vegetables garden & 1191 nos of kitchen garden	Progress report Surveys and interviews	Farmers' willingness to diversify farming system Availability of vegetable seeds and other inputs

			618 nos. of improved animal husbandry practices, 865 nos of azolla units, 1158 nos of backyard poultry units & 5 nos of mushroom units Two demonstration units of improved farm implements & equipments		
Output 2.3: Better energy management through adoption of energy efficient systems	Number of energy efficient systems demonstrated	Energy efficient systems not in place	22 nos of solar pumpsets & 120 nos of solar lighting (energy efficient systems) demonstrated	Progress report Surveys and interviews	Availability of proposed investment items
Component 3: Integration of risk mitigation products like crop, weather and market advisory / insurance and other financial products for the farmers					
Outcome 3: Reduced climate change vulnerability with improved risk mitigation measures	Number of farmers benefitted from crop weather advisories and crop-water budgeting	Crop weather advisories & crop-water budget inputs not available	Atleast 50% of farmers in the watershed area obtain crop-weather advisories and crop-water budgeting inputs	Progress report Surveys and interviews	***Assumptions*** **:** Advisories are disseminated on time ***Risks:*** Generation of weather data on real time basis
Output 3.1: Installation of Automatic Weather Stations (AWS) and generation of	Number of AWS installed Number of farmers covered with crop-weather advisories	Crop weather advisories on real time basis not available	10 no. of AWS installed 200 nos. of farmers covered with crop-weather advisories	Progress report Surveys and interviews	AWS are installed, maintained, data generated and disseminated

agro-advisories					after proper analysis by involving experts
Output 3.2: Geo-hydrological study and crop-water budgeting	Number of geo-hydrological studies undertaken Number of crop-water budgeting plan prepared	Crop-water budget plan not prepared	Geo-hydrological study and crop water budgeting undertaken in all the 20 watersheds	Progress report Study report/water budget plan	Instruments for measurement of run-off, soil moisture tension etc., are installed
Component 4: Creation of knowledge management system for climate proofing of watersheds					
Outcome 4**:** Project learning and created knowledge base benefitted similar projects implemented in other States	Number of reading kit/manual on climate proofing prepared Number of studies undertaken Number of awareness camps/sensitation programme conducted	No awareness material are available	Reading kit/manual on climate proofing are available for wider dissemination Awareness camps/sensitation programmes conducted for creating better awareness among stakeholders	Progress report Reports/ documents /short films	***Assumptions :*** All material are of high quality, and accessible to stakeholders. ***Risks:*** Inadequate participation
Output 4.1: Resource materials prepared for dissemination among various stakeholders	Number of reading kit/manual on climate proofing prepared Number of audio-visual (short films) produced	No awareness material are available	10 no. of reading kit/manual on climate proofing prepared 5 nos. of audio-visual (short films) produced	Progress report Reports/ documents /short films	All documents are of high quality,
Output 4.2: Community and other stakeholders are sensitised about the programme	Number of sensitisation/awareness camps/capacity building programmes	No awareness/sensitization programmes conducted	36 nos. of sensitisation/awareness camps/capacity building programmes	Progress report Programme reports	All stakeholders participate In the programmes

Output 4.3: Conduct of Grassland ecological study in Rajasthan	Number of studies undertaken	No study report available	Grass land ecology study under taken in Rajasthan	Study report	Study is undertaken by qualified person

Result framework of activities supported by NABARD is presented in table 26

Table 26: Project Result Framework of activities supported by NABARD

Outcome/Output	Indicator	Baseline	Target	Source of Verification	Risks and Assumptions
Component 1: Soil and Water Conservation for improvement of soil and water regime in the watershed area					
Outcome 1: Soil and water regime improved on account of soil & water conservation measures	Area covered with various soil and water conservation measures	High degree of soil erosion and poor interception of run-off water	At least 50% farmers living in the project villages directly benefited from soil and water conservation measures	Measurement Book Micro plans prepared by the VWCs Progress Report	***Assumptions*** **:** VWC takes active interest in project execution ***Risks:*** Availability of the labour during the working season due to competing demands
Output 1.1: Soil erosion reduced and in-situ moisture conservation improved through construction of field/stone/contour bund	Area covered under field/stone/contour bunds	Soil conservation works not undertaken	Field bund-8.94 lakh CuM Stone bund-0.35 lakh CuM Contour bund-0.88 lakh ha	Measurement Book Progress Report	Availability of stones locally for stone bund Availability of labour during the working season
Output 1.2:	Number/quantity of farm ponds/sunken	Less number of water harvesting	158 nos. of farm ponds	Measurement Book	Farm pond and other

Increased water availability through farm pond, sunken pond and well recharge pit	pond/well recharge pits constructed	structures and poor water availability	36 nos of sunken pond constructed 5715 CuM. of well recharge pit excavated	Progress Report	WHS are constructed as per approved design
Output 1.3: Run-off water intercepted through construction of gabion, gully plug, stone outlet, waste weir, loose boulder structures, WAT, CCT, SCT & box trench	Number/quantity of gabion, gully plug, stone outlet, waste weir, loose boulder structures, WAT, CCT, SCT & box trench	Poor interception of overland flow and resultant soil loss due to heavy run-off	7 nos of gabion, 0.46 lakh CuM of gully plug, 6114 nos of stone outlet, 303 nos of waste weir & 67 nos of loose boulder structures 0.50 lakh CuM of WAT, 2.26 lakh CuM of CCT, 0.11 lakh M of SCT & 0.32 lakh CuM of box trench	Measurement Book Progress Report	Gabion, gully plug, stone outlet, waste weir, loose boulder structures, WAT, CCT, SCT & box trench are constructed as per approved design
Component 2: Productivity enhancement and diversification of agriculture;					
Outcome 2: Improved productivity and diversified farming	Number of farmers adopted diversified farming system	Farmers are not following diversified farming systems	At least 50% farmers adopt diversified farming system	Progress report Surveys and interviews	***Assumptions*** **:** Farmers willing to adopt diversified farming ***Risks:*** Lack of capacity and resources for adoption
Output 2.1: Increased availability of fodder/fuel/fruit through afforestation & tree plantation	Number of fodder/fuel/fruit trees planted Area covered under grass seeding	No systematic efforts in afforestation and tree plantation	3.34 lakh nos. of fodder/fuel trees planted 4.38 lakh nos. of fruit trees planted 5404 ha covered under grass seeding	Progress report Surveys and interviews	Saplings of fodder/fuel/ fruit trees and grass seeds are available in required quantity

Output 2.2: Improved resilience through adoption of climate resilient farming/livelihood systems	No. of micro-irrigation units No of vermicompost Area under horticulture/vegetables/ kitchen garden Number of livelihood activities supported	Farming system not diversified and hence not resilient to climate change	130 nos of micro-irrigation units installed 92 Nos of vermicompost units 520 nos of kitchen garden & 892 vegetable units 54 nos of horticulture orchard 0.28 lak nos of horticulture trees planted Improved animal husbandry practices like Artificial Insemination (500 nos), health camps (62 nos), breeding (95 nos) Demonstration units of goatery (133 nos), poultry (585 nos), azolla (140 nos) & dairy (10 nos)	Progress report Surveys and interviews	Farmers' willingness to diversify farming system Availability of vegetable seeds and other inputs Availability of semen, Day old Chicks and Does
Output 2.3: Better energy management through adoption of energy efficient systems	**Number of energy efficient systems demonstrated**	**Energy efficient systems not in place**	**9 nos of biogas** **350 nos of cookstoves** **75 nos of solar panel** **150 nos of smokeless chulah**	Progress report Surveys and interviews	Availability of proposed investment items
Component 3: Awareness and Capacity building on watershed management					
Outcome 3**:** Community and other	Number of sensitisation/awareness camps/capacity	No awareness sensitization	Sensitation programmes/training/exposure visits	Progress report	***Assumptions :***Resource

stakeholders benefitted from training/capacity building/exposure programmes	building programmes/exposure visits	programmes conducted	conducted for creating better awareness among stakeholders	Reports/ Documents /Photos	persons available locally ***Risks:*** Inadequate participation
Output 3.1: Community and other stakeholders are sensitised and their capacity built	Number of sensitisation/awareness camps/capacity building programmes/exposure visits	No awareness/sensitization programmes conducted	216 nos. of sensitisation/awareness for women development 74 nos exposure visits 177 nos training/ capacity building programmes	Progress report Programme reports	All stakeholders participate in the programmes

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

Table 27: Project Alignment with Result Framework of Adaptation Fund

Project Objective (s)	Project Objective Indicator (s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Adaptive capacity of the community to climate change / variability improved in rain fed areas of Tamil Nadu and Rajasthan	Livelihoods of vulnerable community strengthened through improved natural resource base (physical, natural and social asset base).	**Outcome 2**: Strengthened institutional capacity to reduce risks associated with climate induced Socio-economic and environmental losses.	2.2. Number of people with reduced risk to extreme weather events.	
		Outcome 5: Increased ecosystem resilience in response to climate change and variability-induced stress	5. Ecosystem services and natural assets maintained or improved under climate change and variability-induced stress	
		Fund Outcome 6: 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	
Project Outcome	**Project Outcome Indicator (s)**	**Fund Output**	**Fund Output Indicator**	
Outcome 1: Soil and water regime improved and crop productivity enhanced	Livelihood vulnerability of percentage of farmers reduced through increased water availability	**Output 5**: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	5.1. No. and type of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets)	170,585
		Output 6: Targeted individual and community livelihood strategies strengthened in relation to climate	6.1.1.No. and type of adaptation assets (physical as well as knowledge) created in support of individual or	

		change impacts, including variability	community livelihood strategies	
Outcome 2: Improved climate resilient farming system and increased livelihood security	Number of farmers adapted climate resilient farming system	**Output 6**: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	6.1.2. Type of income sources for households generated under climate change scenario	673,670
Outcome 3: Reduced climate change vulnerability with improved risk mitigation measures	Number of farmers benefitted from crop weather advisories and crop-water budgeting	**Output 2.2**: Targeted population groups covered by adequate risk reduction systems.	2.2.1. Percentage of population covered by adequate risk-reduction systems	195,917

Alignment with Adaptation Fund Core Indicators

Table 28: Adaptation Fund Core Indicators

Adaptation Fund Core Impact Indicator "Number of Beneficiaries"				
Date of Report	05 March 2015			
Project Title	Climate Proofing of Watershed Development Projects in the States of Rajasthan and Tamil Nadu			
Country	India			
Implementing Agency	NABARD			
Project Duration	4 years			
	Baseline *(absolute number)*	Target at project approval *(absolute number)*	Adjusted target first year of implementation *(absolute number)*	Actual at completion[15] *(absolute number)*
Direct beneficiaries supported by the project	**0**	**26052**	6252	
Female direct beneficiaries	0	11437	2702	
Youth direct beneficiaries	0	16509	4001	
Indirect beneficiaries supported by the project	**0**	**30699**	6753	
Female indirect beneficiaries	0	16259	3593	
Youth indirect beneficiaries	0	14709	3300	
Adaptation Fund Core Impact Indicator "Natural Assets Protected or Rehabilitated"				
Natural Asset or Ecosystem *Pasture land*		Pasture land-52.8 ha	Pasture land-10.56 ha	
Change in state		Grass seeding in pasture land-162 ha	Grass seeding in pasture land-32.4 ha	
	0	1 (Pasture land)		
Adaptation Fund Core Impact Indicator "Early Warning Systems"				
Adopted Early Warning Systems *(Category targeted – 1, 2, 3, 4; and absolute number)* *(1) risk knowledge,* *(2) monitoring and warning service,* *(3) dissemination and communication,* *(4) response capability.* *(report for each project component)*	0	Dissemination of crop weather advisories – 2000 farmers	1000 farmers	

G. Include a detail budget with budget notes, a budget on Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

Table 29: Detail Budget

Sl.No	Description of treatments	Rajasthan	Tamil Nadu	Total
I	**Improvement in soil water regime**			
A	**Area Treatment-Crop Cultivated Area**			
1	Farm Pond	7500		7500
2	Drainage system in crop cultivated area			0
3	Catch pit		4756	4756
4	Well recharge pit		55517	55517
5	Summer ploughing		44392	44392
6	Deep tillage		2818	2818
	Sub Total – Crop cultivation	**7500**	**107483**	**114983**
B	**Drainage line treatment**			
1	Earthen Embankment with spillway	11985		11985
2	Masonry Gabion	2091		2091
3	L.D.P.E Sheet lining for seepage control in existing structures	7174		7174
4	Masonry Check Dam/ Water Harvesting structure	18376		18376
5	Recharge pit on upslope side of gully plugs	11108		11108
6	Open Recharge Pit in drainage line	4868		4868
	Sub Total Drainage line treatment	**55602**	**0**	**55602**
	Total – improvement in soil water regime	**63102**	**107483**	**170585**
II	**Climate Resilient Farming System and improved livelihood**			
A	**Afforestation & Pasture land development**			
1	Gradonis (bench terracing) - demo	5028		5028
2	Refilling of alternate CCTs and tree seeding	2196		2196
3	(Stone pitched) Thawala/ Crescent Bund for regeneration of plants	4333		4333
4	Tree seeding	1149		1149
5	Plantation of fuel/fodder trees in SP site/ stone bund	11788		11788
6	Grass seeding in pasture + silvi pasture land	1613		1613
7	Avenue plantation	1202		1202
8	1 cft (0.3x0.3x0.3 m) pitting and tree seeding	7214		7214
9	Plantation of fodder trees for gully stabilization	9411		9411
10	Use of Water absorption Material during plantation	250		250
11	Pitcher irrigation (gheda)	667		667
12	Thoor bio-fencing/ barrier	3767		3767
13	Stone Fencing bund	6248		6248

Sl.No	Description of treatments	Rajasthan	Tamil Nadu	Total
14	Creation of Pasture group and fodder bank	8333		8333
15	Bund planting/ Tree seeding	1956		1956
17	Fodder development/chaff cutter		50673	50673
18	Korangad development		292	292
19	Nursery for forestry species		417	417
20	Green coverage (Glyceridia)		9342	9342
21	Azolla development		12127	12127
22	Agro-forestsry in channel/castor seeding		375	375
	Sub Total – Afforestation & Pasture land development	**65155**	**73226**	**138381**
B	**Other Climate resilient farming/ Livelihood Support**			
1	Wadi/ Horti-Plantation	22432		22432
2	Vegetable cultivation with Trellis	31109		31109
3	Kitchen Garden	2000	25546	27546
4	RWHS for Backyard plantation	18664		18664
5	Well recharge	8268		8268
6	Enhancing water use efficiency by use of micro irrigation/ UG pipes & outlets	30000	28166	58166
7	Seed bank	5667		5667
8	Short duration and low water required variety of maize and wheat promotion of mixed cropping	1850		1850
9	Improved Farm Implements and equipments (BBF implement, Zero Tiller; Weeder; Fertigation; Reaper, Thresher etc.)	8333		8333
10	Best package of practices incl. seed treatment, INM, IPM, organic farming, etc.	12375		12375
11	Crop insurance awareness programme	8333		8333
12	Silage making demo	617		617
13	Azolla Cultivation	9458		9458
14	Improved animal husbandry practices including feed management, mineral bricks, silage, AI services of improved desi breed, etc.,	27808		27808
15	Community based livestock insurance	9667		9667
16	Backyard Poultry units	4333	1700	6033
17	Vermicompost		67672	67672
18	Integrated Farming System		24700	24700
19	Tank silt application		53125	53125
20	Demo plot on minor millet		14417	14417
21	Seed bank		250	250
22	Herbal garden		1667	1667
23	Cattle tank/trevis		9267	9267

Sl.No	Description of treatments	Rajasthan	Tamil Nadu	Total
24	Organic farming		833	833
25	Mushroom		833	833
	Pitcher irrigation		667	667
	Sub Total – Other livelihood	**200914**	**228843**	**429757**
C	**Energy Efficient System**			
1	Improved cook stove	2750		2750
2	Biogas unit	6069	23130	29199
3	Solar Light (home lighting)	14000		14000
4	Solar Pump	57500	2083	59583
	Sub Total – Energy Efficient System	**80319**	**25213**	105532
	Sub Total – Climate Resilient Farming System and improved livelihood	**346388**	**327282**	**673670**
III	**Risk Mitigation**			
1	AWS and agro-advisory	43333	43333	86666
2	RML subscription (3 years) on crop, weather & market info	25000	25000	50000
3	Sediment Observation Unit and Data Analysis	5250	4000	9250
4	Geo- hydrological study and crop water budgeting	25000	25000	50000
	Sub Total Risk Mitigation	**98583**	**97333**	**195916**
IV	**Knowledge management**			
1	Grassland ecology study	6000		6000
2	Educational kit – Manual of Climate Change Adaptation	15000	3333	18333
3	Posters and pamphlet on climate change adaptation	4167	3417	7584
4	Community sensitisation Programs	9833		9833
5	Audio Visual Tools – short films	11833	7500	19333
6	Exposure visits, peer learning	15333	12500	27833
7	Training on NRM/Climate Change	2833		2833
8	Awareness and mobilisation/capacity building		8367	8367
9	IEC activity in the proect area		3500	3500
10	Veterinary camp/silage making/para extension worker		1000	1000
11	Skill training		833	833
12	Information board		1000	1000
13	Village Knowledge Centre		2833	2833
	Sub Total Knowledge management	**64999**	**44283**	**109282**
	Grand Total	**573072**	**576381**	**1149453**
	Project/Programme Execution cost			120600
	Total Project/ Programme Cost			**1270055**
	Project/programme Cycle Management Fee charged by the Implementing Entity			107955
	Amount of Financing Requested			**1378010**

The watershed-wise detailed cost is enclosed as Annexure-IV (A) & IV (B). Whereas consolidated financials are presented at Annexure III (A) and III (B)

Breakdown of Execution Cost:

Table 30: Breakdown of Execution Cost

Sl No.	Budget Head	Rate (Rs.)	No.	Total (Rs.)	Amount USD
1	Field coordinator: 20 nos. @ $167/month for 3years	10000	20	6000000	100000
2	Travel (local and for facilitation) @ $400/ month (for 20 field coordinators) for 3years	1200	20	864000	14400
3	Reporting and Data @ $ 400 per year (for 20 watersheds) for 3 years	1200	20	72000	1200
4	Watershed Level Meetings (half yearly) @ $ 83.33 per meeting per watershed	5000	20	300000	5000
Total				**7236000**	**120600**

Budget of Implementing Entity Management Fee.

Table 31: Detail Budget of Implementing Entity Management Fee.

Sl No.	Budget Head	Rate	No.	Total	Amount USD
	PMU Costs				
1	PMU Staff	29250	4	3510000	58500
2	Review meetings	2500	20	150000	2500
3	Travel (local and for facilitation)	5000	4	720000	12000
4	Report preparation	5000	6	90000	1500
5	M&E Cost			396000	6600
6	Online monitoring system			1000000	
	NABARD Cost				
6	Financial Management			300000	5000
7	Performance Management - Progress Monitoring- Field Monitoring			300000	5000
6	Miscleneous			11300	188
Total				**6477300**	**107955**

The implementation mechanism proposed is through Executing Entities numbering 14 nos, who will be directly responsible for execution of project activities in all the 20 watersheds. For facilitating execution of project activities, one field co-ordinator for every watershed is proposed and their expenses are provided in the EE budget. The execution by the EE will closely be monitored by a dedicated field level unit of NABARD known as Programme Management Unit (PMU) located at Madurai (Tamil Nadu) and Udaipur (Rajasthan). Two Consultants will be stationed in each of these PMUs, who will exclusively be attending to the works related to AFB projects. Since the eligible programme execution cost provided @9.5% of the project measures, is inadequate to meet many of the execution costs, owing to large number of Executing Entities (EEs), it is proposed that NABARD will be meeting costs like review meetings, report preparation, M & E cost etc., Further, NABARD also will be charging lesser amount towards financial management and performance management compared to earlier projects in view of the special nature of the proposed project and importance attached to it being co-funded by NABARD.

As against the total cost of the project at US $ 5.64 million, NABARD will be co-funding the project to the tune of US $ 3.84 (68%) under its dedicated fund/programme like Watershed Development Fund (WDF) and Indo-German Watershed Development Programme (IGWDP). The detailed activity-wise and watershed-wise budget for Rajasthan and Tamil Nadu are presented in Annexure III A and B respectively.

The process of execution consisting of sanction, disbursement, progress reporting, monitoring, review, etc., will be clearly defined and segregated for the co-funding by NABARD and AFB funding. Although EEs involved for the NABARD and AFB portions are same, it will be ensured that the EEs maintain a separate books of accounts, records, registers and all other documents, necessary for tracing flow of fund and end use of the fund. A separate set of manpower is available at the level of EE and PMU for attending to the works related to regular watershed projects. In order to avoid mix-up of data, a separate reporting system will be devised by NABARD for reporting progress under AFB funded items of investments. In order to track real time progress, it is proposed to introduce on-line monitoring system in the projects supported by AFB. The outcome/output envisaged under each of the activities funded by AFB, will be monitored separately by the Field Coordinator attached to EE and by the Consultants attached to PMU, thereby ensuring achievement of the same irrespective of success of activities funded by NABARD.

H. Include a disbursement schedule with time bound milestones.

Table 32: Proposed disbursement schedule.

	Upon Agreement signature	One Year after Project Start[a/]	Year 2[b/]	Year 3	**Total**
Scheduled Date	June 2015	June 2016	June 2017	June 2018	
Project Funds	**254011**	**381017**	**444519**	**190508**	**1270055**
Implementing Entity Fee	**21591**	**32386**	**37784**	**16193**	**107955**
Total	**275602**	**413403**	**482304**	**206702**	**1378010**

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:*

Ravi Shankar Prasad, IAS, Joint Secretary, Ministry of Environment and Forest (MoEF), Government of India	Date:

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, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
(Dr. B. G. Mukhopadhyay) *Chief General Manager* *NABARD, Head Office, Mumbai* *(Implementing Entity Co-ordinator)*	
Date: *January, 29, 2015*	Tel. and email: Phone (Direct): +91 (022) 26530007 Fax (022) 2653 0009, Mobile: +91 9769690750 fsdd@nabard.org climate.change@nabard.org benu8896@yahoo.co.in
Project Contact Person: Mr. V. Mashar, Dy. General Manager, NABARD, Head Office, Mumbai	
Tel. and Email: +91 22 2653 9632, +91 9769863397 p.radhakrishnan@nabard.org, climate.change@nabard.org	

Annexure I: Climate Scenario in Project Area of Rajasthan:

Climate Dimensions	Malvi Watershed	Mandali watershed	Nayagaon-1 Watershed	Nayagaon-2 Watershed	Vagda Watershed	Balua Watershed	Chainpuria Watershed	Dhuwala Watershed	Jhabla watershed	Khad Watershed
Project Area Specification										
State	Rajasthan	Rajasthan	Rajasthan	Rajasthan	Rajasthan	Rajasthan	Rajasthan	Rajasthan	Rajasthan	Rajasthan
District	Dungarpur	Udaipur	Jhalawar	Jhalawar	Gogunda	Sarada	Badi Sadri	Bhilwara	Udaipur	Udaipur
Block	Sagwara	Sarada	Bakani	Bakani	Udaipur	Udaipur	Chittorgarh	Mandal	Girwa	Sarada
Geographic Position	23°42'30" and 23°46'45" North Latitude and 73°53'30" and 73°57'30" East longitude	**24°10'**and 24°15''North Latitude and 73°45´and 73°50´ East longitude	24° 23' 10" N to 24° 25' 20" N Latitude and 76° 15' 10" E to 76° 18' 40" E Longitude	24° 20' 40" N to 24° 25' 00" N Latitude and 76° 15' 10" E to 76° 17' 40" E Longitude	24^0 49' and 24^0 53' North Latitude and 73^0 31' and $73^0$33' East longitude	$24^0$5' and 24^0-10' North Latitude and H22 73-^{0}44' and 73-^{0}50' East longitude	74 30.5' N to 74 33.5' N North Latitude and 24 25' to 24 27.5' East longitude	$25^0$35'18.67" and $25^0$35'12.94 North Latitude and $74^0$07'57.51" and $74^0$08'06.03" East longitude	$24^0$15'54.2" to $24^0$18' North Latitude, $73^0$35'25.3" to $73^0$36'40" East longitude	$24^0$5' and $24^0$8' North Latitude and between $73^0$49' and $73^0$52' East longitude
Average maximum Temperature	34^0C	37.69^0C	36.8^0C	36.8^0C	33.52^0C	33.52^0C	47^0C	32.94^0C	38.0^0C	33.52-^{0}C
Average Minimum Temperature	20^0C	14.2^0C	5^0C	5^0C	16^0C	16.80^0C	24^0C	16.27^0 C	13.8^0C	16.80^0**C**
Total Watershed Area	14.24 sq. km	9.75 sq. km	11.55 sq. km	10.70 sq. km	9.84 sq. km	12.20 sq. km	12.02 sq. km	1180 Ha. (0.12 sq. km)	24sq. km	13.3 sq. km
Population in Watershed	4088	2805 (2011 C)	1707 (2000 C)	1707 (2000 C)	2149 (2011 C)	4253 (2011 C)	2484 (2001 C)	2375 (2001 C)	1400 (2001 C)	2127 (2011 C)
Literacy Level in Watershed	48%	61%	40%	35%	35%	63.95%	33.21%	35%	66.66%	67.41%
Major Soil Type in Watershed	Sandy loam, clay & clay soil in flat area whereas gravel sandy loam soil in the slope area	Sandy loam soil	Silt loam, silt clay soil	Silt loam, silt clay soil	Sandy loam & sandy clay loam in valley and red gravelly loam on ridge	Brown loamy medium to deep soil in valley and red gravely loam hilly soil on ridge	Black cotton soil	Clay loam and sandy loam soil	Clay loam and silt loam	Brown loamy medium to deep soil in valley and red gravely loam hilly soil on ridge
Major Crops Grown in Watershed	Maize, Paddy, Urd, Wheat, Gram, Mustard and Green Gram	Maize, Wheat, Gram, Mustard, Vegetables, Moong, Fuel and Forage	Soya bean, maize in Kharif season and Wheat, coriander in Rabi season	soya bean, maize in Kharif season and Wheat, coriander in Rabi season	Maize, Wheat, Jowar, Urd, Gram & mustard	Maize and Wheat	Maize, Soybean, (Kharif) Wheat, Bengal gram, Mustard, Garlic Isabgol (Rabi)	Maize, Sorghum, Pigeon pea, Wheat	Maize and Wheat, sorghum and Paddy	Maize and Wheat
Major Sources of Water	Wells, tube wells and canal, besides rainfall	Wells and tube well, besides rainfall	wells and ponds besides rainfall	open wells and ponds besides rainfall	open wells, besides rainfall	open well besides rainfall	Well and rainfall, besides rainfall	open wells through pumping besides rainfall	well irrigation; besides rainfall	open well besides rainfall
Total Livestock Population	3432	3026	932	912	380	3738	1193	3819	3384	2642
Climate Related Risk										
Risk 1:	Consecutive Drought	Consecutive Drought	Consecutive Drought	Consecutive Drought	Consecutive Drought	Consecutive Drought	Consecutive Drought	Drought	Drought	Consecutive Drought
Consequence 1:	Reduction in crop yields	Reduction in overall productivity of fodder and crop, Scarcity of drinking water and fodder, Migration of community	Reduction in crop yields	Reduction in crop yields	Reduction in crop yields	Reduction in crop yields	Reduction in crop yields, lack of fodder and drinking water	Reduction in crop yields, Mortality of livestock, increase in migration	Reduction in crop yields, Death of livestock due to lack of fodder	Reduction in crop yields

Likelihood Probability 1:	Every 4 to 5 years	Every 4 to 5 years	Every 2 to 4 years	Every 2 to 4 years	Every 3 to 4 years	Every 3 to 4 years	Every 2 years	Every 2 to 3 years	Every 4 to 5 years	Every 3 to 4 years
Risk Rank 1:	High - 1	High-1	High-1	High-1	High-1	High-1	High-1	High-1	High-1	High-1
Risk 2:	Excess rainfall	low rainfall	Excess rainfall	Excess rainfall	Delay in monsoon	Intermitted long dry spell	High intensity of rainfall	Delay in Monsoon	Delay in monsoon	Intermitted long dry spell
Consequence 2:	Soil erosion	Reduction in crop yields	Soil erosion, Insect Attack, Red fever, Plague, Chickunguniya, Dengue	Soil erosion	Reduction in yield in kharif crop	Reduction in crop yields, crop loss	Soil erosion, crop damage, water logging but Rabi crop yield is good, Infection / disease attack on livestock	Delay in cropping, low productivity, assistance to rabi crop if good monsoon at later stage	Scarcity of fodder, negative effect in crop yield	Reduction in crop yields, crop loss
Likelihood Probability 2:	Every 3 to 4 years	Every 2 to 4 years	Every 3 to 5 years	Every 3 to 5 years	5-6 years	Every alternative year	Every 2 – 3 years	Occasionally	Every 4 to 5 years	Every alternative year
Risk Rank 2:	Medium - 2	High-1	Medium -2	Medium -2	Medium -2	high-2	Medium-2	High-2	High-2	high-2
Risk 3:	Delay in Monsoon	Excess rainfall, high intensity	Temperature extremes	Temperature extremes	Excess rainfall	Delay in monsoon	Temperature extremes	Excess rainfall	Temperature extremes	Delay in monsoon
Consequence 3:	Reduction in Kharif crop and more effect on summer crop	Soil erosion, Reduction in crop yield, damage to water harvesting structure, More Disease and pest incidence	Increased evapo-transpiration, Reduced flowering and grain filling in wheat	Increased evapo-transpiration	Soil erosion	Delaying in sowing of kharif crop and subsequent in rabi crop	Increased evapo-transpiration, Increased irrigations nos., life loss of Small ruminants	Loss of top soil, crop damage, loss of agri fodder and grass,	Increased evapo-transpiration, fire out-break in forest area	Delaying in sowing of kharif crop and subsequent in rabi crop
Likelihood Probability 3:	Every 6 to 7 years	Every 3 to 4 years	Frequent	Frequent	Every 5 to 6 years	5-6 years	Frequent	Occasionally	Frequent	5-6 years
Risk Rank 3:	Low -3	Medium -2	Medium -3	Medium -3	Medium -3	Medium -3	Low -3	Medium-3	Medium -3	Medium -3
Risk 4:	Intermittent dry spell	Erratic Temperature	Hailstorm	Insect Attack	Frost	Excess rainfall	Daaha (Frost)	Temperature extremes – heat	Cold wave	Excess rainfall
Consequence 4:	Reduction in crop production	Disease and pest attack, Reduction in crop Yield	Crop Damage, Increased livestock mortality	Reduction in crop yields	Reduction in crop yield in rabi season	Soil erosion, Maize crop damaged, yield reduction	Crop damaged e.g. Isabgol	Increased evapo-transpiration, increase mortality among livestock	High mortality of animals	Soil erosion, Maize crop damaged, yield reduction
Likelihood Probability 4:	Every 2 to 3 years	No definite trend	Every 3-4 years	Every 3 to 5 years	Every 5 to 6 years	Every 5 to 6 years	Every 2-3 years	Frequent	Frequent	Every 5 to 6 years
Risk Rank 4:	Low- 4	Medium-3	4	Medium-4	Medium -4	Medium -4	Low -4	Medium -4	Medium -4	Medium -4
Risk 5:	Cold wave	Frost	Frost	Hailstorm	Intermitted long dry spell	Frost	Kada (Hailstorm)	Frost	Excess rainfall	Frost
Consequence 5:	High mortality of small ruminants	Reduction in crop yields	Crop Damage	Crop Damage	Reduction in crop yields	Reduction in crop yield in rabi season	Crop damaged, Grass fodder in pasture is lost	Damage to crop and tree saplings	Soil erosion, stream bank erosion and well gets contaminated with surface flow water,	Reduction in crop yield in rabi season
Likelihood Probability 5:	Every 5 to 6 years	Every 2 to 3 years	Every 2-3 years	Every 3-4 years	5-6 year	4-5 year	Every 3-4 years	Occasionally	Rare	4-5 year
Risk Rank 5:	Low-5	Medium-3	5	5	High-5	Medium -5	Low -5	Low-5	Medium -5	Medium -5
Risk 6:		Delayed monsoon	Delayed Monsoon	Frost	Rain during harvesting time	Rain during harvesting time		Hailstorm	High Wind velocity	Rain during harvesting time
Consequence 6:		Scarcity of fodder and water, Reduction in	Less Productivity; decrease in net sown area; increased fallow	Crop Damage	Reduction in yield and market value	Reduction in yield and market value		Effect on crop	Falling of agriculture crops during maturity stage	Reduction in yield and market value

		crop yields							and falling of livestock n human shelters	
Likelihood Probability 6:		Every 3 to 4 years	Every 2-4 years	Every 2-3 years	2-3 years	2-3 years		Occasionally	Rare	2-3 years
Risk Rank 6:		Medium-3	6	6	High-6	low-6		low-6	Medium-6	low-6
Risk 7:			Unseasonal Winter rains	Delayed Monsoon	Hail storm	High wind velocity coupled with intense rainfall			Intermittent dry spell	High wind velocity coupled with intense rainfall
Consequence 7:			Logging of Crops	Less Productivity; decrease in net sown area; increased fallow	Reduction in crop yields in rabi	Damaged to the crops ,fodder that leads to reduce in yield			Growth of major crop and fodder gets affected	Damaged to the crops ,fodder that leads to reduce in yield
Likelihood Probability 7:			Every 3-4 years	Every 2-4 years					Rare	
Risk Rank 7:			7	7	Medium-7	low-7			Medium-7	low-7
Risk 8:				Unseasonal Winter rains		Hail storm			Rains during harvesting period	Hail storm
Consequence 8:				Logging of Crops		Reduction in crop yields in rabi			Reduction in crop yield and market value of crop	Reduction in crop yields in rabi
Likelihood Probability 8:				Every 3-4 years					Rare	
Risk Rank 8:				8		low-8			Medium-7	low-8
Risk 9:				Red fever, Plague, Chickunguniya, Dengue						
Consequence 9:				Health hazard						
Likelihood Probability 9:				Every 4 to 20 years						
Risk Rank 9:				Minimum-9						
Rainfall:										
Lowest Rainfall	309.2 mm	267 mm	428 mm	428 mm	285 mm	267 mm	366 mm	268 mm	206 mm	267 mm
Highest Rainfall	1588 mm	1155 mm	1826.8 mm	1826.8 mm	1670 mm	1155mm	1253 mm	982 mm	1015 mm	1155 mm
Standard Deviation in Rainfall	265.7 mm	188.59 mm	320.8 mm	320.8 mm	271.51mm	188.59 mm	212.1 mm	180.1mm	198.6 mm	188.59 mm
CV (in %)	34%	33.65%	31.40%	31.40%	40.42%	33.65%	28.20%	31.00%	31.70%	33.65%
Temperature:										
Mean Maximum Temperature	33.9^{0}C	33.06^{0}C	36.8^{0}C	36.8^{0}C	33.52^{0}C	33.52^{0}C	47^{0}C	32.94^{0}C	38.0^{0}C	33.52-^{0}C
Mean Minimum Temperature	25.1^{0}C	17.47^{0}C	5^{0}C	5^{0}C	16^{0}C	16.80^{0}C	24^{0}C	16.27^0 C	13.8^{0}C	16.80**^{0}C**
Extreme Weather Event:										
Drought (Years of	1971, 1975, 1981,	1965, 1972, 1986, 1995,	1972, 1981, 1984, 1990, 1991-98,	1972, 1981, 1984, 1990, 1991,1998,	1993, 1996, 1999-2000, 2002-05, 2008-09	1983, 1995	1981,1985, 1987 – 1988, 1993,	1960, 1970, 1981, 1985, 1987 – 1988, 1993, 2005, 2007, 2009	1972, 1986 and 1987, 1992 and	1899, 1966, 1971, 1995, 2007

Drought)	1988,1989,1986, 1993, 1995, 1997,2000, 2001, 2002, 2005, 2008	1999, 2000, 2002	2000-02, 2005-12, 2012	2000,2002, 2005,2012			2005, 2007, 2009		1993, 1995, 1999, 2000, 2001 to 2003, 2007, 2009	
Semi Drought (Years)	1991-92, 1999, 2010	1987, 1991, 1993, 2003, 2007								
Severe Drought (Year)	1985		1963	1963		2007	2002	2002		
Consecutive drought (Year)	1985-86, 2000-2002		2007-2010		1986-1987	1986-1987, 1991-1992, 1999 and 2000, 2002 and 2003	1998 -2000	1998 -2000		1986-1987, 1991-1992, 1999 and 2000, 2002 and 2003
Flood (Year)	1973-74, 2006		1974, 1986, 1988, 2003,	1974, 1986, 1988, 2003					1973	
Strong Wind (Year)	1973-74									
Scanty Rainfall (Year)	1985									
Hailstorm (Year)	1989					2014				
Galgoto (Year)	1991-92									
Earth quake (Year)	2001									
Less Rain (Year)	2002-04									
Fadke (locust) (Year)	2005				1994-95, 2012-2013					
Dracunculiasis	1960-65									
Average rainfall (Year)	1981-83, 1988-89, 1991-92, 1996-1999, 2003, 2009-10	1984, 2008, 2009, 2010, 2011, 2012, 2008-13					2006	2006		1973
High Rainfall (Year)	1994, 2006	1973, 1994, 2006				2001, 2011				1994
Tiddi infestation (Year)	2005 1981-1982,2003-2004	1981-82, 2003-04								
Chikungunya (Year)	2006	2006								
GSS interventions (Year)	2008-2013	2008-2013								
Red fever (Year)			1965	1965						
Insect attack (Year)			1971	1971						
Excess (Year)			1986, 1996-2011	1986, 1996,2011	1992, 2010		1989, 1994, 1996, 2004	1989, 1994, 1996, 2004	2006, 2010	
Normal (Year)			1988, 1990, 1995, 2003	1988, 1990, 1995, 2003						
Plague (Year)			1995	1995						
Launch of			2006	2006						

NREGA scheme (Year)										
Wet (Year)			2006	2006		1994, 2006		1994		
Chickunguniya (Year)			2008	2008						
Dengue (Year)			2012	2012						
Hail (Year)			2012	2012			2008	2008		2014
Heavy rain (Year)			2013	2013					2014	
High intensity Rainfall (Year)					2006					2005, 2006
Thunderclouds (Year)						2005				2011
Outbreak of Diseases in Livestock (Year)								1980		
Sukhaa								1988		
Irregular rains									1980	
Locust invasion									1997 to 1998	
Intermittent dry spell									2012	
Future Climate Projection:										
Expected Maximum Temperature (Year)										
2030	34.61	33.83	37.19	37.19	34.27	34.51	47.68	33.20	38.73	34.46
2050	35.23	34.39	37.63	37.63	34.83	35.11	48.24	33.73	39.41	35.06
2070	36.33	35.54	38.78	38.78	35.98	36.11	49.39	34.77	40.45	36.06
2100	37.53	36.81	39.99	39.99	37.25	37.50	50.66	36	41.94	37.45
Deviation in Maximum Temperature (Year)										
2030	0.71	0.77	0.39	0.39	0.75	0.99	0.68	0.26	0.73	0.94
2050	1.33	1.33	0.83	0.83	1.31	1.59	1.24	0.79	1.41	1.54
2070	2.43	2.48	1.98	1.98	2.46	2.59	2.39	1.83	2.45	2.54
2100	3.63	3.75	3.19	3.19	3.73	3.98	3.66	3.06	3.94	3.93
Expected Minimum Temperature (Year)										
2030	26.03	18.49	5.52	5.52	17	17.86	24.93	16.66	14.81	17.81
2050	26.74	19.13	6.16	6.16	17.64	18.48	25.57	17.30	15.57	18.43
2070	28.02	20.43	7.46	7.46	18.94	19.49	26.87	18.60	16.76	19.44
2100	29.23	21.78	8.60	8.60	20.26	20.86	28.19	19.74	18.26	20.81
Deviation in Minimum Temperature (Year)										
2030	0.93	1.02	0.52	0.52	1	1.06	0.93	0.39	1.01	1.01
2050	1.64	1.66	1.16	1.16	1.64	1.68	1.57	1.03	1.77	1.63
2070	2.92	2.96	2.46	2.46	2.94	2.69	2.87	2.33	2.96	2.64
2100	4.13	4.31	3.6	3.6	4.26	4.06	4.19	3.47	4.46	4.01
Expected Change in										

Rainfall (Year)										
2030	6	14	2	2	11	4.3	7	-3	5	3.1
2050	13.8	19	9	9	17	12.6	16	4	11.5	11.3
2070	19.2	24.5	15	15	21	17.7	20	9	18.4	16.1
2100	21.9	31	18	18	28	20.7	23	16	22	19.4
Expected CO2 Level (Year)										
2030	420	420	420	420	420	420	420	420	420	420
2050	500	500	500	500	500	500	500	500	500	500
2070	535	535	535	535	535	535	535	535	535	535
2100	588	588	588	588	588	588	588	588	588	588
Survey Findings:										
	Cultivation on Sloping Lands		**Cultivation on Sloping Lands**	**Cultivation on Sloping Lands**	**Cultivation on Sloping Lands**	**Cultivation on Sloping Lands**	**Cultivation on Sloping Lands**		**Cultivation on Sloping Lands**	**Cultivation on Sloping Lands**
Risk 1:	Drought, yellowish of plants, strong wind, erosion during rainy season		Drought Flood Insect attack,	Drought Flood Insect attack,	Drought	Drought	Drought and excess water in the field, frost, necrosis		Dryness	Drought
Action for Risk 1:	Irrigation facilities, well digging, bore well, Field Bunding, check dam		Irrigation facilities Pond construction Field bunding Crop insurance Proper insecticide Training Deep ploughing	Irrigation facilities Pond construction Field bunding Crop insurance Proper insecticide Training Deep ploughing	Levelling of farm lands Field bunds Insurance of crop	Levelling of farm lands Field bunds Insurance of crop	Irrigation, Check dam, CCT, etc. Re sowing of crop, out of the water		irrigation facility Bore well Farm Bunding Crop insurance	Levelling of farm lands Field bunds Insurance of crop
	Cultivation in plain land		**Cultivation in plain land**	**Cultivation in plain land**	**Cultivation in plain land**	**Cultivation in plain land**				
Risk 2:	Drought and excess water in the field, frost, necrosis		Drought	Drought	Heavy rains destroy the crops	Heavy rains destroy the crops				
Action for Risk 2:	Irrigation ,Check dam, CCT, re sowing of paddy, out of the water		Irrigation facilities Micro irrigation (Sprinklers)	Irrigation facilities Micro irrigation (Sprinklers)	Side drains for drainage of excess water	Side drains for drainage of excess water				
	Goat rearing	**Goat rearing**	**Goat rearing**	**Goat rearing**	**Goat rearing**	**Goat rearing**	**Goat rearing**		**Goat rearing**	**Goat rearing**
Risk 3:	Diseases (Sore mouth, Diarrhoea, water discharge from eyes,	Disease, Marketing, Cost involved, Mortality	Diseases Attack	Diseases Attack	Grazing problems Housing problem Insemination problem Treatment problem	Grazing problems Housing problem Insemination problem Treatment problem	Diseases (Sore mouth, Diarrhoea, water discharge from eyes,		Risk of disease	Grazing problems Housing problem Insemination problem Treatment problem
Action for Risk 3:	Vaccination, Take care, Treatment, poundage	Insurance, Improved Practices, Training, Handholding	Proper Housing Knowledge Building on proper taking care Insurance Medical Treatment Pashu Mitra	Proper Housing Knowledge Building on proper taking care Insurance Medical Treatment Pashu Mitra	Protected Grazing land Proper Housing Artificial Insemination Treatment First Aid Facility	Protected Grazing land Proper Housing AI Treatment First Aid Facility	Vaccination, Take care, Treatment, poundage		Better housing through cattle shed Information on proper supervision treatment Current supervision	Protected Grazing land Proper Housing Artificial Insemination Treatment First Aid Facility
	Buffalo rearing						**Buffalo rearing**			
Risk 4:	Diseases (ring						Diseases (ring			

	disease due to water scarcity), galgoto, Hoof disease, infection						disease due to water scarcity), Galgoto, Hoof disease, infection			
Action for Risk 4:	Vaccination, take care, Treatment, poundage						Vaccination, take care, Treatment, poundage			
	Labour	**Labour**			**Labour**	**Labour**	**Labour**			**Labour**
Risk 5:	Low wages ,money not given in time, lack of labour work	Irregularity, Not sustainable			Less opportunity Problems for going out side	Less opportunity Problems for going out side	Low wages, money not given in time, lack of labour work			Less opportunity Problems for going out side
Action for Risk 5:	Migration, enhance the working days, generate new employment scheme, and increase wages.	NAREGA, Watershed Work, Local work			Increase in local labour Solving Transport problem	Increase in local labour Solving Transport problem	Migration enhances the working days, generate new employment scheme, and increase wages			Increase in local labour Solving Transport problem
	Vegetables	**Vegetables**					**Vegetables**			
Risk 6:	Drought, embark worm ,obtain low market rate	Drought, Diseases/Pest Marketing					Drought, embark worm ,obtain low market rate			
Action for Risk 6:	Irrigation ,treatment	Land use planning and measures, Irrigation system, Insurance, Water conservation measures, Handholding					Irrigation ,Treatment, Collective sale of produces			
		Livestock rearing								
Risk 7:		Lack of water, Lack of Fodder, Lack of awareness, Marketing, Disease	Diseases Attack	Diseases Attack						
Action for Risk 7:		Water conservation measures, Awareness, Training, Handholding	Proper Housing Knowledge Building on proper taking care Insurance Medical Treatment Pashu Mitra	Proper Housing Knowledge Building on proper taking care Insurance Medical Treatment Pashu Mitra						
		Crop (Maize, Wheat, and Gram etc.)			Crop (wheat, gram and mustard etc.)	Crop (wheat, gram and mustered etc.)				Crop (wheat, gram and mustard)
Risk 8:		Drought, Heavy rain fall, Disease, pest, Frost			Frost, Fadka, Diseases Attack	Frost, Fadka, Diseases Attack				Frost, Fadka, Diseases Attack

Action for Risk 8:		Land use planning and measures, Irrigation system, Insurance, Handholding			Crop insurance Medicine sprinkling Bore well excavation	Crop insurance Medicine sprinkling Bore well excavation				Crop insurance Medicine sprinkling Bore well excavation
									Joint forest management	
Risk 9:									Fire	
Action for Risk 9:									Helping to put out fire	
									Good farming practices	
Risk 10:									Information	
Action for Risk 10:									Training	
					Large ruminant	**Large ruminant**				**Large ruminant**
Risk 11:					Grazing problems Housing problem Insemination problem Treatment problem	Grazing problems Housing problem Insemination problem Treatment problem				Grazing problems Housing problem Insemination problem Treatment problem
Action for Risk 11:					Protected Grazing land Proper Housing Insemination by improved breed Bull Treatment, First Aid Facility	Protected Grazing land Proper Housing Insemination by improved breed Bull Treatment, First Aid Facility				Protected Grazing land Proper Housing Insemination by improved breed Bull Treatment, First Aid Facility Increase in local labour
Climate Proofing:										
Climate Variability										
V. 1	**Consecutive Drought**	Consecutive Drought	Consecutive Drought	Consecutive Drought	Consecutive Drought	Consecutive Drought	Excess rainfall	Excess rainfall	Consecutive Drought	Consecutive Drought
Direct Impact	Low soil moisture content	Low soil moisture content	Low soil moisture content	Low soil moisture content	Low soil moisture content	Low soil moisture content	Increasing erosion of top soil	Increasing erosion of top soil	Low soil moisture content	Low soil moisture content
	Depletion of surface/ ground water	Depletion of surface/ ground water	Depletion of surface/ ground water	Depletion of surface/ ground water	Depletion of surface/ ground water	Depletion of surface/ ground water	Damage to Standing crop	Damage to Standing crop	Depletion of surface/ ground water	Depletion of surface/ ground water
	Scarcity of water for domestic n farming	Scarcity of water for domestic and farming	Scarcity of water for domestic n farming	Scarcity of water for domestic n farming	Scarcity of water for domestic n farming	Scarcity of water for domestic n farming	Breaching of existing soil moisture conservation structures	Breaching of existing soil moisture conservation structures	Scarcity of water for domestic and farming	Scarcity of water for domestic n farming
	Low crop yield	Low crop yield	Low crop yield	Low crop yield	Low crop yield	Low crop yield	Flooding in low lying regions	Flooding in low lying regions	Low crop yield	Low crop yield
	Lesser availability of fodder	Lesser availability of fodder	Lesser availability of fodder	Lesser availability of fodder	Lesser availability of fodder	Lesser availability of fodder	Crop loss due to flooding	Crop loss due to flooding	Lesser availability of fodder	Lesser availability of fodder
	Higher livestock mortality	Higher livestock mortality	Higher livestock mortality	Higher livestock mortality	Higher livestock mortality	Higher livestock mortality			Higher livestock mortality	Higher livestock mortality
	Poor access to	Poor access to	Poor access to	Poor access to	Poor access to quality	Poor access to quality			Poor access to	Poor access to

	quality drinking water	quality drinking water	quality drinking water	quality drinking water	drinking water	drinking water			quality drinking water	quality drinking water
	Reduced vegetative cover	Reduced vegetative cover	Reduced vegetative cover	Reduced vegetative cover	Reduced vegetative cover	Reduced vegetative cover			Reduced vegetative cover	Reduced vegetative cover
	Excess heat leads to surface hardening – soil Solarisation	Excess heat leads to surface hardening – soil Solarisation	Excess heat leads to surface hardening – soil Solarisation	Excess heat leads to surface hardening – soil Solarisation	Excess heat leads to surface hardening – soil Solarisation	Excess heat leads to surface hardening – soil Solarisation			Excess heat leads to surface hardening – soil Solarisation	Excess heat leads to surface hardening – soil Solarisation
Indirect Impact	Scarcity of food grains, fodder & fuel wood	Scarcity of food grains, fodder & fuel wood	Scarcity of food grains, fodder & fuel wood	Scarcity of food grains, fodder & fuel wood	Scarcity of food grains, fodder & fuel wood	Scarcity of food grains, fodder & fuel wood	High Silt load in the streams and water bodies reducing its capacity	High Silt load in the streams and water bodies reducing its capacity.	Scarcity of food grains, fodder & fuel wood	Scarcity of food grains, fodder & fuel wood
	Overgrazing of pasture	Overgrazing of pasture	Overgrazing of pasture	Overgrazing of pasture	Overgrazing of pasture	Overgrazing of pasture	Formation of gullies in pasture lands	Formation of gullies in pasture lands	Overgrazing of pasture	Overgrazing of pasture
	Soil becomes more vulnerable to erosion	Soil becomes more vulnerable to erosion	Soil becomes more vulnerable to erosion	Soil becomes more vulnerable to erosion	Soil becomes more vulnerable to erosion	Soil becomes more vulnerable to erosion	Poor soil fertility	Poor soil fertility	Soil becomes more vulnerable to erosion	Soil becomes more vulnerable to erosion
	Reduction in soil fertility	Reduction in soil fertility	Reduction in soil fertility	Reduction in soil fertility	Reduction in soil fertility	Reduction in soil fertility	Reduced Income from crops due to lower productivity	Reduced Income from crops due to lower productivity	Reduction in soil fertility	Reduction in soil fertility
	Distress sale of livestock	Distress sale of livestock	Distress sale of livestock	Distress sale of livestock	Distress sale of livestock	Distress sale of livestock	Disease / infection attack on livestock and Human		Distress sale of livestock	Distress sale of livestock
	Increase in migration/ lesser availability of agril. Labour	Increase in migration/ lesser availability of agriculture Labour	Increase in migration/ lesser availability of agril. Labour	Increase in migration/ lesser availability of agril. Labour	Increase in migration/ lesser availability of agril. Labour	Increase in migration/ lesser availability of agril. Labour			Increase in migration/ lesser availability of agriculture Labour	Increase in migration/ lesser availability of agril. Labour
	Increase in drudgery	Increase in drudgery	Increase in drudgery	Increase in drudgery	Increase in drudgery	Increase in drudgery			Increase in drudgery	Increase in drudgery
Non-Climatic Stress	High rate of extraction of wood (esp. from pasture lands) for fuel wood during summer.	High rate of extraction of wood (esp. from pasture lands) for fuel wood during summer.	High rate of extraction of wood (esp. from pasture lands) for fuel wood during summer.	High rate of extraction of wood (esp. from pasture lands) for fuel wood during summer.	High rate of extraction of wood (esp. from pasture lands) for fuel wood during summer.	High rate of extraction of wood (esp. from pasture lands) for fuel wood during summer.	Regularized extraction of fuel wood from commons	Regularized extraction of fuel wood from commons.	High rate of extraction of wood (esp. from pasture lands) for fuel wood during summer.	High rate of extraction of wood (esp. from pasture lands) for fuel wood during summer.
	High dependence on money lenders for credit.	High dependence on money lenders for credit.	High dependence on money lenders for credit.	High dependence on money lenders for credit.	High dependence on money lenders for credit.	High dependence on money lenders for credit.	Poor alternative energy sources	Poor alternative energy sources	High dependence on money lenders for credit.	High dependence on money lenders for credit.
	Focus shifted more on livelihood; Health/ Education get neglected	Focus shifted more on livelihood; Health/ Education get neglected	Focus shifted more on livelihood; Health/ Education get neglected	Focus shifted more on livelihood; Health/ Education get neglected	Focus shifted more on livelihood; Health/ Education get neglected	Focus shifted more on livelihood; Health/ Education get neglected	Open grazing on non-protected common lands	Open grazing on non-protected common lands	Focus shifted more on livelihood; Health/ Education get neglected	Focus shifted more on livelihood; Health/ Education get neglected
	Increase in migration	Increase in migration	Increase in migration	Increase in migration	Increase in migration	Increase in migration	Land use changes from private pastures to agriculture lands	Land use changes from private pastures to agriculture lands.	Increase in migration	Increase in migration
							Dependence on money lenders for credit	Dependence on money lenders for credit		

Sensitivity	High dependence on rain fed crop	Low soil fertility	Low soil fertility	Low soil fertility	Low soil fertility	Low soil fertility	Poor vegetative cover of the soil	Poor vegetative cover of the soil	Low soil fertility	Low soil fertility
	Poor irrigation management	Lack of drought hardy varieties	Poor vegetative cover	Poor vegetative cover	Poor vegetative cover	Poor vegetative cover	Soil prone to erosion	Soil prone to erosion	Lack of drought Resistance varieties	Poor vegetative cover
	Low soil fertility	Poor vegetative cover	High dependence on rain fed crop	High dependence on rain fed crop	High dependence on rain fed crop	High dependence on rain fed crop	Land with low percentage of slopes	Land with low percentage of slopes	Poor vegetative cover	High dependence on rain fed crop
	Poor vegetative cover	High dependence on rain fed crop	Poor awareness on quality of water for domestic use	Poor awareness on quality of water for domestic use	Poor awareness on quality of water for domestic use	Poor awareness on quality of water for domestic use	High dependence of farmers on rain fed crop	High dependence of farmers on rain fed crop.	High dependence on rain fed crop	Poor awareness on quality of water for domestic use
	Poor awareness on quality of water for domestic use	Poor awareness on quality of water for domestic use	Poor irrigation management	Poor irrigation management	Poor irrigation management	Poor irrigation management	Many poor families do not have own land (private pastures) for grazing	Many poor families do not have own land (private pastures) for grazing.	Poor awareness on quality of water for domestic use	Poor irrigation management
	Poor alternate fuel wood strategy	Poor irrigation management	Poor alternate fuel wood strategy	Poor alternate fuel wood strategy	Poor alternate fuel wood strategy	Poor alternate fuel wood strategy	Poor livestock disease management		Poor irrigation management	Poor alternate fuel wood strategy
	Poor social control on grazing	Poor alternate fuel wood strategy	Poor social control on grazing	Poor social control on grazing	Poor social control on grazing	Poor social control on grazing	Poor water sanitation		Poor alternate fuel wood strategy	Poor social control on grazing
	Poor institutional mechanism for proper land management	Poor social control on grazing	Poor institutional mechanism for proper land management	Poor institutional mechanism for proper land management	Poor institutional mechanism for proper land management	Poor institutional mechanism for proper land management			Poor social control on grazing	Poor institutional mechanism for proper land management
	Village Forest Protection and Management Committee non-functional	Poor institutional mechanism for proper land management	Village Forest Protection and Management Committee non-functional	Village Forest Protection and Management Committee non-functional	Village Forest Protection and Management Committee non-functional	Village Forest Protection and Management Committee non-functional			Poor institutional mechanism for proper land management	Village Forest Protection and Management Committee non-functional
	Poor awareness/ access to Govt. schemes	Poor awareness/ access to Govt. schemes	Poor awareness/ access to Govt. schemes	Poor awareness/ access to Govt. schemes	Poor awareness/ access to Govt. schemes	Poor awareness/ access to Govt. schemes			Poor awareness/ access to Govt. schemes	Poor awareness/ access to Govt. schemes
Local Adaptive Capacity	Some pastures being managed on group mode	Some pastures being managed on group mode	Some pastures being managed on group mode	Some pastures being managed on group mode	Some pastures being managed on group mode	Some pastures being managed on group mode	Diversified farming practices,	Diversified farming practices,	Some pastures being managed on group mode	Some pastures being managed on group mode
	Fodder trees with multi-purpose utility conserved	Fodder trees with multi-purpose utility conserved	Fodder trees with multi-purpose utility conserved	Fodder trees with multi-purpose utility conserved	Fodder trees with multi-purpose utility conserved	Fodder trees with multi-purpose utility conserved	Private pastures and community protected pasture lands	Private pastures and community protected pasture lands	Fodder trees with multi-purpose utility conserved	Fodder trees with multi-purpose utility conserved
	Integrated farming system (crop + livestock)	Integrated farming system (crop + livestock)	Integrated farming system (crop + livestock)	Integrated farming system (crop + livestock)	Integrated farming system (crop + livestock)	Integrated farming system (crop + livestock)	Crop failures forcing Migration for alternative employment	Crop failures forcing Migration for alternative employment	Integrated farming system (crop + livestock)	Integrated farming system (crop + livestock)
	Sale of small ruminants at needy time	Sale of small ruminants at needy time	Sale of small ruminants at needy time	Sale of small ruminants at needy time	Sale of small ruminants at stress period.	Sale of small ruminants at stress period.	Charagarh Vikas & Jal Grahan Samities for protection of pasture lands and grass collection	Charagarh Vikas Samities & Jal Grahan Samities for protection of pasture lands and grass collection.	Sale of small ruminants at needy time	Sale of small ruminants at stress period.
	Livelihood support/ Loan waiver from Govt schemes	Livelihood support/ Loan waiver from Govt schemes	Livelihood support/ Loan waiver from Govt schemes	Livelihood support/ Loan waiver from Govt schemes	Livelihood support/ Loan waiver from Govt schemes	Livelihood support/ Loan waiver from Govt schemes	Low height bunds to manage inter field flow	Low height bunds to manage inter field flow.	Generating Alternative income through collection of NTFP e.g. Mahuwa	Livelihood support/ Loan waiver from Govt schemes

									(Madhuca indica), Tendu leaves *(Dispyros melanoxylon)*, Ratanjot *(Jatropa curcas)*, Baheda *(Terminalia belerica)*	
	Traditional water bodies with local regulation practices	Traditional water bodies with local regulation practices	Traditional water bodies with local regulation practices	Traditional water bodies with local regulation practices	Traditional water bodies with local regulation practices	Traditional water bodies with local regulation practices	Traditional practices being used		Livelihood support/ Loan waiver from Govt schemes	Traditional water bodies with local regulation practices
									Traditional water bodies with local regulation practices	
									Increasing the height of field bunds to increase the infiltration of water in the fields.	
Suggested Adaptation Strategy	**Ground water recharge** through	Ground water recharge through a. Recharge pits on drainage line b. Well recharge pits	Ground water recharge through a. Recharge pits on drainage line; b. Impermeable lining of the bunds extended to the trenches to prevent sub surface flow; c. Underground dykes and soak pits; d. Geo-hydrological consideration for WHS and recharge of aquifers on the basis of recharge potential e. Well recharge pits	Ground water recharge through a. Recharge pits on drainage line; b. Impermeable lining of the bunds extended to the trenches to prevent sub surface flow; c. Underground dykes and soak pits; d. Geo-hydrological consideration for WHS and recharge of aquifers on the basis of recharge potential e. Well recharge pits	**Increasing soil fertility to improve the water holding capacity** and productivity with the use of organic fertilizers like Vermi-compost	**Increasing soil fertility to improve the water holding capacity** and productivity with the use of organic fertilizers like Vermi-compost, compost pits	Soil and Moisture Conservation Measures through: a. Farm bund measures to reduce top soil erosion & runoff b. Farm pond c. Repairing of existing soil – moisture conservation structures	Soil and Moisture Conservation Measures through: a. Farm bund measures to reduce top soil erosion & runoff. b. Small loose stone structures on drains.	**Ground water recharge** through Recharge pits on drainage line	**Increasing soil fertility to improve the water holding capacity** and productivity with the use of organic fertilizers like Vermi-compost, compost pits.
	Recharge pits on drainage line	Increasing soil fertility to improve the water holding capacity and productivity with the use of a. NADEP compost b. Vermi-compost	Development of **community water bodies'** for livestock's in pastures.	Development of **community water bodies'** for livestock's in pastures.	**Ground water recharge** through	Promoting vegetation in the pasture land to provide fodder during drought-: a. Protecting the existing trees with stone pitched crescent bund, earthen crescent bund b. Promotion of Silvipasture: seeding of Neem/ Custard Apple/ Karanj/ Palash/ Khair/ Mahua/ Ber/ Aduwa in 1 Cubic feet pit along the CCT, refilled CCT,	Augmenting vegetation in the pasture land through: a. Development of common pasture lands with endemic species suitable to the area b. Regeneration of natural and existing root stock with crescent shaped bunds with Box trench c. Grass seeding	Augmenting vegetation in the pasture land through: a. Development of pasture lands with endemic species appropriate to the area. b. Regeneration of natural and existing root stock with crescent shaped bunds. C. Seeding of fodder species such as Cenchrus to increase grass biomass. d. Seeding on bunds to protect against erosion.	**Increasing soil fertility to improve the water holding capacity** and productivity with the use of Vermi – Compost and compost pit	Promoting vegetation in the pasture land to provide fodder during drought-: a. Protecting the existing trees with stone pitched crescent bund, earthen crescent bund b. Promotion of Silvipasture: seeding of Neem/ Custard Apple/Karanj/Palash/ Khair/Mahua/Ber/

						Gradonis, etc. c. Plantation of fodder trees d. Broadcasting/dibbling the seeds of grass and leguminous species in the pasture land	of species such as Stylosanthes, Cenchrus to increase biomass. d. Tree seeding and plantation e.g. Bamboo, Karanj, Neem, etc. to protect soil erosion			Aduwa in 1 Cubic feet pit along the CCT, refilled CCT, Gradonis c. Plantation of fodder trees d. Broadcasting/dibbling the seeds of grass and leguminous species in the pasture land
	Promoting vegetation in the pasture land to provide fodder during drought	Demonstration of animal shelter and management	Promoting vegetation in the pasture land to provide fodder during drought a. Protecting the existing trees with stone pitched crescent bund b. Promotion of Silvipasture: seeding of Neem/Custard Apple/Karanj/Palash/Kher/ Mahua/Ber/Kat Karanj/ Shikakai and fodder trees along the fencing c. Broadcasting the seeds of grass and leguminous species in the pasture land d. Plantation of multi-purpose tree species	Promoting vegetation in the pasture land to provide fodder during drought a. Protecting the existing trees with stone pitched crescent bund b. Promotion of Silvipasture: seeding of Neem/Custard Apple/Karanj/Palash/Kher/ Mahua/Ber/Kat Karanj/ Shikakai and fodder trees along the fencing c. Broadcasting the seeds of grass and leguminous species in the pasture land d. Plantation of multi-purpose tree species	Recharge pits on gully plugs	Fodder savings through a. Feed Mangers, silage, etc. b. Stall feeding with balanced nutrition like urea molasses blocks, mineral bricks etc.	Improving ground water recharge through: a. Recharge pit b. Recharge of wells through Farm pond c. Diversion of drain to crop area; waste weir d. Water conservation measures – CCT, SCT, Gully plugs, Stone bunds, etc.	**I**mproving biomass of private lands through: Grass seeding on Births (private pasture lands).	Promoting vegetation through a. Stone pitched crescent bund with box trench for existing plant population b. Seed broadcasting- Castor, Neem/Custard Apple/Karanj/ Palash/Khair/ Mahua/Ber/Karanj, etc. along the fencing and among notches, bushes c. Grass seeding	Fodder savings through a. Feed Mangers, Silage, etc. b. Stall feeding with balanced nutrition like urea molasses blocks, mineral bricks etc.
	Protecting the existing trees with stone pitched crescent bund	Capacity building and developing institutional arrangement for a. Regulating grazing practices such as Rotational grazing, social fencing, protection of pasture land and benefit sharing b. Awareness creation for using safe drinking water c. Sharing information on Government schemes and subsidies available	Increasing soil fertility to improve the water holding capacity and productivity with the use of organic fertilizers a. Vermi-compost, NADEP compost b. Co-cultivation of green manure crops and incorporation into the soil	Increasing soil fertility to improve the water holding capacity and productivity with the use of organic fertilizers a. Vermi-compost, NADEP compost b. Co-cultivation of green manure crops and incorporation into the soil	Promoting vegetation in the pasture land to provide fodder during drought-: a. Protecting the existing trees with stone pitched crescent bund, earthen crescent bund b. Promotion of Silvipasture: seeding of Neem/Custard Apple/Karanj/Palash/Kher/Mahua/ Ber/Aduwa in 1 Cubic feet pit along the CCT, refilled CCT, Gradonis, etc. c. Plantation of fodder trees d. Broadcasting/dibbling the seeds of grass and leguminous species in the pasture land	**Fodder supplementation** by Promoting of *Azolla* cultivation	Livestock health and vaccination camp	Improving ground water recharge through: a. Development of community water bodies for livestock's in pastures. b. Protection of wells / deepening of wells. c. Appropriate drainage line treatment through, gully plugs and wire mesh gabion structures d. Water harvesting structures to check and facilitate storage of water.	Demonstration of Animal shelter and strengthening management practices	**Fodder supplementation** by Promoting of *Azolla* cultivation
	Promotion of Silvipasture:	**Increasing availability of**	Fodder savings through Feed	Fodder savings through Feed	Fodder savings through a. Feed Mangers, silage,	Reduce the grazing pressure by	Human health camps	Appropriate Institutional arrangements and healthy	Capacity building and	Reduce the grazing pressure

	seeding of Neem/ Custard Apple/ Karanj/ Palash/ Khair/ Mahua/ Ber/ Kat Karanj/ Shikakai and fodder trees along the fencing,	**fodder through creating pasture group and fodder bank**	Mangers (silos, using Chaff cutters, Stall feeding with balanced nutrition); Fodder supplementation by a. Promoting Azolla cultivation b. Cultivation of green fodder like Berseem, fodder maize, fodder sorghum, C-N hybrids	Mangers (silos, using Chaff cutters, Stall feeding with balanced nutrition); Fodder supplementation by a. Promoting Azolla cultivation b. Cultivation of green fodder like Berseem, fodder maize, fodder sorghum, C-N hybrids	etc. b. Stall feeding with balanced nutrition like urea molasses blocks, mineral bricks etc.	introduction of improved local breed (Ger) in large ruminants through A.I services and Sirohi breed in small ruminants		village Institutions to: a. Sustain the rules and regulations set in place by the Institutions for sharing of resources. b. Work towards securing / maintaining the tenurial arrangements of the pasture lands in favour of the Institutions.	developing institutional arrangement for a. Regulating grazing practices such as Rotational grazing, social fencing, protection of pasture land and benefit sharing of forest produce through JFM b. Pasture planning through grass land ecological study c. Crop planning through inputs from Geo – hydrological study and crop water budgeting d. Developing IEC material on climate change adaptation e. Sharing information on Government schemes and subsidies available	by introduction of improved local breed(Ger) in large ruminants through A.I. services and Sirohi breed in small ruminants
	Broadcasting the seeds of grass and leguminous species in the pasture land	Promotion of Silvipasture: seeding of Neem/Custard Apple/Karanj/ Palash/Khair/Mahua/Ber/ and fodder trees along the fencing	Capacity building and developing institutional arrangement for a. Regulating grazing practices such as Rotational grazing, social fencing, protection of pasture land and benefit sharing b. Pasture planning through grass land ecological study c. Awareness creation for using safe drinking water d. Sharing information on Government schemes and subsidies available e. Crop planning through inputs from Geo – hydrological study and crop	Capacity building and developing institutional arrangement for a. Regulating grazing practices such as Rotational grazing, social fencing, protection of pasture land and benefit sharing b. Pasture planning through grass land ecological study c. Awareness creation for using safe drinking water d. Sharing information on Government schemes and subsidies available e. Crop planning through inputs from Geo – hydrological study and crop	**Fodder supplementation** by Promoting of *Azolla* cultivation	**Ground water recharge** through	Awareness on health, nutrition and sanitation through:	**S**trengthen farming systems in the area:	**Promoting fodder saving mechanism** through Feed mangers	**Ground water recharge** through

			water budgeting	water budgeting						
	Pasture planning through grass land ecological study	Broadcasting the seeds of grass and leguminous species in the pasture land	Increasing availability of seeds and fodder during drought period through a) Seed multiplication b) Creating seed banks and fodder banks	Increasing availability of seeds and fodder during drought period through a) Seed multiplication b) Creating seed banks and fodder banks	**Capacity building and developing institutional arrangement** for	Recharge pits on gully plugs;	Sanitation kit distribution; water filter; Bath platform; Soak pit at individual level and community hand pumps	With Awareness in improved farming practices, through crop demonstrations, stage wise training programs	Increasing availability of fodder through creating a. Pasture group and fodder bank b. Silage demonstration c. Bund plantation of fodder tree d. Azolla cultivation as feed supplement to livestock	Recharge pits on gully plugs;
	Fodder savings through feed manger	Pasture planning through Grass land ecological study	**Increasing water use efficiency** by Promoting micro irrigation and solar pumping system on demonstrative mode;	**Increasing water use efficiency** by Promoting micro irrigation and solar pumping system on demonstrative mode;	Regulating grazing practices such as Rotational grazing, social fencing, protection of pasture land and benefit sharing	Impermeable lining(L.D.P.E sheet) in the existing structures to control seepage/sub surface flow	Kitchen garden		**Increasing water use efficiency** by Promoting micro / drip irrigation in crop	Impermeable lining(L.D.P.E sheet) in the existing structures to control seepage/sub surface flow;
	Fodder supplementation by Promoting Azolla cultivation	**Fodder savings** through feed manger	**Promoting crop insurance** & livestock insurance as climate risk transfer mechanism	**Promoting crop insurance** & livestock insurance as climate risk transfer mechanism	Pasture planning through grass land ecological study	Earthen bund with masonry spillway; Check structures	Appropriate Institutional arrangements at village level: a. Farmers club, SHGs, user group of pasture and livestock e.g. Goat b. Sustain the rules and regulations set in place by the Institutions for sharing of resources c. Work towards securing / maintaining the tenurial arrangements of the common pasture lands in favour of the Institutions		**Promoting crop insurance** and livestock insurance as climate risk transfer mechanism.	Earthen bund with masonry spillway
	Develop common drinking water facilities for livestock e.g. trough, tank etc.	**Fodder supplementation** by Promoting Azolla cultivation	To create alternate livelihood against climatic risk and off season employment generation: a. Agro-forestry of multipurpose tree species and horticulture plantation; b. Developing micro enterprises from Nursery raising, vegetable cultivation, dairy and so on.	To create alternate livelihood against climatic risk and off season employment generation: a. Agro-forestry of multipurpose tree species and horticulture plantation; b. Developing micro enterprises from Nursery raising, vegetable cultivation, dairy and so on.	Awareness creation for using safe drinking water	**Capacity building and developing institutional arrangement** for	**S**trengthen farming systems in the area:		To create alternate livelihood against climatic risk and off season employment generation: a. Multipurpose tree species and horticulture plantation b. Sustainable harvesting of	**Capacity building and developing institutional arrangement** for

									NTFP and establish forward linkages	
	Capacity building and developing institutional arrangement for :	Increasing water use efficiency by a. Promoting drip and sprinkler in crops b. Water absorption material c. Pitcher techniques with plantation	**Alternative energy source**: Biogas, improved Chula and Solar	**Alternative energy source**: Biogas, improved Chula and Solar	Sharing information on Government schemes and subsidies available	Regulating grazing practices such as Rotational grazing, social fencing, protection of pasture land and benefit sharing	With Awareness in improved farming practices through crop demonstrations, vegetable cultivation stage wise training programs		**Alternative energy source**: Solar pump set at common well and Improved cook stove	Regulating grazing practices such as Rotational grazing, social fencing, protection of pasture land and benefit sharing
	Crop planning through inputs from Geo – hydrological study and crop water budgeting	**Promoting crop insurance** and livestock insurance as climate risk transfer mechanism.	Demonstration of climate resilient farming: a. Practicing climate responsive farming for maximizing input use efficiency: Using weather based Agro-advisory services through Automatic weather station (AWS) for farm decision making b. Farm mechanization, Land configuration (BBF, Zero tillage) c. Subscription of RML and Kisan call centre services for technical guidance in sowing time, seed source, mandi market, post-harvest etc.	Demonstration of climate resilient farming: a. Practicing climate responsive farming for maximizing input use efficiency: Using weather based Agro-advisory services through Automatic weather station (AWS) for farm decision making b. Farm mechanization, Land configuration (BBF, Zero tillage) c. Subscription of RML and Kisan call centre services for technical guidance in sowing time, seed source, mandi market, post-harvest etc.	Crop planning through inputs from Geo – hydrological study and crop water budgeting	Pasture planning through grass land ecological study			**Safe drinking water** facilities by establishing water tank on common well	Pasture planning through grass land ecological study
	Regulating grazing practices such as Rotational grazing, social fencing, protection of pasture land and benefit sharing	To create alternate livelihood against climatic risk and off season employment generation: a. Agro-forestry of multipurpose tree species and horticulture plantation, meadow techniques b. Developing micro enterprises from vegetable cultivation, dairy and poultry and so	Financial inclusion and credit facilitation through banking plan	Financial inclusion and credit facilitation through banking plan	**Increasing availability of fodder** during drought period through fodder banks	Awareness creation for using safe drinking water			**Practicing climate responsive farming** for maximizing input use efficiency: Using weather based Agro-advisory services through Automatic weather station (AWS) for farm decision making	Awareness creation for using safe drinking water

		on								
	Sharing information on Government schemes and subsidies available	**Alternative energy source**: improved Chula and Solar home lighting			**Increasing water use efficiency** by Promoting micro irrigation (Drip & Sprinkler) and solar pumping system on demonstrative mode	Sharing information on Government schemes and subsidies available			Financial inclusion and credit facilitation through banking plan	Sharing information on Government schemes and subsidies available
	Increasing availability of seeds and fodder during drought period through	**Practicing climate responsive farming** for maximizing input use efficiency: Using weather based Agro-advisory services through for farm decision making			**Promoting crop insurance** & livestock insurance as climate risk transfer mechanism	Crop planning through inputs from Geo – hydrological study and crop water budgeting				Crop planning through inputs from Geo – hydrological study and crop water budgeting
	Increasing water use efficiency by Promoting micro irrigation and solar pumping system on demonstrative mode;	Financial inclusion and credit facilitation through banking plan			To create **alternate livelihood** against climatic risk and off season employment generation:	**Increasing availability of fodder** during drought period through fodder banks				**Increasing availability of fodder** during drought period through fodder banks
	Promoting crop insurance & livestock insurance as climate risk transfer mechanism.				Agro-**forestry of multipurpose tree species**	**Increasing water use efficiency** by Promoting micro irrigation systems and solar pumping system on demonstrative mode				**Increasing water use efficiency** by Promoting micro irrigation and solar pumping system on demonstrative mode
	To create **alternate livelihood** against climatic risk and off season employment generation:				Developing micro enterprises from vegetable cultivation with trellis, custard apple as NTFP, dairy and poultry and so on	**Promoting crop insurance**& livestock insurance as climate risk transfer mechanism.				**Promoting crop insurance** & livestock insurance as climate risk transfer mechanism
	Agro-forestry of multipurpose tree species and horticulture plantation;				**Alternative energy source**: Biogas, improved Chula/cook stove and Solar	To create **alternate livelihood** against climatic risk and off season employment generation:				To create **alternate livelihood** against climatic risk and off season employment generation:
	Developing micro enterprises from vegetable cultivation, dairy and poultry and so on				**Demonstration of climate resilient farming**:	Agro-forestry of multipurpose tree species				Agro-forestry of multipurpose tree species
	Alternative energy source:				**Practicing climate responsive farming** for maximizing input use	Aloe Vera plantation in pastures				Aloe Vera plantation in pastures

	Biogas Solar and improved cook stove				efficiency: Using weather based Agro-advisory services through Automatic weather station (AWS) for farm decision making					
	Practicing climate responsive farming for maximizing input use efficiency: Using weather based Agro-advisory services through Automatic weather station (AWS) for farm decision making				Subscription of RML and Kisan call centre services for technical guidance in sowing time, seed source, mandi market, post-harvest etc.	Developing micro enterprises from vegetable cultivation, floriculture, dairy and poultry and so on.				Developing micro enterprises from vegetable cultivation, dairy and poultry and so on.
	Financial inclusion and credit facilitation through banking plan				Financial inclusion and credit facilitation through banking plan	**Alternative energy source**: Biogas, improved Chula/cook stove and Solar				**Alternative energy source**: Biogas, improved Chula/cook stove and Solar
					Best package of practices Including seed treatment, IPM (integrated pest management& INM (Integrated nutrient management	**Demonstration of climate resilient farming**:				**Demonstration of climate resilient farming**:
						Practicing climate responsive farming for maximizing input use efficiency: Using weather based Agro-advisory services through Automatic weather station (AWS) for farm decision making				**Practicing climate responsive farming** for maximizing input use efficiency: Using weather based Agro-advisory services through Automatic weather station (AWS) for farm decision making
	Livestock insurance Crop insurance					Subscription of RML and Kisan call centre services for technical guidance in sowing time, seed source, mandi market, post-harvest etc.				Subscription of RML and Kisan call centre services for technical guidance in sowing time, seed source, mandi market, post-harvest etc.
	Micro irrigation devices					Financial inclusion and credit facilitation through banking plan				Financial inclusion and credit facilitation through banking plan
						Best package of practices Including seed treatment, IPM				Best package of practices Including seed treatment,

						(integrated pest management) & INM (Integrated nutrient management)				IPM (integrated pest management) & INM (Integrated nutrient management)
V. 2	**Excess rainfall/ increase in rainfall intensity**	Excess rainfall/ increase in rainfall intensity	Excess rainfall/ increase in rainfall intensity	Excess rainfall/ increase in rainfall intensity	Delayed onset of monsoon/ Late setting of season	Delayed onset of monsoon/ Late setting of season	Delayed onset of monsoon/Late setting of season (Ref June 15, IMD)	Delayed onset of monsoon/Late setting of season (Ref June 15, IMD)	Excess rainfall/ increase in rainfall intensity	Delayed onset of monsoon/ Late setting of season
Direct Impact	More top soil erosion	More top soil erosion	More top soil erosion	More top soil erosion	Low Moisture availability at critical growth stage of the crop	Low Moisture availability at critical growth stage of the crop	Poor Moisture availability at critical growth stage of the crop	Poor Moisture availability at critical growth stage of the crop	More top soil erosion	Low Moisture availability at critical growth stage of the crop
	Formation of gullies and ravines in pasture lands and exposure of bed rock surface due to loss of top soil	Formation of gullies and ravines in pasture lands and exposure of bed rock surface due to loss of top soil	Formation of gullies and ravines in pasture lands and exposure of bed rock surface due to loss of top soil	Formation of gullies and ravines in pasture lands and exposure of bed rock surface due to loss of top soil	Poor pasture growth	Poor pasture growth	Delay in sowing.	Delay in sowing.	Formation of gullies and ravines in pasture lands and exposure of bed rock surface due to loss of top soil	Poor pasture growth
	Damage to Standing crop (maize)	Damage to Standing crop (maize)	Damage to Standing crop (maize)	Damage to Standing crop (maize)	Increasing competition with weed species for water.	Increasing competition with weed species for water.	Increased incidence of pest and diseases	Increased incidence of pest and diseases	Damage to Standing crop (maize)	Increasing competition with weed species for water.
	Total crop loss due to flooding	Breaching of existing water harvesting structures	Total crop loss due to flooding	Total crop loss due to flooding			Limiting regeneration capacity	Limiting regeneration capacity	Breaching of existing water harvesting structures	
	Breaching of existing water harvesting structures		Breaching of existing water harvesting structures	Breaching of existing water harvesting structures					Flooding in low lying regions	
	Flooding in low lying regions		Flooding in low lying regions	Flooding in low lying regions					Increase in siltation in water harvesting structures	
	Increase in siltation in water harvesting structures		Increase in siltation in water harvesting structures	Increase in siltation in water harvesting structures					Increased incidence of pest and diseases	
	Increased incidence of pest and diseases		Increased incidence of pest and diseases	Increased incidence of pest and diseases						
Indirect Impact	Top soil nutrients loss and poor soil fertility	Top soil nutrients loss and poor soil fertility	Top soil nutrients loss and poor soil fertility	Top soil nutrients loss and poor soil fertility	Shortened LGP	Shortened LGP	Shortened LGP	Shortened LGP	Top soil nutrients loss and poor soil fertility	Shortened LGP
	Reduced Income from crops due to lower productivity	Reduced Income from crops due to lower productivity	Reduced Income from crops due to lower productivity	Reduced Income from crops due to lower productivity	Poor flowering and seeding	Poor flowering and seeding	Poor flowering and seeding and thus poor yield.	Poor flowering and seeding and thus poor yield.	Reduced Income from crops due to lower productivity	Poor flowering and seeding
	Increased investments for fertilizers and soil nutrients	Increased investments for fertilizers and soil nutrients	Increased investments for fertilizers and soil nutrients	Increased investments for fertilizers and soil nutrients	Poor crop productivity & Crop Failure	Poor crop productivity & Crop Failure	Poor crop productivity & Crop Failure	Poor crop productivity & Crop Failure	Increased investments for fertilizers and soil nutrients	Poor crop productivity & Crop Failure
	Less ground water recharge	Less ground water recharge	Less ground water recharge from water	Less ground water recharge from water	Late crops: missing market advantage	Late crops: missing market advantage	Increasing competition with	Increasing competition with weed species for water.	Less ground water recharge	Late crops: missing market

	from water harvesting structures due to silt accumulation	from water harvesting structures due to silt accumulation	harvesting structures due to silt accumulation	harvesting structures due to silt accumulation			weed species for water.		from water harvesting structures due to silt accumulation	advantage
	Reduced vegetation cover due to soil loss	Reduced vegetation cover due to soil loss	Reduced vegetation cover due to soil loss	Reduced vegetation cover due to soil loss			Weakening market.	Weakening market.	Reduced vegetation cover due to soil loss	
							Reduce income due to low production.	Reduce income due to low production.	Water borne diseases / infections increases in Livestock	
Non-Climatic Stress	Land use changes from pastures to agriculture lands	Land use changes from pastures to agriculture lands	Land use changes from pastures to agriculture lands	Land use changes from pastures to agriculture lands	Lack of early warning system at local level	Lack of early warning system at local level	Lack of early warning system at local level.	Lack of early warning system at local level.	Land use changes from pastures to agriculture lands	Lack of early warning system at local level
					Forestry conservation activities are affected	Forestry conservation activities are affected	Forestry conservation activities Regeneration activities affected – increase in mortality rate in saplings.	Forestry conservation activities Regeneration activities affected – increase in mortality rate in saplings.	Soil – water conservation without looking at the catchment flow	Forestry conservation activities are affected
							Increase cost of water resources and manpower.	Increase cost of water resources and manpower.		
Sensitivity	Sloppy terrain with soil prone to erosion	Sloppy terrain with soil prone to erosion	Sloppy terrain with soil prone to erosion	Sloppy terrain with soil prone to erosion	Choice of varieties suitable for the condition are not cultivated	Choice of varieties suitable for the condition are not cultivated	Poor moisture holding capacity of the loamy soils	Poor moisture holding capacity of the loamy soils	Sloppy terrain with soil prone to erosion	Choice of varieties suitable for the condition are not cultivated
	Runoff interception/ recharge capacity not adequate	Runoff interception/ recharge capacity not adequate	Runoff interception/ recharge capacity not adequate	Runoff interception/ recharge capacity not adequate	Lack of cultivation of alternative crops	Lack of cultivation of alternative crops	Poor fertility of the soil affecting the initial establishment	Poor fertility of the soil affecting the initial establishment	Runoff interception/ recharge capacity not adequate	Lack of cultivation of alternative crops
							Poor vegetative cover of the soil	Poor vegetative cover of the soil		
							Farmers taking high interest loans from money lenders	Farmers taking high interest loans from money lenders		
Local Adaptive Capacity	R&M of field bunds/ checks by individual farmers	R&M of field bunds/ checks by individual farmers	R&M of field bunds/ checks by individual farmers	R&M of field bunds/ checks by individual farmers	Traditional late sown varieties (Short duration varieties of Maize)	Traditional late sown varieties (Short duration varieties of Maize)	Traditional late sown varieties (Short duration varieties of Maize).	Traditional late sown varieties (Short duration varieties of Maize).	R&M of field bunds/ checks by individual farmers or in group	Traditional late sown varieties (Short duration varieties of Maize)
							Leave land for grass	Leave land for grass.		
							Ploughing of land if low grass production which would act as manure for next crop	Ploughing of land if low grass production which would act as manure for next crop.		
Suggested Adaptation	**Maximizing runoff**	Maximizing runoff	Maximizing runoff interception through	Maximizing runoff interception through	**Agronomic interventions** to increase	**Agronomic interventions** to	**A**dopt late sowing varieties	Creation of seed bank.	**Maximizing runoff**	**Agronomic interventions** to

Strategy	**interception** through	interception and increasing ground water recharge in WHS through a. Desilting of submergence area of anicuts b. Plantation of fodder trees for Gully stabilization	a. Continuous Contour trenches b. Plantation in the Slopes c. Grass seeding on CCT, SCT, etc. d. Riparian buffers plantation along the both sides of drainage line to prevent from breaching of embankments	a. Continuous Contour trenches b. Plantation in the Slopes c. Grass seeding on CCT, SCT, etc. d. Riparian buffers plantation along the both sides of drainage line to prevent from breaching of embankments	the crops productivity under delayed monsoon	increase the crops productivity under delayed monsoon	of crops like short duration maize, sorghum etc. Through crop demonstration		**interception and increasing ground water recharge in WHS** through the slopes and Grass seeding	increase the crops productivity under delayed monsoon
	Plantation in the slopes and Grass seeding	Collecting excess rainwater through a. Earthen nala bund with spillway b. Repair of existing defunct anicut	Collecting excess rainwater through a. Series of field trenches with adjustable outlet from adjacent farmers' fields connected to farm ponds for collecting excess rain water b. Percolation tanks for improving ground water level and for critical irrigation & livestock use	Collecting excess rainwater through a. Series of field trenches with adjustable outlet from adjacent farmers' fields connected to farm ponds for collecting excess rain water b. Percolation tanks for improving ground water level and for critical irrigation & livestock use	Short duration varieties suitable for late sowing condition	**Summer ploughing**/Hoeing to use the pre monsoon showers	Promoting *Azolla* cultivation for green fodder availability to livestock.	**A**dopt late sowing varieties of crops like short duration maize, sorghum etc. (associated with 'seed bank').	Riparian buffers plantation along the both sides of drainage line to prevent from breaching of embankments	**Summer ploughing**/Hoeing to use the pre monsoon showers
	Riparian buffers plantation along the both sides of drainage line to prevent from breaching of embankments	Stabilizing existing field bund through waste weir	Agronomic interventions to increase the crops productivity by building the capacity of the farmers through farm school and motivating to practice in the farms a) Determination of seed rate based on pre germination test b) Seed treatment and seed hardening for better germination c) Crop intensification d) Crop diversification etc. e) Soil nutrient analysis precision fertigation f) Integrated pest management	Agronomic interventions to increase the crops productivity by building the capacity of the farmers through farm school and motivating to practice in the farms a) Determination of seed rate based on pre germination test b) Seed treatment and seed hardening for better germination c) Crop intensification d) Crop diversification etc. e) Soil nutrient analysis precision fertigation f) Integrated pest management	Crop diversification: Growing alternate crops that mature in 60 – 70 days	Short duration varieties suitable for late sowing condition	Crop planning through inputs from Geo – hydrological study and crop water budgeting	Promoting *Azolla* cultivation for green fodder availability to livestock.	To create alternate livelihood against climatic risk through a. Agri – Horti plantation along the field bund b. Introducing Wadi - Guava/Lemon/ Mango/ Pomegranate in field c. Developing micro enterprises from vegetable cultivation, dairy, Goatry, poultry and so on	Short duration varieties suitable for late sowing condition
		Crop planning through inputs from Geo – hydrological study and crop water budgeting to increase the crops productivity	Sediment and Run-Off recording for advisory services	Sediment and Run-Off recording for advisory services	INM and IPM practices to control pest attack	Crop diversification: Growing alternate crops that mature in 60 – 70 days	**Di**versity in cropping pattern considering rain conditions	Crop planning through inputs from Geo – hydrological study and crop water budgeting	Repairing of existing soil - water conservation structure with creating new	Crop diversification: Growing alternate crops that mature in 65 – 70 days
							Practicing	**A**wareness programs for	Promoting	

							climate responsive farming for maximizing input use efficiency: Using weather based Agro-advisory services through Automatic weather station (AWS) for farm decision making	advance crop planning.	crop and Livestock insurance	
							Subscription of RML and Kisan call centre services for technical guidance in sowing time, seed source, mandi market, post-harvest etc.	**D**iversity in cropping considering rain conditions.		
							Farm ponds for critical irrigation	**S**ensitize on crop rotation.		
							Anicut for maintaining moisture in common land and livestock drinking.	**Practicing climate responsive farming** for maximizing input use efficiency: Using weather based Agro-advisory services through Automatic weather station (AWS) for farm decision making		
								Pond silt application		
								Farm ponds for critical irrigation		
								Awareness generation and Insurance for crop		
								Protect harvested fodder grass		
								Dug out pond for maintaining moisture in common land and livestock drinking.		
V. 3	**Delayed onset of monsoon/ Late setting of season**	**Delayed onset of monsoon/ Late setting of season**	**Delayed onset of monsoon/ Late setting of season**	**Delayed onset of monsoon/ Late setting of season**	**Excess rainfall/ increase in rainfall intensity**	Excess rainfall / increase in rainfall intensity	Drought	Drought	Delayed onset of monsoon/ Late setting of season	Excess rainfall/ increase in rainfall intensity
Direct Impact	Low Moisture availability at critical growth stage of the crop	Low Moisture availability at critical growth stage of the crop	Low Moisture availability at critical growth stage of the crop	Low Moisture availability at critical growth stage of the crop	More top soil erosion	More top soil erosion	Scarcity of surface water resources	Scarcity of surface water resources.	Low Moisture availability at critical growth stage of the crop	More top soil erosion
	Poor pasture growth	Poor pasture growth	Poor pasture growth	Poor pasture growth	Formation of gullies and ravines in pasture lands and exposure of bed rock surface due to loss of top soil	Formation of gullies and ravines in pasture lands and exposure of bed rock surface due to loss of top soil	Low soil moisture content	Low soil moisture content.	Poor pasture growth	Formation of gullies and ravines in pasture lands and exposure of bed rock surface due to loss of top soil
	Salinization of soil	Salinization of soil	Salinization of soil	Salinization of soil	Damage to Standing crop (maize)	Damage to Standing crop (maize)	Depletion in ground water and lesser surface water availability	Depletion in ground water and lesser surface water availability	Salinization of soil	Damage to Standing crop (maize)
	Increasing competition with weed species for	Increasing competition with weed species for	Increasing competition with weed species for water.	Increasing competition with weed species for water.	Total crop loss due to flooding	Total crop loss due to flooding	Poor access to drinking water	Poor access to drinking water	Increasing competition with weed species for	Total crop loss due to flooding

	water.	water.							water.	
					Breaching of existing water harvesting structures	Breaching of existing water harvesting structures				Breaching of existing water harvesting structures
					Flooding in low lying regions	Flooding in low lying regions				Flooding in low lying regions
					Increase in siltation in water harvesting structures	Increase in siltation in water harvesting structures				Increase in siltation in water harvesting structures
					Increased incidence of pest and diseases	Increased incidence of pest and diseases				Increased incidence of pest and diseases
Indirect Impact	Shortened LGP	Shortened LGP	Shortened LGP	Shortened LGP	Top soil nutrients loss and poor soil fertility	Top soil nutrients loss and poor soil fertility	Distress sale of livestock	Distress sale of livestock	Shortened LGP	Top soil nutrients loss and poor soil fertility
	Poor flowering and seeding	Poor flowering and seeding	Poor flowering and seeding	Poor flowering and seeding	Reduced Income from crops due to lower productivity	Reduced Income from crops due to lower productivity	Increase in migration/ lesser agricultural labour availability	Increase in migration/ lesser agricultural labour availability	Poor flowering and seeding	Reduced Income from crops due to lower productivity
	Poor crop productivity & Crop Failure	Poor crop productivity & Crop Failure	Poor crop productivity & Crop Failure	Poor crop productivity & Crop Failure	Increased investments for fertilizers and soil nutrients	Increased investments for fertilizers and soil nutrients	Migration of livestock	Migration of livestock	Poor crop productivity & Crop Failure	Increased investments for fertilizers and soil nutrients
	Late crops: missing market advantage		Late crops: missing market advantage	Late crops: missing market advantage	Less ground water recharge from water harvesting structures due to silt accumulation	Less ground water recharge from water harvesting structures due to silt accumulation	Scarcity of food grain, fodder	Scarcity of food grain, fodder		Less ground water recharge from water harvesting structures due to silt accumulation
					Reduced vegetation cover due to soil loss	Reduced vegetation cover due to soil loss	Increase in burden on community especially women folk	Increase in burden on community especially women folk		Reduced vegetation cover due to soil loss
						Disease attack on Livestock				
Non-Climatic Stress	Lack of early warning system at local level	Labour migration	Lack of early warning system at local level	Lack of early warning system at local level	Land use changes from pastures to agriculture lands	Land use changes from pastures to agriculture lands	Increase in pressure on common land	Increase in pressure on common land.	Labour migration	Land use changes from pastures to agriculture lands
	Forestry conservation activities are affected		Forestry conservation activities are affected	Forestry conservation activities are affected		Livestock management cost is increased	Increase in costs for purchase of fodder and grains	Increase in costs for purchase of fodder and grains		Livestock management cost is increased
							Increase in dependency of money lenders	Increase in dependency of money lenders		
							Forced migration leading to neglect of education, health and other services	Forced migration leading to neglect of education, health and other services		
Sensitivity	Choice of varieties suitable for the condition are not cultivated	Lack of early warning system at local level	Choice of varieties suitable for the condition are not cultivated	Choice of varieties suitable for the condition are not cultivated	Sloppy terrain with soil prone to erosion	Sloppy terrain with soil prone to erosion	Pressure on norms being set in place for protection and management.	Pressure on norms being set in place for protection and management.	Lack of early warning system at local level	Sloppy terrain with soil prone to erosion
	Lack of cultivation of	Choice of varieties	Lack of cultivation of alternative crops	Lack of cultivation of alternative crops	Runoff interception/ recharge capacity not	Runoff interception/ recharge capacity not	Low vegetative cover	Low vegetative cover.	Choice of varieties	Runoff interception/

	alternative crops	suitable for the condition are not cultivated			adequate	adequate			suitable for the condition are not cultivated	recharge capacity not adequate
		Lack of cultivation of alternative crops				Poor health and nutritional management in livestock	Low soil fertility	Low crop residue thereby increasing dependency more on external sources.	Lack of cultivation of alternative crops	Poor health and nutritional management in livestock
							Low crop residue thereby increasing dependency more on external sources	High dependence on rain fed crop		
							High dependence on rain fed crop	Poor irrigation management		
							Poor irrigation management			
Local Adaptive Capacity	Traditional late sown varieties (Short duration varieties of Maize)	Traditional late sown varieties (Short duration varieties of Maize)	Traditional late sown varieties (Short duration varieties of Maize)	Traditional late sown varieties (Short duration varieties of Maize)	R&M of farm bunds/ checks by individual farmers	R&M of farm bunds/ checks by individual farmers	Rules framed for sharing of grass from pasture lands.	Rules framed for sharing of grass from pasture lands.	Traditional late sown varieties (Short duration varieties of Maize) or short duration crops e.g. Pulses, Sesame, etc.	R&M of farm bunds/ checks by individual farmers
						Traditional livestock health care practices being used	Procurement of grass from other areas.	Procurement of grass from other areas.		Traditional livestock health care practices being used
							Migration for other wage opportunities	Migration for other wage opportunities		
							Sale of small and big ruminants	Sale of small and big ruminants		
							Waiver of loan for various schemes	Waiver of loan for various schemes		
							Prevention of felling of fodder bearing species	Prevention of felling of fodder bearing species		
Suggested Adaptation Strategy	**Agronomic interventions** to increase the crops productivity	**Augmenting Crop Productivity** through Advisory and information sharing	Agronomic interventions to increase the crops productivity under delayed monsoon a. Short duration varieties suitable for late sowing condition b. Crop diversification: Growing alternate crops that mature in 60 – 70 days c. Summer ploughing/Hoeing to use the pre monsoon showers d. Application of tank silt to improve the WHC and soil productivity e. Seed hardening to	Agronomic interventions to increase the crops productivity under delayed monsoon a. Short duration varieties suitable for late sowing condition b. Crop diversification: Growing alternate crops that mature in 60 – 70 days c. Summer ploughing/Hoeing to use the pre monsoon showers d. Application of tank silt to improve the WHC and soil productivity e. Seed hardening to	**Maximizing runoff interception** through Continuous Contour trenches, contour stone bund, box trench, stone bund, gully plug, etc.	**Maximizing runoff interception** through Continuous Contour trenches, contour stone bund, box trench, stone bund, Gully plug, etc.	**G**round water recharge and provisioning for storage for longer duration:	Ground water recharge and provisioning for storage for longer duration: a. Through construction and renovation of water harvesting structures. b. Maximizing run off interception though contour trenches, contour bunds, farm bunds	Introduction of short duration crops e.g. Maize; promoting mixed cropping system demonstration	**Maximizing runoff interception** through Continuous Contour trenches, contour stone bund, box trench, stone bund, gully plug etc.

			induce drought resistance: Maize (KCl 2%); Soybean (var: JS 9560) f. Farm mechanization: Sowing with seed drills to avoid delay in planting g. Mulching to reduce evaporation losses – Mustard plant residues h. Market linkages through e-choupal	induce drought resistance: Maize (KCl 2%); Soybean (var: JS 9560) f. Farm mechanization: Sowing with seed drills to avoid delay in planting g. Mulching to reduce evaporation losses – Mustard plant residues h. Market linkages through e-choupal						
	Short duration varieties suitable for late sowing condition	Crop diversification: Growing alternate crops that mature in 60 – 70 days			Grass seeding on CCT, Gradonie, etc.	Plantation in the slopes	a. Through construction and renovation of water harvesting structures	**P**romoting vegetation through:	Promoting short duration vegetable cultivation like green gram	Plantation in the slopes
	Crop diversification : Growing alternate crops that mature in 60 – 70 days				Repairing of soil – water conservation structures – stone, bund, Gully plugs, etc.	Grass seeding on CCT, Gradonie, etc.	b. Maximizing run off interception though contour trenches, contour bunds, farm stone bunds	Sapling plantation and seeding of endemic species with focus on fodder.	**Augmenting crop productivity** through Advisory and information sharing (RML services)	Grass seeding on CCT, Gradonie, etc. at pastures
					Collecting excess rainwater through masonry gabion for improving ground water level and for critical irrigation & livestock use	Repairing of soil – water conservation structures – stone, bund, Gully plugs, etc.	**Increasing soil fertility to improve the water holding capacity** and productivity with the use of organic fertilizers through compost pits	Pasture planning through grass land ecological study.		Repairing of soil – water conservation structures – stone, bund, Gully plugs, etc.
					Livestock health care camp and vaccination; Promoting Improved livestock management practices	**Collecting excess rainwater** through Percolation tanks. Earthen bund with masonry spillway for improving ground water level and for critical irrigation & livestock use	**P**romoting vegetation through:	**S**trengthen adaptive farming systems to mitigate adverse climatic factors:		**Collecting excess rainwater** through Percolation tanks. Earthen bund with masonry spillway for improving ground water level and for critical irrigation & livestock use
						Livestock health care camp and vaccination; Promoting Improved livestock management practices	Plantation and seeding of endemic species with focus on fodder;	**Promoting crop insurance** & livestock insurance as climate risk transfer mechanism.		Livestock health care camp and vaccination; Promoting Improved livestock management practices
							Pasture planning through grass land ecological study	Adaptation to low water demanding crops.		
							Strengthen adaptive farming systems to mitigate adverse climatic factors:	Explore other livelihood opportunities.		

							low water demanding crops			
							Develop common drinking water facilities for livestock e.g. trough, tank etc.	**P**rovisions for grains through Seed Bank and establishment of fodder bank through creating pasture group.		
							Well deepening for drinking water	Financial inclusion and credit facilitation through banking plan		
							Roof water harvesting with storage tank at individual level	**P**romoting solar pumping systems for irrigation on demonstrative mode.		
							Promoting crop insurance & livestock insurance as climate risk transfer mechanism	Alternative fuel energy sources e.g. Bio-gas		
							To create **alternate livelihood** against climatic risk and off season employment generation:	**W**ork towards generating awareness among community in:		
							Agro-forestry of multipurpose tree species and horticulture plantation	Livestock care and maintenance		
							Developing micro enterprises from vegetable nursery and cultivation, dairy, Goatry, poultry and so on	Engage with Animal husbandry department, vaccinations, camps		
							Establishment of fodder bank through creating pasture group	Make efforts with community to develop the dairy network as secondary income sources.		
							Fodder savings through Feed mangers, Chaff cutter, etc.	**S**trengthening capacities of community through customized programs:		
							Financial inclusion and credit facilitation through banking plan	Awareness program on ground water, situation, regional condition of the area, use practices & governance – mechanisms for appropriate and judicious use.		
							Promoting solar pumping systems for irrigation on demonstrative mode	Deliberate on prevention of boring wells; federations to take lead		
							Alternative fuel energy sources e.g. improved cook stove. Solar, etc.	Sharing information on Government schemes and subsidies available		
							Work towards	Installation of micro irrigation		

							generating awareness among community in:	systems such as sprinklers in regulating excess water use.		
							Engage with Animal husbandry department, vaccinations camps, etc.			
							Awareness program on ground water, situation, regional condition of the area, use practices & governance			
							Sharing information on Government schemes and subsidies available			
							Installation of micro irrigation systems such as sprinklers, drips in regulating excess water use			
V. 4	**Cold wave**	**Temperature extremes within the growing season**	**Temperature extremes within the growing season**	**Temperature extremes within the growing season**	Frost	Frost	Increase in temperature	Increase in temperature	Temperature extremes within the growing season	Frost
Direct Impact	Crop Damage	Sterility at flowering stage for wheat , gram , moong	Sterility at flowering stage for wheat	Sterility at flowering stage for wheat	Crop Damage	Crop Damage	Reduced crop productivity (sterility at flowering stage for wheat)	Reduced crop productivity (sterility at flowering stage for wheat)	Sterility at flowering stage for wheat , gram Moong	Crop Damage
	Increased Livestock Mortality	Reduction in crop duration	Increased rate of evaporate-transpiration	Increased rate of evaporate-transpiration			Increased rate of evapo-transpiration	Increased rate of evapo-transpiration	Reduction in crop duration	
			Reduction in crop duration	Reduction in crop duration			Increased salinisation of soil	Increased salinisation of soil	Drying of pasture	
			Drying of pasture	Drying of pasture						
Indirect Impact	Soil erosion	Water table depletion due to frequent irrigation	Water table depletion due to frequent irrigation	Water table depletion due to frequent irrigation	Crop productivity reduced	Crop productivity reduced	Loss of income for household	Loss of income for household	Water table depletion due to frequent irrigation	Crop productivity is reduced
							Effect on health of human and livestock.	Effect on health of human and livestock.		
Non-Climatic Stress	Poor quality of food grain	Loss of income for farmers & increased cost of cultivation	Loss of income for farmers & increased cost of cultivation	Loss of income for farmers & increased cost of cultivation	Poor quality of food grain	Poor quality of food grain	Effect production capacity of land resources.	Effect production capacity of land resources.	Loss of income for farmers & increased cost of cultivation	Poor quality of food grain
							Effect production capacity of livestock resources.	Effect production capacity of livestock resources.	Increase diseases / infection in livestock	Loss of quality seeds for next season

Sensitivity	Less market price	Heat tolerant varieties are not in use	Heat tolerant varieties are not in use	Heat tolerant varieties are not in use	Less market price	Less market price	Drying of pastures	Drying of pastures	Heat tolerant varieties are not in use	Less market price
							Reduced Crop Duration	Reduced Crop Duration		
							Health of human and livestock	Health of human and livestock.		
							Rise in cost of production and products	Rise in cost of production and products.		
Local Adaptive Capacity	Traditional methods being used for crop protection	Frequent irrigation is given to crops	Few farmers use micro irrigation	Few farmers use micro irrigation	Traditional method being used e.g. fumes, irrigation evening time	Traditional method being used e.g. fumes, irrigation evening time	Change in consumption habits.	Change in consumption habits.	Frequent irrigation is given to crops	Traditional method being used e.g. fumes, irrigation evening time
	Temporary cattle shed being built						Planning for crop requiring less water	Planning for crop requiring less water		
Suggested Adaptation Strategy	Livestock insurance	Drip / sprinkler irrigation, Agro -advisory etc. Increasing green cover through Avenue plantation	Promotion of shade net for vegetable crops and high value crops cultivation for thermo regulation	Promotion of shade net for vegetable crops and high value crops cultivation for thermo regulation	**Agronomic interventions** to protect crops from frost injury	**Agronomic interventions** to protect crops from frost injury	**U**ndertake appropriate interventions to increase green cover through regeneration activities, plantation and seeding on pasture lands, farm boundary, etc.	**U**ndertake appropriate interventions to increase green cover:	Promotion of Micro irrigation devices	**Agronomic interventions** to protect crops from frost injury
	Crop insurance	Protection by Thor fencing for new plantation and pasture land plantation	Cultivation of thermo-insensitive varieties (Wheat: Lok-1; HI 1531)	Cultivation of thermo-insensitive varieties (Wheat: Lok-1; HI 1531)	Introducing resilient varieties	Introducing resilient varieties	Soil – moisture conservation efforts – Farm bunds, Farm pond, etc.	Through regeneration activities of sapling plantation and seeding on pasture lands.	Crop demonstration of heat tolerant crop varieties	Introducing resilient varieties
			Spaying MOP during flowering / grain filling stage	Spaying MOP during flowering / grain filling stage	Undertaking disease control measures	Undertaking pest control measures	Heat tolerant crop demonstration	Construction of water harvesting structures as recharge measures such as gabion, earthen structures to aid to increase in water levels.	Animal health camps and vaccination involving local govt. health providers	Undertaking pest control measures
					Irrigation in the evening hours to maintain the soil temperature	Irrigation in the evening hours to maintain the soil temperature	**W**ork towards generating awareness among community to engage with Animal husbandry department, vaccinations, camps, etc.	**W**ork towards generating awareness among community in:		Irrigation in the evening hours to maintain the soil temperature
					Foliar spray of MoP	Foliar spray of MoP		Livestock care and maintenance		Foliar spray of MoP
								Engage with Animal husbandry department, vaccinations, camps		
								Make efforts with community to develop the dairy network as secondary income sources.		

V. 5	**Intermittent dry spell**	**Frost**	Hailstorm	Hailstorm	Unseasonal Winter rains	Unseasonal Winter rains	Frost	Frost	Frost	Unseasonal Winter rains
Direct Impact	Moisture availability less	Crop Damage	Crop Damage	Crop Damage	Lodging of Crops	Lodging of Crops	Damage to crops	Damage to crops	Crop Damage	Lodging of Crops
			Increased Livestock Mortality	Increased Livestock Mortality	Increased Incidence of disease occurrence	Increased Incidence of disease occurrence	Damage to saplings	Damage to saplings		Increased Incidence of disease occurrence
Indirect Impact	Reduction in crop productivity	Less market price	Soil erosion	Soil erosion	Crop productivity reduced	Crop productivity reduced	Loss of income	Loss of income	Less market price	Crop productivity is reduced
		Low income			Dry fodder availability is reduced	Dry fodder availability is reduced	Reduction in biomass	Reduction in biomass	Low income	Dry fodder availability is reduced
Non-Climatic Stress		Poor quality of food grain	Poor quality of food grain	Poor quality of food grain	Poor quality of food grain	Poor quality of food grain	Reduction in crop production.	Reduction in crop production.	Poor quality of food grain	Poor quality of food grain
					Increase household expenditure on post-harvest process and livestock management	Increase household expenditure on post-harvest process and livestock management				Increase household expenditure on post-harvest process and livestock management
Sensitivity	Low income	Lack of resistant varieties and frost management practices	Less market price	Less market price	Less market price	Less market price	Increase in cost of production and products.	Increase in cost of production and products.	Lack of resistant varieties and frost management practices	Less market price
					Excess water to crops	Excess water to crops				Excess water to crops
Local Adaptive Capacity	Irrigation (Open well) at critical period by some farmers	Traditional fumes methods being used for crop protection during night	Reduced the numbers of irrigation	Reduced the numbers of irrigation	Less irrigation to crops	Less irrigation to crops	Late sowing of crop.	Late sowing of crop.	Traditional fumes method being used at night	No. of irrigation to crop is reduced
		Irrigation during evening time					Provision of early irrigation.	Provision of early irrigation.	Irrigation during evening	
							Creating smoke atmosphere	Creating smoke atmosphere		
Suggested Adaptation Strategy	Micro irrigation devices	Agronomic interventions to protect crops from frost injury a. Introducing resilient varieties b. Undertaking disease control measures c. Irrigation in the evening hours to maintain the soil temperature	**Agronomic interventions** to protect crops from Hailstorm through	**Agronomic interventions** to protect crops from Hailstorm through	**Agronomic interventions** to protect crops from frost unseasonal rainfall	**Agronomic interventions** to protect crops from frost unseasonal rainfall	Undertake regeneration measures on pasture lands to increase vegetative cover acting as buffer	Undertake regeneration measures on pasture lands to increase vegetative cover acting as buffer.	Agronomic interventions to protect crops from frost injury a. Introducing climate resilient varieties b. Undertaking disease / pest control measures c. Irrigation in the evening hours to maintain the	**Agronomic interventions** to protect crops from unseasonal rainfall

		d. Smoking in the night time to maintain the temperature							soil temperature d. Smoking in the night time to maintain the temperature	
			Introducing resilient varieties	Introducing resilient varieties	Water logging resistant varieties	Water logging resistant varieties	Maintaining water harvesting structures to improve availability of water	Undertake construction of structures to improve availability of water.		Water logging resistant varieties
			Improved farm implement and equipment	Improved farm implement and equipment	Integrated pest management	Integrated pest management	Provisions of cover in areas of vegetable cultivation	Provisions of cover in areas of vegetable cultivation		Integrated pest management
			Livestock Health camps, vaccination	Livestock Health camps, vaccination						
V. 6			Frost	Frost				Concerns of mining in the area	Rains during harvesting period	
Direct Impact			Crop Damage	Crop Damage				Degradation of land commons and private	Crop lodging and reduction in crop yield	
Indirect Impact			Crop productivity is reduced	Crop productivity is reduced				Change in land use	Poor quality produce and low profit	
									The produce cannot be stored long time due to fungal infection	
Non-Climatic Stress			Poor quality of food grain	Poor quality of food grain				Loss of cropland and private birh area	Less holding capacity due to poor storage	
Sensitivity			Less market price	Less market price				Increase in wastelands	Non availability of storage and post-harvest facilities at village level	
								Change in mentality of community		
Local Adaptive Capacity			Traditional methods e.g. fumes during evening time, Irrigation during night time	Traditional methods e.g. fumes during evening time, Irrigation during night time				Community visualizing quick financial gains	No proven local adaptive mechanisms	
Suggested Adaptation Strategy			Agronomic interventions to protect crops from frost injury a. Introducing resilient varieties b. Undertaking disease control measures	Agronomic interventions to protect crops from frost injury a. Introducing resilient varieties b. Undertaking disease control measures				a) Raise awareness among community to prevent from lease of mining b) Engage in securing the commons through government negotiations c) Negotiate with panchayats to bring more or all of pasture lands under tenurial	Trainings on post-harvest technology, etc. to minimize quality deterioration of produces due to high	

			c. Irrigation in the evening hours to maintain the soil temperature d. Foliar spray of MoP e. Smoking in the night time to maintain the temperature	c. Irrigation in the evening hours to maintain the soil temperature d. Foliar spray of MoP e. Smoking in the night time to maintain the temperature				arrangements. d) Exposure visit of community to successful areas engaged in climate change adaptation. e) Mass awareness in the region through federations, chetna yatra etc.	moisture	
V. 7			Unseasonal Winter rains	Unseasonal Winter rains						
Direct Impact			Lodging of Crops	Lodging of Crops						
			Increased Incidence of disease occurrence	Increased Incidence of disease occurrence						
Indirect Impact			Crop productivity reduced	Crop productivity reduced						
			Dry fodder availability is reduced	Dry fodder availability is reduced						
Non-Climatic Stress			Poor quality of food grain	Poor quality of food grain						
			Increase household expenditure on post-harvest process and livestock management	Increase household expenditure on post-harvest process and livestock management						
Sensitivity			Less market price	Less market price						
			Excess water to crops	Excess water to crops						
Local Adaptive Capacity			Less irrigation to crops	Less irrigation to crops						
Suggested Adaptation Strategy			Agronomic interventions to protect crops from frost unseasonal rainfall a. Water logging resistant varieties b. Nitrogen management after cessation of rainfall c. Integrated pest management	Agronomic interventions to protect crops from frost unseasonal rainfall a. Water logging resistant varieties b. Nitrogen management after cessation of rainfall c. Integrated pest management						

Annexure II: Climate Scenario in Project Area of Tamil Nadu:

Climate Dimensions	Anjukulipatty - Dinduigal	Ayyampalayam – Dindigul	Sriramapuram – malvarpatty Dinduigal	Chinnapoolampatty - Madurai	Chithalai - Madurai	Peikulam - Madurai	Vannikonendal - Kurukkalpatti – Tirunelveli	Bettamugulalam - Krishnagiri	Salivaram - Krishnagiri	Thally Kothanur - Krishnagiri
Project Area Specification										
State	Tamil Nadu	Tamil Nadu	Tamil Nadu	Tamil Nadu	Tamil Nadu	Tamil Nadu	Tamil Nadu	Tamil Nadu	Tamil Nadu	Tamil Nadu
District	Dinduigal	Dinduigal	Dinduigal	Madurai	Madurai	Madurai	Tirunelveli	Krishnagiri	Krishnagiri	Krishnagiri
Block	Shanarpatty	Athoor	Vedasandur	T.Kallupatti	Thirumangalam	Kalligudi	Melaneelithanallur	Kelamangalam	Kelamangalam	Thally
Geographic Position (Latitude / Longitude)	10^0 12’ and 10^0 17’ 30” North Latitude and 78^0 4’ and 78^0 6’ 30” East longitude	10^0 12’ and 10^0 15’ North Latitude and between 77^0 42’ and 77^0 46’ East longitude	10°05’ and 10°09’ north latitude and between 77°30’ and 78°20’ east longitude	9^0 44’ and 9^0 48’ North Latitude and between 77^0 46’ and 77^0 49’ East longitude	9^0 51’ and 9^0 54’ 30” North Latitude and between 77^0 55’ 30” and 77^0 58’ East longitude	9^0 38’ and 9^0 41’ North Latitude and between 77^0 58’ and 78^0 2’ East longitude	9^0 44’ and 9^0 48’ North Latitude and between 77^0 46’ and 77^0 49’ East longitude	12^0 20’ 30” and 12^0 33’ 30”North Latitude and between 77^0 52’ 30” and 77^0 56’ East longitude	12^0 22’ and 12^0 26’ North Latitude and between 77^0 43’ and 77^0 48’ East longitude	12^0 33’ and 12^0 36’ North Latitude and between 77^0 30’ 30” and 77^0 43’ East longitude
Average maximum Temperature	34^0C	36^0C	34^0C	34.1^0C	34.1^0C	34.1^0C	33.8^0C	33.8^0C	33.8^0C	33.8^0C
Average Minimum Temperature	22.5^0C	18^0C	22.5^0C	23.7^0C	23.7^0C	23.7^0C	22.4^0C	22.1^0C	22.1^0C	22.1^0C
Total Watershed Area	1398.32.5 ha	1633 sq.km	1195 ha	8.32 sq. km	11.58 sq. km	9.62 sq. km	1487 Ha	1500.990 Ha	1075 ha	988 ha
Population in Watershed	7786 (2011 C)	9240 (2010 C)	1169 (2011 C)	5430 (2011 C)	3840 (2011 C)	2675 (2011 C)	10250 (2011 C)	550 (2001 C)	671 (2011 C)	975 (2011 C)
Literacy Level in Watershed	87.86%	57%	54%	55.50%	61 %.	60.20%	56%	37%	64%	83%
Major Soil Type in Watershed	Red soil, sandy clay, clay loam and alluvial soil	clay loam, sandy loam and loam	Red sandy soil, red loamy soil and laterite soil	Red sandy, Block cotton and clay soil	Red sandy soil, laterite, and clay sandy soil	Block cotton and clay soil	Deep Red, Red Sandy and Red Sandy loam soil	Sandy Clay and Sandy Clay loam soil	Sandy clay loam and Sandy loam	Sandy loam, Sandy clay loam Clay and Clay loam soil
Major Crops Grown in Watershed	Groundnut, Maize, sorghum, onion, tomato and fodder crops	sorghum, black gram, green gram, cowpea, mango, and coconut	Maize, millets and other cereals, pulses, groundnut, gingerly, cotton and onion	paddy, cotton, groundnut, vegetables and millets	paddy, vegetables, groundnut, pulses, cotton and millets	paddy, plugs, vegetable and millets	Paddy, Groundnut, Chilli, Pulses and Vegetables	Ragi, Samai and Groundnut	Ragi, Gingelly and Groundnut	Ragi, Gingerly, Ground nut and Fodder maize
Major Sources of Water	Bore well and well	well, and bore well, besides rainfall	open wells and bore wells besides rainfall	lift irrigation and Rain fed tank, besides rainfall	lift irrigation and tank irrigation, besides rainfall	Lift irrigation, rain fed tank. Besides rain fall	Tank, Well and Bore wells, besides rainfall	Open well, Lake besides rainfall	open well and bore well, besides rainfall	Open well and Bore well, besides rainfall
Total Livestock Population	-	1708	722	-	-	-	-	791	925	987
Climate Related Risk										
Risk 1:	Drought	Drought	Droughts	Drought	Drought	Drought	Drought	Consecutive Drought	Consecutive Drought	Consecutive Drought

Consequence 1:	Reduction in crop yields	Reduction in crop yield, Migration of community, Poor family income	Trees died , Food shortage Reduction in crop yields	- Reduction in yield - Drinking water scarcity - Food grain shortage - Fodder shortage - Migration of community	Reduction in yield Drinking water scarcity Food grain shortage Fodder shortage Migration of community	-Reduction in yield - Drinking water scarcity - Food grain shortage - Fodder shortage - Migration of community	Reduction in crop yields	Reduction in crop yields, Problem for domestic water use	Reduction in crop yields, Problem for domestic water use	Reduction in crop yields, Problem for domestic water use
Likelihood Probability 1:	Almost 2/3 year	Almost every year	Almost every year	Once in two years	Once in two years	Once in two years	Almost every year	Once in 3 years	Once in 3 years	Once in 3 years
Risk Rank 1:	High-1	High-1	High-1	High-1	High-1	High-1	High-1	High-1	High-1	High-1
Risk 2:	Consecutive drought	Intermittent dry spell	Delayed on set of monsoon	Delay in Monsoon	Delay in Monsoon	Delay in Monsoon	Consecutive droughts	Intermittent dry spell	Intermittent dry spell	Intermittent dry spell
Consequence 2:	Increased no. of irrigation. More water requirement.	Low soil moisture, Low yield, Livestock affected and low animal productivity	Scarcity of fodder, negative effect in crop yield	scarcity of water Crops exposed to extreme conditions during critical crop stage - Low yield and Low quality of produces	Scarcity of water Crops exposed to extreme conditions during critical crop stage - Low yield and Low quality of produces	Scarcity of water Crops exposed to extreme conditions during critical crop stage - Low yield and Low quality of produces	Drying up of wells, very low crop productivity Problem for drinking water for human and animal	Low crop yields	Low crop yields	Low crop yields
Likelihood Probability 2:	Once in 3 years in the recent decade	Almost every year	Once in 3 – 4 years	Frequent	Frequent	Frequent	Once in 3 – 4 years	Every year	Every year	Every year
Risk Rank 2:	Medium-2	High -1	High-2	High-1	High-1	High-1	High-1	High-1	High-1	High-1
Risk 3:	Excess rainfall	Excess rainfall	Intermittent dry spell	Extreme Temperature	Extreme Temperature	Extreme Temperature	Intermittent dry spell	Unseasonal rainfall	Unseasonal rainfall	Unseasonal rainfall
Consequence 3:	Soil erosion as a result of highly sloppy land	Soil erosion Crop damage Low yield High pest and disease attack	Reduced crop yields	Increased evapo transpiration Reduction in moisture content Frequent irrigation need Reduction in yield	Increased evapo transpiration Reduction in moisture content Frequent irrigation need Reduction in yield	Increased evapo transpiration Reduction in moisture content Frequent irrigation need Reduction in yield	Reduction in crops productivity	Soil erosion, sowing season is altered, hampers harvesting	Soil erosion, sowing season is altered, hampers harvesting	Soil erosion, sowing season is altered, hampers harvesting
Likelihood Probability 3:	Once in 5 years	Once in 5 years	Frequent – almost every alternate year	Frequent	Frequent	Frequent	Every year	Once in 3 – 4 years	Once in 3 – 4 years	Once in 3 – 4 years
Risk Rank 3:	Medium -2	Medium -2	Medium-2	High-1	High	High-1	High-1	Medium -2	Medium -2	Medium -2
Risk 4:	Temperature extremes	Temperature extremes	Temperature extremes	Excess Rainfall	Excess Rainfall	Excess Rainfall	Uncertainty in onset of monsoon	High wind speed	High wind speed	High wind speed
Consequence 4:	Increased evaporation	Increased evapo-transpiration Low soil moisture Low yield Livestock affected and low animal	Increased evapo-transpiration	Soil Erosion Reduction in yield High Disease incidence to human and livestock People and Animals	Soil Erosion Reduction in yield High Disease incidence to human and livestock	Soil Erosion Reduction in yield High Disease incidence to human and	Delay in sowing, shortened LGP	Affects vegetable crops, Lowers ground water table	Affects vegetable crops, Lowers ground water table	Affects vegetable crops, Lowers ground water table

		productivity			People and Animals	livestock People and Animals				
Likelihood Probability 4:	Frequent	Once in 3 years	Once in 5 years	Once in five years	Once in five years	Once in five years	Once in 3 – 4 years	Every year	Every year	Every year
Risk Rank 4:	Medium -2	Medium -3	Medium -3	Medium-2	Medium-2	Medium-2	Medium-2	Medium -3	Medium -3	Medium -3
Risk 5:	Intermittent dry spell	Delayed monsoon	Heavy wind	Strong wind	Strong wind	Fog	Temperature extremes	Low night temperature and occurrence of dew	Low night temperature and occurrence of dew	Low night temperature and occurrence of dew
Consequence 5:	Reduced crop productivity	Crops exposed to extreme conditions during critical crop stages Low yield	Physical damage to crops	Soil erosion Reduction in moisture content Frequent irrigation need Reduction in yield	Soil erosion Reduction in moisture content Frequent irrigation need Reduction in yield	Pest &Disease attack	Increased soil evaporation and more crop water demand	Affects vegetable crops production, more pest and disease, Reduced flower quality	Affects vegetable crops production, more pest and disease, Reduced flower quality	Affects vegetable crops production, more pest and disease, Reduced flower quality
Likelihood Probability 5:	Almost every year	Every alternate year	Rare (Last 2 years high wind)	Once in 3 years	Once in 3 years	Frequent	Often in the recent years	Every year	Every year	Every year
Risk Rank 5:	Medium-2	Medium -3	Medium-3	Medium-2	Medium-2	Medium -2	Medium -2	Medium-3	Medium-3	Medium-3
Risk 6:	High wind speed	High wind speed	Cold wave	Fog	Fog	Intermittent dry spell	High wind speed	High intensity rainfall	High intensity rainfall	High intensity rainfall
Consequence 6:	Physical damage to crops	Physical damage to crops Low yield Low quality of produces Low income	High mortality of animals	Pest &Disease attack	Pest &Disease attack	Fodder Scarcity Drinking water scarcity Increased evapo transpiration Reduction in moisture content Frequent irrigation need Reduction in yield	Soil erosion and Physical damage to crops	Soil erosion, crop destruction, Livestock diseases	Soil erosion, crop destruction, Livestock diseases	Soil erosion, crop destruction, Livestock diseases
Likelihood Probability 6:	Often	Once in 3years	Noticed every year in the last 4 years	Frequent	Frequent	Frequent	Every year during June – July	Once in 5 years	Once in 5 years	Once in 5 years
Risk Rank 6:	Low -3	Low -4	Medium -4	Medium -2	Medium -2	Medium -2	Medium -3	Low-4	Low-4	Low-4
Risk 7:	High temperature		Flood	Intermittent dry spell	Intermittent dry spell		Dew during January	Temperature extremes	Temperature extremes	Temperature extremes
Consequence 7:	Mortality of maximum number or mango trees		Heavy Soil erosion, Houses Broken, Cattles died	Fodder Scarcity Drinking water scarcity Increased evapo transpiration Reduction in moisture content Frequent irrigation need Reduction in yield	Fodder Scarcity Drinking water scarcity Increased evapo transpiration Reduction in moisture content Frequent irrigation need Reduction in yield		Affects paddy and groundnut crops, increases diseases	Increases the frequency of irrigation	**Increases the frequency of irrigation**	Increases the frequency of irrigation
Likelihood Probability	Rare. First time		Rare	Frequent	Frequent		Once in 5 years	Often	Often	Often

7:										
Risk Rank 7:	Low-3		Low-5	Medium -2	Medium -2		Low-4	Low -4	Low -4	Low -4
Risk 8:	Hail storm				Flood		Excess rainfall			
Consequence 8:	Destruction of flowers and flower shedding in mango trees				Soil erosion Crop damage and low yield		Soil erosion			
Likelihood Probability 8:	Once in three years or four years				Rare		Once in 7 years			
Risk Rank 8:	Low-3				Low-3		Low -5			
Risk 9:	High temperature coupled with continuous rainfall									
Consequence 9:	Tree is affected by fungus infection									
Likelihood Probability 9:	Once in 4 years									
Risk Rank 9:	Low-4									
Rainfall:										
Lowest Rainfall	484.5 mm	648 mm	331.4 mm	401.9 mm	401.9 mm	401.9 mm	343.7 mm	497.8 mm	497.8 mm	497.8 mm
Highest Rainfall	1493.4 mm	2197.2 mm	1001.5 mm	41363 mm	41363 mm	41363 mm	1119.3 mm	1407.6 mm	1407.6 mm	1407.6 mm
Standard Deviation in Rainfall	238.7 mm	395.9 mm	182.6 mm	245.2 mm	245.2 mm	245.2 mm	206.6 mm	245.5 mm	245.5 mm	245.5 mm
CV (in %)	25.5%	33%	25.50%	29.3 %	29.3%	29.3%	27.7%.	26.7%	26.7%	26.7%
Temperature:										
Mean Maximum Temperature	34^0C	36^0C	34^0C	34.1^0C	34.1^0C	34.1^0C	33.8^0C	33.8^0C	33.8^0C	33.8^0C
Mean Minimum Temperature	22.5^0C	18^0C	22.5^0C	23.7^0C	23.7^0C	23.7^0C	22.4^0C	22.1^0C	22.1^0C	22.1^0C
Extreme Weather Event:										
Drought	2002-03, 2012-13	2002-2003, 2012-2013	2011, 2012, 2013		1998 - 2000	1998 – 2000	2010 to till		1966	1964
Semi Drought										
Severe Drought				1970, 72, 75	1970	1970		1960		
Consecutive drought										
Flood	1979-1990,	1979-1990, 2005	1977, 2004	1976, 84, 2004	1965-66	1965-66	1977			

	2005									
Strong Wind			2014	1989, 2000			1976			
Scanty Rainfall										
Hailstorm										
Galgoto										
Mines were closed										
Earth quake										
Continuous rain								1980 (22 days)		
Less Rain										
Fadke (locust)										
Dracunculiasis										
Average rainfall										
High Rainfall	1960-70	1960-70	1960-65, 1980							
Tiddi infestation										
Chikun gunya										
GSS interventions										
Red fever										
Insect attack										
Excess										
Normal										
Plague										
Launch of NREGA scheme										
Wet										
Chickunguniya										
Dengue										
Hail										
Heavy rain										1966
High intensity Rainfall										
Thunderclouds										
Outbreak of Diseases in Livestock										
Sukhaa										
Irregular rains										
Locust invasion										
Intermittent dry spell										
Famine			1974-75	1974, 80	1980	1980	1975			

Introduction of submersible pump							2002			
High Temperature								1988		2000-2014
Entry of Inorganic Fertilisers								2000		1978
Poison Rain									1980	
Rain got lessened and Soil fertility lost.									1980	
Nematodes developed because of insufficient rain									1982	
Future Climate Projection:										
Expected Maximum Temperature										
2030	34.55	36.53	34.57	34.6	34.66	34.59	45.51	34.43	34.43	34.43
2050	34.97	36.95	34.99	35.02	35.08	35.01	45.93	34.85	34.85	34.85
2070	35.85	37.83	35.87	35.9	35.96	35.89	46.81	35.73	35.73	35.73
2100	37.67	39.65	37.69	37.72	37.78	37.71	48.63	37.55	37.55	37.55
Deviation in Maximum Temperature										
2030	0.55	0.53	0.57	0.5	0.56	0.49	0.51	0.63	0.63	0.63
2050	0.97	0.95	0.99	0.92	0.98	0.91	0.93	1.05	1.05	1.05
2070	1.85	1.83	1.87	1.8	1.86	1.79	1.81	1.93	1.93	1.93
2100	3.67	3.65	3.69	3.62	3.68	3.61	3.63	3.75	3.75	3.75
Expected Minimum Temperature										
2030	23.17	18.66	23.19	24.32	24.38	24.31	37.49	22.85	22.85	22.85
2050	24.09	19.57	24.11	25.24	25.3	25.23	37.91	23.77	**23.77**	23.77
2070	25.03	20.51	25.05	26.18	26.24	26.58	38.79	24.71	24.71	24.71
2100	26.63	22.11	26.65	27.78	27.84	27.77	40.61	26.31	26.31	26.31
Deviation in Minimum Temperature										
2030	0.67	0.66	0.69	0.62	0.68	0.61	0.49	0.75	0.75	0.75
2050	1.59	1.57	1.61	1.54	1.6	1.53	0.91	1.67	1.67	1.67
2070	2.53	2.51	2.55	2.48	2.54	2.47	1.79	2.61	2.61	2.61
2100	4.13	4.11	4.15	4.08	4.14	4.07	3.61	4.21	4.21	4.21
Expected Change in Rainfall										
2030	5	5.83	3.5	-1	2	11.3	0.5	8.34	8.34	8.34
2050	7	7.86	5.3	3.3	4.7	13.6	3.2	10.56	10.56	10.56
2070	10	10.15	8	6.7	7.1	15.8	5.6	13.99	13.99	13.99
2100	13	13.81	11.6	11.4	10.1	20.3	8.6	17.2	17.2	17.2

Expected CO2 Level										
2030	420	420	420	420	420	420	420	420	420	420
2050	500	500	500	500	500	500	500	500	500	500
2070	535	535	535	535	535	535	535	535	535	535
2100	588	588	588	588	588	588	588	588	588	588
Participatory Field Survey Findings:										
Goat rearing										
Risk 1:	Diseases (Sore mouth, Diarrhoea, water discharge from eyes,									
Action for Risk 1:	Vaccination, Take care, Treatment, poundage									
Buffalo rearing										
Risk 2:	Diseases (ring disease due to water scarcity), galgoto, Hoof disease, infection									
Action for Risk 2:	Vaccination, take care, Treatment, poundage									
	Labour		**Labour**							
Risk 3:	Low wages ,money not given in time, lack of labour work Viral fever, Malaria, Dengue, Chikengunia		Low wages ,money not given in time, lack of labour work Viral fever, Malaria, Dengue, Chikengunia							
Action for Risk 3:	Migration, enhance the working days, generate new employment scheme, and increase wages. Primary health centre \		Migration, enhance the working days, generate new employment scheme, and increase wages. Primary health centre							
	Agriculture	Water		Water	Water	Water	Water	Water	Water	Water
Risk 4:		Water scarcity Excess rainfall Crop failure		Water scarcity Excess rainfall Crop failure	Water scarcity Excess rainfall Crop failure	Water scarcity Excess rainfall Crop failure	Water scarcity Excess rainfall Crop failure	Water scarcity Excess rainfall Crop failure Migration	Water scarcity Excess rainfall Crop failure Migration	Water scarcity Excess rainfall Crop failure Migration

Action for Risk 4:		Irrigation facilities, well digging, Bank loan writ off, Government relief Field Bunding, check dam, Insurance, Compensation		Irrigation facilities, well digging, bore well, Bank loan writ off, Government relief Field Bunding, check dam, Insurance, Compensation	Well recharge pit formation, Water conservation measures, Micro irrigation, Drought resistance crops	Irrigation facilities, well digging, bore well, Bank loan writ off, Government relief Field Bunding, check dam, Insurance, Compensation	Irrigation facilities- Drip and sprinkler irrigation installation, well digging, deepening, bore well, Bank loan writ off, Government relief Growing of less water intense crops like minor millets Field Bunding, check dams, Farm ponds, sunken ponds, Insurance, Compensation	Tree plantation, Well Recharge pits formation	Tree plantation, Well Recharge pits formation	Tree plantation, Well Recharge pits formation
Cattle rearing										
Risk 5:		Diseases (Sore mouth, Diarrhoea, water discharge from eyes,	Diseases (Sore mouth, Diarrhoea, water discharge from eyes,	Diseases (Sore mouth, Diarrhoea, water discharge from eyes,	Diseases (Foot and mouth disease, Mastitis diseases, Blue tongue diseases)	Diseases (Sore mouth, Diarrhoea, water discharge from eyes,	Diseases (Sore mouth, Diarrhoea, water discharge from eyes,			
Action for Risk 5:		Vaccination, Take care, Treatment, poundage	Vaccination, Take care, Treatment, poundage	Vaccination, Take care, Treatment, poundage	Vaccination, Take care, Treatment, poundage, Insurance	Vaccination, Take care, Treatment, poundage	Vaccination, Take care, Treatment, poundage			
Temperature rise										
Risk 6:		Crop failure	Crop failure	Crop failure	Crop failure	Crop failure	Crop failure	No water in Lake and River, No Agricultural Yield, Spread of new Diseases.	No water in Lake and River, No Agricultural Yield, Spread of new Diseases.	No water in Lake and River, No Agricultural Yield, Spread of new Diseases.
Action for Risk 6:		Planting trees	Planting trees	Planting trees	Planting trees	Planting trees	Planting fruit bearing trees, Grow drought resistant crops,	Using Organic Fertilisers, Use of Plant protection chemicals, Tree plantation	Using Organic Fertilisers, Use of Plant protection chemicals, Tree plantation	Using Organic Fertilisers, Use of Plant protection chemicals, Tree plantation
Humidity										
Risk 7:										
Action for Risk 7:		Afforestation, Awareness to youngsters for planting trees								
Wind										
Risk 8:			Soil erosion							
Action for Risk 8:			Tree planting							

Fodder										
Risk 9:			Shortage of fodder				Low milk yield, Selling of cattle	Selling of Livestock, Shortage of Organic FYM, lack in Economic status	Selling of Livestock, Shortage of Organic FYM, lack in Economic status	Selling of Livestock, Shortage of Organic FYM, lack in Economic status
Action for Risk 9:			Sale of cattle, using natural resources, soil and water conservation				Fodder development, planting of fodder trees	Improving Fodder promotion, Azolla cultivation	Improving Fodder promotion, Azolla cultivation	Improving Fodder promotion, Azolla cultivation
Agriculture										
Risk 10:			Water scarcity Crop failure					Less Income Migration	Less Income Migration	Less Income Migration
Action for Risk 10:			Irrigation facilities, well digging, bore well, Field Bunding, check dam, Insurance, Compensation					Using new varieties of Seeds, Increase the Livestock population, Tank Silt Application in Agricultural fields, Using Compost Pits, Vermicomposting units.	Using new varieties of Seeds, Increase the Livestock population, Tank Silt Application in Agricultural fields, Using Compost Pits, Vermicomposting units.	Using new varieties of Seeds, Increase the Livestock population, Tank Silt Application in Agricultural fields, Using Compost Pits, Vermicomposting units.
Disease infection										
Risk 11:				A. Fever B. Cold C. Cough D. Viral and bacterial infection	A. Fever B. Cold C. Cough D. Small fox E. Viral fever	A. Fever B. Cold C. Cough D. Small fox E. Viral fever	A. Fever B. Cold C. Cough D. Viral and bacterial infection \	Cholera, Anaemia, Chicken pox, Migration, Expensive Medical charges	Cholera, Anaemia, Chicken pox, Migration, Expensive Medical charges	Cholera, Anaemia, Chicken pox, Migration, Expensive Medical charges
Action for Risk 11:				Availing Health Department services, Awareness creation about personal and environment Hygiene, To acquire Immunization	Establishing toilet facilities, properly disposing wastages, creating accessibility of medical services, To acquire Immunization	Establishing toilet facilities, properly disposing wastages, creating accessibility of medical services, To acquire Immunization	Availing Health Department services, Awareness creation about personal and environment Hygiene, To acquire Immunization	Using Organic Fertilisers in Agriculture, Promoting Kitchen Gardens, Taking Healthy Foods	Using Organic Fertilisers in Agriculture, Promoting Kitchen Gardens, Taking Healthy Foods	Using Organic Fertilisers in Agriculture, Promoting Kitchen Gardens, Taking Healthy Foods
							Marketing of Agri Products			
Risk 12:							Low price, Middle man commission,			
Action for							Direct			

Risk 12:							marketing, creation of marketing linkage, creation of village level storage godown			
Climate Proofing:										
Climate Variability										
V. 1	Consecutive drought	Drought	Drought	Consecutive Drought	Consecutive Drought	Consecutive Drought	Drought/ Consecutive Drought	Consecutive Drought	Consecutive Drought	Consecutive Drought
Direct Impact	Depletion of surface/ ground water	Depletion of soil moisture content and ground water & water scarcity	Yield decrease	Low soil moisture content	Low soil moisture content	Low soil moisture content	Low soil moisture content	Low soil moisture content and depletion of ground water leading to Scarcity of water for farming and domestic	Low soil moisture content and depletion of ground water leading to Scarcity of water for farming and domestic	Low soil moisture content and depletion of ground water leading to Scarcity of water for farming and domestic
	Soil erosion	Withering of more coconut and mango trees	Lesser availability of fodder	Water level goes down	Water level goes down	Water level goes down	Depletion of surface/ ground water	Low crop yield	Low crop yield	Low crop yield
	Low soil moisture content	Low yield and Lesser availability of fodder	Poor access to quality drinking water	Water scarcity both human being and live stock	Water scarcity both human being and live stock	Water scarcity both human being and live stock	Scarcity of water for domestic and farming	Lesser availability of fodder	Lesser availability of fodder	Lesser availability of fodder
	Scarcity of water for domestic and farming		Reduced vegetative cover	Cultivable area reduced	Cultivable area reduced	Cultivable area reduced	Low crop yield	Higher livestock mortality	Higher livestock mortality	Higher livestock mortality
	Low crop yield		Water scarcity	Production and productivity reduced	Production and productivity reduced	Production and productivity reduced	Lesser availability of fodder			
	Lesser availability of fodder			Lesser availability of fodder	Lesser availability of fodder	Lesser availability of fodder	Poor access to quality drinking water			
	Perennial mango tries dried up			Reduced vegetative cover	Reduced vegetative cover	Reduced vegetative cover	Reduced vegetative cover			
				Excess heat leads to surface hardening – soil Solarisation	Excess heat leads to surface hardening – soil Solarisation	Excess heat leads to surface hardening – soil Solarisation	Excess heat leads to surface hardening – soil Solarisation			
				Low income	Low income	Low income				
Indirect Impact	Scarcity of food grains, fodder.	Scarcity of fodder	Loss of income	*Low income generation*	*Low income generation*	*Low income generation*	Scarcity of food grains, fodder & fuel wood	Low farm income	Low farm income	Low farm income
	Low economic growth	Soil becomes more vulnerable to erosion leading to low fertility	Overgrazing of pasture	*Deeping of well and bore well*	*Deeping of well and bore well*	*Deeping of well and bore well*	Overgrazing of pasture	Soil becomes less fertile due to solarisation.	Soil becomes less fertile due to solarisation.	Soil becomes less fertile due to solarisation.

	Famers face poverty		Soil becomes more vulnerable to erosion	*Selling livestock*	*Selling livestock*	*Selling livestock*	Soil becomes more vulnerable to erosion	Reduction in soil fertility	Reduction in soil fertility	Reduction in soil fertility
	Distress sale of livestock		Reduction in soil fertility	*Production of milk and meat reduced*	*Production of milk and meat reduced*	*Production of milk and meat reduced*	Reduction in soil fertility	Distress sale of Agricultural land and livestock		
	Increase in drudgery		Distress sale of livestock	***Purchased drinking water***	***Purchased drinking water***	***Purchased drinking water***	Distress sale of livestock			
			Lack of drinking water	*Reduction in soil fertility*	*Reduction in soil fertility*	*Reduction in soil fertility*	Increase in migration/ lesser availability of agril. Labour			
							Increase in drudgery			
Non-Climatic Stress	Forest fire in the fringe forest areas leading to invasion of wild animal	High dependence on money lenders for credit.	No use of drought resistant varieties	High rate of extraction of wood (esp. from pasture lands) for fuel wood during summer.	High rate of extraction of wood (esp. from pasture lands) for fuel wood during summer.	High rate of extraction of wood (esp. from pasture lands) for fuel wood during summer.	High dependence on money lenders for credit.	Borrowing loans from local money lenders.	Borrowing loans from local money lenders.	Borrowing loans from local money lenders.
	Cost of food materials increases.	Pilferage and minor crimes	High dependence on money lenders for credit.	High dependence on money lenders for credit.	High dependence on money lenders for credit.	High dependence on money lenders for credit.	Focus shifted more on livelihood; Health/ Education get neglected	Neglecting Education to children in few locations		
	High dependence on money lenders for credit.	High mental stress due to borrowing	shifted more on livelihood; Health/ Education get neglected	Focus shifted more on livelihood; Health/ Education get neglected	Focus shifted more on livelihood; Health/ Education get neglected	Focus shifted more on livelihood; Health/ Education get neglected	Increase in migration			
	Migration of people and scarcity for labour	Increase in migration of Labour force	Increase in migration	Increase in migration	Increase in migration	Increase in migration				
Sensitivity	>75% of the area under rainfed condition	High dependence on rain fed crop	High dependency on agricultural production	High dependence on rain fed crop	High dependence on rain fed crop	High dependence on rain fed crop	High dependence on rain fed crop (Out of 1487 ha, 991.8 ha is purely rainfed)	High dependence on rain fed crop	High dependence on rain fed crop	High dependence on rain fed crop
	More small and marginal farmers– highly vulnerable even to small changes	Poor irrigation management in right side supply channel of Maruthanathi	Lack of market access	Poor irrigation management	Poor irrigation management	Poor irrigation management	Poor irrigation management	Poor irrigation management	Poor irrigation management	Poor irrigation management
	Poor awareness/ access to Govt. schemes	Low soil fertility	High dependence on rain fed crop	Low soil fertility	Low soil fertility	Low soil fertility	Low soil fertility	Low soil fertility	Low soil fertility	Low soil fertility
		Lack of desilting in tanks and channels	Poor irrigation management	Poor awareness on quality of water for domestic use	Poor awareness on quality of water for domestic use	Poor awareness on quality of water for	Poor vegetative cover	Poor awareness on quality of water for domestic use	Poor awareness on quality of water for	Poor awareness on quality of water for

						domestic use			domestic use	domestic use
		Negligence of traditional practices and drought hardy varieties	Low soil fertility	Poor social control on grazing	Poor social control on grazing	Poor social control on grazing	Poor awareness on quality of water for domestic use	Poor institutional mechanism for proper land management	Poor Technical awareness for proper land management	Poor Technical awareness for proper land management
			Poor vegetative cover	Poor awareness/ access to Govt. schemes	Poor awareness/ access to Govt. schemes	Poor awareness/ access to Govt. schemes	Poor social control on grazing	Poor awareness/ access to Govt. schemes	Poor awareness/ access to Govt. schemes	Poor awareness/ access to Govt. schemes
			Poor awareness on quality of water for domestic use				Poor institutional mechanism for proper land management			
							Poor awareness/ access to Govt. schemes			
Local Adaptive Capacity	Earning family members migrate to other districts for alternate employment	Feeding the animal with tree Fodder trees	Knowledge of	Fodder trees with multi-purpose utility conserved	Fodder trees with multi-purpose utility conserved	Fodder trees with multi-purpose utility conserved	Dry Fodder (paddy straw, sorghum straw, groundnut haulm, Black gram stalk) saved for dry season	Selling live stock to generate liquid cash during stress time	Selling live stock to generate liquid cash during stress time	Selling live stock to generate liquid cash during stress time
	Collection of NTFP in the nearby forest areas	Few farmers Switching to low water requiring crops like fodder sorghum	robust crop varieties	Integrated farming system (crop + livestock)	Integrated farming system (crop + livestock)	Integrated farming system (crop + livestock)	Integrated farming system (crop + livestock)			
	Growing goats for sale in the distress period		Livestock as insurance	Sale of small ruminants at needy time	Sale of small ruminants at needy time	Sale of small ruminants at needy time	Sale of Sheep and Goats at needy time			
	Integrated farming system (crop + livestock)		local breeds of livestock	Livelihood support/ Loan waiver from Govt schemes	Livelihood support/ Loan waiver from Govt schemes	Livelihood support/ Loan waiver from Govt schemes	Livelihood support/ Loan waiver from Govt schemes			
	Livelihood support/ Loan waiver from Govt schemes like Puthu Valvu Thittam		Lack of meteorological information	Traditional water bodies with local regulation practices	Traditional water bodies with local regulation practices	Traditional water bodies with local regulation practices	Traditional water bodies with local regulation practices			
			Diverse cropping patterns							
			Integrated farming system (crop + livestock)							
Suggested Adaptation Strategy	Ground water recharge through 1. Field Bunding, Farm Pond, , Well Recharge pits,	Restructuring the right side supply channel of Maruthanathi for efficient irrigation	Efficient irrigation systems (sprinkler, drip irrigation)	Soil mulching practices	Soil mulching practices	Soil mulching practices	Ground water recharge through 1. Field Bunding, Farm Pond, , Well Recharge pits,	Establishing well recharge pit	Establishing well recharge pit	Establishing well recharge pit

	Loose rock bold structures, sunken ponds, water observation trenches						Check dams on drainage line			
	Arresting soil erosion in the sloppy land (26 – 30 % slope) through 1. Water observation trenches, Gabion Check dams, 2. Planting Glyrisidia along the field bunds and in the boundaries of water harvesting structures	Ground water recharge through recharge pits	Summer ploughing and deep tillage to observe more rain water, Tanksilt application to enhance the soil fertility.	Soil water conservation measures-s, like summer ploughing, Tank silt application, Well recharge pits	Soil water conservation measures-s, like summer ploughing, Tank silt application, Well recharge pits	Soil water conservation measures-s, like summer ploughing, Tank silt application, Well recharge pits	Promoting vegetation in the pasture land to provide fodder during drought through 1. Protecting the existing trees with pitcher irrigation /drip irrigation 2. Promotion of tree species planting in the pasture land such as Neem/ Acha/ Subabul/ Velvel/ Glyrecidia/ Kodukkapuli and broadcasting the seeds of grass and leguminous species in the pasture land 3. Planting fodder trees along the fencing area and field bunds	Summer ploughing	Summer ploughing	Summer ploughing
	Promoting vegetation in the pasture land to provide fodder during drought through 1. Promotion of tree species planting in the pasture land such as Neem/ Acha/ Subabul/ Velvel/ Glyrecidia/ Kodukkapuli and broadcasting the seeds of grass and leguminous species in the pasture land	Protecting the existing trees with pot irrigation and mulching tree bottom with coir dust	Promoting Azolla cultivation and Kitchen garden	Rainwater water harvesting	Rainwater water harvesting	Rainwater water harvesting	Fodder and water management for animals through 1. Fodder saving: Silage making 2. Fodder supplementation by Promoting Azolla cultivation 3. Developing common drinking water facilities for livestock digging cattle ponds, trough, tank etc.	Micro irrigation	Micro irrigation	Micro irrigation

	Fodder and water management for animals through 1. Fodder saving: Silage making on demonstration 2. Fodder supplementation by Promoting As olla cultivation	Introducing short duration drought hardy tree crops like Soobabul and tamarind	Ground water recharge through	Application of Organic manures	Application of Organic manures	Application of Organic manures	Capacity building and developing institutional arrangement for :	Creating alternate income source through mushroom cultivation, bee keeping, making furniture from Lantana camera value addition to minor millets.	Creating alternate income source through mushroom cultivation, bee keeping, making furniture from Lantana camera, and Sericulture and value addition to minor millets.	Creating alternate income source through mushroom cultivation, bee keeping, making furniture from Lantana camera, and Sericulture and value addition to minor millets.
	Capacity building and developing institutional arrangement for: 1. Promotion of organic farming to conserve the soil fertility 2. Sharing information on Government schemes and subsidies available	Introducing Cashew and Amla plantation in suitable areas	Recharge pits.	Increasing fodder cultivation	Increasing fodder cultivation	Increasing fodder cultivation	Regulating grazing practices such as Rotational grazing, social fencing, protection of pasture land and benefit sharing	Capacity building programme on above mentioned alternate livelihood opportunities	Capacity building programme on above mentioned alternate livelihood opportunities	Producer Groups for Sericulture farmers
	Increasing availability of seeds and fodder during drought period through 1. Creation of community Fodder Bank and seed bank linking Farmers club and SHGs	Encouraging azolla cultivation	Promotion of Vermi compost unit to enhance the soil fertility	Adopting insurance coverage	Adopting insurance coverage	Adopting insurance coverage	Sharing information on Government schemes and subsidies available	Encouraging Integrated Farming system (Agriculture + Floriculture + Horticulture+ Livestock + Vermicompost)	Encouraging Integrated Farming system	Capacity building programme on above mentioned alternate livelihood opportunities
	Increasing water use efficiency by 1. Promoting micro irrigation (Drip and sprinkler) 2. Mulching with coirpith	Capacity building programme on innovative technologies	Integrated farming system (crop + livestock)	Adopting Reverse osmosis plant for drinking water	Adopting Reverse osmosis plant for drinking water	Adopting Reverse osmosis plant for drinking water	**Increasing availability of seeds and fodder** during drought period through 1.**Creation of community Fodder Bank**			Encouraging Integrated Farming system (Agrl.crop, livestock, Vermicompost)
	Promoting crop insurance & livestock insurance as climate risk transfer mechanism.	Promoting crop insurance& livestock insurance	Sharing information on Government schemes and subsidies available				**Increasing water use efficiency** by Promoting micro irrigation and solar pumping system			

							on demonstrative mode;			
	To create alternate livelihood against climatic risk and off season employment generation: 1. Agro-forestry of multipurpose tree species and horticulture plantation; 2. Developing micro enterprises from vegetable cultivation, dairy and poultry and so on	Creating alternate livelihood options like mushroom cultivation, Value addition of coconut waste, Amla and mango	Increasing availability of seeds and fodder during drought period through Kurangardu development.				**Promoting crop insurance** & livestock insurance as climate risk transfer mechanism.			
	Alternative energy source: Biogas	Promoting Biogas as alternate energy source	Promoting crop insurance & livestock insurance as climate risk transfer mechanism.				To create alternate livelihood against climatic risk and off season employment generation: 1. Agro-forestry of multipurpose tree species and horticulture plantation; 2. Developing micro enterprises from vegetable cultivation, dairy and poultry and so on			
	Practicing climate responsive farming for maximizing input use efficiency: Using weather based Agro-advisory services through Automatic weather station	Introducingweather based Agro-advisory services and Village knowledge centre	To create alternate livelihood against climatic risk and off season employment generation:				Alternative energy source: Biogas			

	(AWS) for farm decision making									
	Financial inclusion and credit facilitation through banking plan	Financial inclusion and credit facilitation through banking plan	Alternative energy source: Biogas ,				Practicing climate responsive farming for maximizing input use efficiency: Using weather based Agro-advisory services through Automatic weather station (AWS) for farm decision making			
			Practicing climate responsive farming for maximizing input use efficiency: Using weather based Agro-advisory services through Automatic weather station (AWS) for farm decision making				Financial inclusion and credit facilitation through banking plan			
Activities proposed		Cultivation of minor millets								
		Azolla cultivation								
		Integrated farming system								
		Kurangad development								
		Summer ploughing								
		Deep tillage								
		Well recharge pits								
		Tank silt/ FYM application								
		Drip irrigation								
		Sprinkler irrigation								
		Fodder development								
V. 2	Excess rainfall	Intermittent dry spell	**Delayed on set of monsoon**	Delayed onset of monsoon	Delayed onset of monsoon	Delayed onset of monsoon	Intermittent dry spell	Excess rainfall/ increase in rainfall intensity	Excess rainfall/ increase in rainfall intensity	Excess rainfall/ increase in rainfall intensity
Direct Impact	Destroy of crop	Less soil moisture and poor crop growth leading to low yield	Incidences of pests / diseases	Low Moisture availability at critical growth stage of the crop	Low Moisture availability at critical growth stage of the crop	Low Moisture availability at critical growth stage of the crop	Moisture availability less	More top soil erosion	More top soil erosion	More top soil erosion
	More top soil		Poor pasture growth	Poor pasture growth	Poor pasture	Poor pasture		Formation of	Formation of	Formation of

	erosion				growth	growth		gullies and ravines in pasture lands and exposure of bed rock surface due to loss of top soil	gullies and ravines in pasture lands and exposure of bed rock surface due to loss of top soil	gullies and ravines in pasture lands and exposure of bed rock surface due to loss of top soil
	Formation of gullies and ravines in pasture lands and exposure of bed rock surface due to loss of top soil		Salinization of soil					Total crop loss due to flooding	Total crop loss due to flooding	Total crop loss due to flooding
	Damage to Standing crop		Increasing competition with weed species for water.					Increase in siltation in water harvesting structures	Increase in siltation in water harvesting structures	Increase in siltation in water harvesting structures
	Breaching of existing water harvesting structures							Increased incidence of pest and diseases	Increased incidence of pest and diseases	Increased incidence of pest and diseases
	Increase in siltation in water harvesting structures									
	Increased incidence of pest and diseases									
Indirect Impact	Reduced Income from crops due to lower productivity	Low income to farm families	Poor seeding	Low income to farm families and low spending power	Low income to farm families and low spending power	Low income to farm families and low spending power	Reduction in crop productivity	Top soil nutrients loss and poor soil fertility	Top soil nutrients loss and poor soil fertility	Top soil nutrients loss and poor soil fertility
	Top soil nutrients loss and poor soil fertility		Poor crop productivity & Crop Failure					Reduced Income from crops due to lower productivity	Reduced Income from crops due to lower productivity	Reduced Income from crops due to lower productivity
	Increased investments for fertilizers and soil nutrients		Late crops: missing market advantage					Increased investments for fertilizers and soil nutrients	Increased investments for fertilizers and soil nutrients	Increased investments for fertilizers and soil nutrients
	Less ground water recharge from water harvesting structures due to silt accumulation							Less ground water recharge from water harvesting structures due to silt accumulation	Less ground water recharge from water harvesting structures due to silt accumulation	Less ground water recharge from water harvesting structures due to silt accumulation
Non-Climatic	Land use changes from	No specific non climatic stress	Health problems	Borrowing from money lenders	Borrowing from money lenders	Borrowing from money lenders		Land use changes from pastures to	Land use changes from	Land use changes from pastures to

Stress	pastures to agriculture lands							agriculture lands	pastures to agriculture lands	agriculture lands
			Forestry conservation activities are affected					Productivity loss	Productivity loss	Productivity loss
								Demand for food grains	Demand for food grains	Demand for food grains
Sensitivity	Runoff interception/ recharge capacity not adequate	Low soil organic matter and poor moisture holding capacity	Poverty	Choice of varieties suitable for the condition are not cultivated	Choice of varieties suitable for the condition are not cultivated	Choice of varieties suitable for the condition are not cultivated	Reduction in crop productivity	Sloppy terrain with soil prone to erosion	Sloppy terrain with soil prone to erosion	Sloppy terrain with soil prone to erosion
			Choice of varieties suitable for the condition are not cultivated	Lack of cultivation of alternative crops	Lack of cultivation of alternative crops	Lack of cultivation of alternative crops		Livestock diseases	Livestock diseases	Livestock diseases
			Lack of cultivation of alternative crops					Loss of interest in Agriculture	Loss of interest in Agriculture	Loss of interest in Agriculture
Local Adaptive Capacity	R&M of field bunds/Farm ponds, checks dams by individual farmers	Irrigation (Open well) at critical period by some farmers	Overuse of pesticides	Traditional late sown varieties (Short duration varieties of Maize)	Traditional late sown varieties (Short duration varieties of Maize)	Traditional late sown varieties (Short duration varieties of Maize)	Irrigation through Bore well and Water tanker at critical period by some farmers	Renovation of existing Water Harvesting Structures by individual farmers	R&M of field bunds/ checks by individual farmers	R&M of field bunds/ checks by individual farmers
		Soil mulching by few farmers	Traditional late sown varieties (Short duration varieties of Maize)					Tree plantation to avoid excess runoff	Tree plantation to avoid excess runoff	Tree plantation to avoid excess runoff
Suggested Adaptation Strategy	Maximizing runoff interception through 1. Creation and maintenance of water harvesting structures by Farmers and VWC 2.Plantation in the slopes and Grass seeding 3. Planting of tree species in the stream banks to protect from damage	Encouraging Micro irrigation systems particularly to coconut, mango, amla and vegetables	Alternate crops (pulses / fodder sorghum	Agronomic interventions to increase the crops productivity	Agronomic interventions to increase the crops productivity	Agronomic interventions to increase the crops productivity	Micro irrigation devices	Maximizing runoff interception contour bunding/ drenching and Plantation in the slopes and Grass seeding	Maximizing runoff interception contour bunding/ drenching and Plantation in the slopes and Grass seeding	Maximizing runoff interception contour bunding/ drenching and Plantation in the slopes and Grass seeding
		Encouraging vegetable cultivation under shade nets to minimize the impact of dry	Agronomic interventions to increase the crops productivity	Short duration varieties suitable for late sowing condition	Short duration varieties suitable for late sowing condition	Short duration varieties suitable for late sowing condition	Using Drought resistant crops	Fodder supplementation by Promoting Azolla cultivation	Fodder supplementation by Promoting Azolla cultivation	Fodder supplementation by Promoting Azolla cultivation

		spells								
			Short duration varieties suitable for late sowing condition	Crop diversification: Growing alternate crops that mature in 60 – 70 days	Crop diversification: Growing alternate crops that mature in 60 – 70 days	Crop diversification: Growing alternate crops that mature in 60 – 70 days	Spraying of Bio Anti-transpirants	Promoting Compost pits and Vermicomposting units for increasing Agricultural productivity and to minimize Inorganic Fertilizers usage.	Promoting Compost pits and Vermicomposting units for increasing Agricultural productivity and to minimize Inorganic Fertilizers usage.	Promoting Compost pits and Vermicomposting units for increasing Agricultural productivity and to minimize Inorganic Fertilizers usage.
								Improving productivity of soil through application of Tank silt.	Improving productivity of soil through application of Tank silt.	Improving productivity of soil through application of Tank silt.
Activities proposed										
V. 3	Intermittent dry spell	Excess rainfall	Intermittent dry spell	Extreme temperature	Extreme temperature	Extreme temperature	Delayed onset of monsoon/ Late setting of season	High wind speed	High wind speed	High wind speed
Direct Impact	Moisture availability less	More top soil erosion in the foot hills of Mankaradu, Peelikaradu	Reduction in crop productivity	Crop Damage and low yield	Crop Damage and low yield	Crop Damage and low yield	Delay in sowing and sometimes no sowing due to fear of late monsoon setting	Affects vegetable crops, Lowers ground water table	Affects vegetable crops, Lowers ground water table	Affects vegetable crops, Lowers ground water table
		Shedding of flowers in mango and cashew, budden shedding in coconut leading to poor yield		Increased Livestock Mortality	Increased Livestock Mortality	Increased Livestock Mortality	Low Moisture availability at critical growth stage of the crop			
		Breaching of existing water harvesting structures					Poor pasture growth			
Indirect Impact	Reduction in crop productivity	Low soil fertility	Moisture availability less	Soil Fertility reduction	Soil Fertility reduction	Soil Fertility reduction	Reduction of net sown area	Agricultural production loss	Agricultural production loss	Agricultural production loss
		Reduced Income to farm families		Low income	Low income	Low income	Shortened LGP			
							Poor flowering and seeding			
							Poor crop productivity & Crop Failure			
Non-Climatic Stress		Land use changes from fallow to agriculture lands	Low income -	More mental stress	More mental stress	More mental stress	Lack of early warning system at local level	High mental stress due to crop loss	High mental stress due to crop loss	High mental stress due to crop loss
Sensitivity	Low income	Sloppy terrain		Lack of temperature	Lack of	Lack of	Choice of	No proper wind	No proper wind	No proper wind

		with soil prone to erosion.		resilient agro techniques	temperature resilient agro techniques	temperature resilient agro techniques	varieties suitable for the condition are not cultivated	shelter belts around agricultural fields	shelter belts around agricultural fields	shelter belts around agricultural fields
		Lack of contour bunding					Lack of cultivation of alternative crops			
							Unscientific management of rain fed crops			
Local Adaptive Capacity	Watering of mango using tanker	Raising stone walls in few places to minimize erosion	Irrigation (Open well) at critical period by some farmers	Avoiding grazing during hot sun	Avoiding grazing during hot sun	Avoiding grazing during hot sun	Traditional late sown varieties.	Crop support using wooden poles	Crop support using wooden poles	Crop support using wooden poles
	Mulching									
Suggested Adaptation Strategy	Planting of drought tolerant mango varieties to withstand extreme temperature	Maximizing runoff interception through loose boulder structures	Micro irrigation devices	Seed hardening	Seed hardening	Seed hardening	**Agronomic interventions to increase the crops productivity 1. Short duration varieties suitable for late sowing condition**	Promoting Wind Barrier trees like casuarinas, silver oak	Promoting Wind Barrier trees like casuarinas, silver oak	Promoting Wind Barrier trees like casuarinas, silver oak
	Micro irrigation	Introducing soil binding grasses like vettiver in sloppy terrains		Soil mulch cover	Soil mulch cover	Soil mulch cover				
		Establishing shelter facilities to live stocks		Inter cropping in	Inter cropping in	Inter cropping in				
				Livestock insurance	Livestock insurance	Livestock insurance				
				Crop insurance	Crop insurance	Crop insurance				
Activities proposed										
V. 4	High wind velocity	Temperature extremes	Temperature extremes	Intermittent dry spell	Intermittent dry spell	Intermittent dry spell	Excess rainfall/ increase in rainfall intensity	Low night temperature and occurrence of dew	Low night temperature and occurrence of dew	Low night temperature and occurrence of dew
Direct Impact	Physical damage to agri crops,	Leaf scorching, flower shedding leading to low and poor quality yield.	Reduced crop yield	Less Moisture availability	Less Moisture availability	Less Moisture availability	More top soil erosion	Affects vegetable crops production, more pest and disease, Reduced flower quality	Affects vegetable crops production, more pest and disease, Reduced flower quality	Affects vegetable crops production, more pest and disease, Reduced flower quality
	withering of mango flowers, breaking of	High incidence of Foot and mouth and other diseases	Loss of income	Late crop establishment	Late crop establishment	Late crop establishment	Formation of gullies and ravines in			

	mango tree branches	in animals					pasture lands and exposure of bed rock surface due to loss of top soil			
				Poor flower establishment	Poor flower establishment	Poor flower establishment	Damage to Standing crop			
							Breaching of existing water harvesting structures			
							Increase in siltation in water harvesting structures			
							Increased incidence of pest and diseases			
Indirect Impact	Reduction of yield	Low income to farmers and more livestock mortality.		Reduction in crop productivity	Reduction in crop productivity	Reduction in crop productivity	Top soil nutrients loss and poor soil fertility	Low income to farm families	Low income to farm families	Low income to farm families
	Loss of income	Low animal productivity					Reduced Income from crops due to lower productivity			
	Indebtedness with moneylenders						Increased investments for fertilizers and soil nutrients			
							Less ground water recharge from water harvesting structures due to silt accumulation			
							Reduced vegetation cover due to soil loss			
Non-Climatic Stress		High mental tension due to loss incurred		Poor quality produces	Poor quality produces	Poor quality produces	Land use changes from pastures to agriculture lands	High mental stress due to crop loss	High mental stress due to crop loss	High mental stress due to crop loss
				Less /poor marketing	Less /poor marketing	Less /poor marketing				
				Poor price	Poor price	Poor price				
Sensitivity		Lack of heat management	High dependency on agricultural	Low income	Low income		Runoff interception/	Lack of innovative	Lack of innovative	Lack of innovative

		technologies	production				recharge capacity not adequate	techniques and knowledge to prevent damage during dew	techniques and knowledge to prevent damage during dew	techniques and knowledge to prevent damage during dew
		Lack of shade net cultivation	Lack of market access	Poor bank repayment	Poor bank repayment	Low income				
				Migration for job	Migration for job	Poor bank repayment				
						Migration for job				
Local Adaptive Capacity	Planting of neem and tamarind, teak around the boundary of mango orchard	Confining animals under thatched roofs and tree shade	Knowledge of robust crop varieties	Irrigation (Open well) at critical period by some farmers	Irrigation (Open well) at critical period by some farmers	Irrigation (Open well) at critical period by some farmers	R&M of field bunds/Farm ponds, checks dams by individual farmers			
			Diverse cropping patterns	Crop spray for avoiding transpiration loss	Crop spray for avoiding transpiration loss	Crop spray for avoiding transpiration loss				
Suggested Adaptation Strategy	Developing wind breaks in the watershed area	Introducing shade net cultivation and micro sprinklers	Crop insurance	Micro irrigation devices	Micro irrigation devices	Micro irrigation devices	Maximizing runoff interception through 1. Creation and maintenance of water harvesting structures by Farmers and VWC 2.Plantation in the slopes and Grass seeding 3. Planting of tree species in the stream banks to protect from damage	Imparting training on recent techniques	Imparting training on recent techniques	Imparting training on recent techniques
		Introducing livestock insurance	Agricultural extensions	Use of Soil mulches	Use of Soil mulches	Use of Soil mulches		Spraying using mineral oil	Spraying using mineral oil	Spraying using mineral oil
			Training on adjusted agricultural practices	Integrated farming system	Integrated farming system	Integrated farming system				
Activities proposed										
V. 5	Hail storm	Delayed onset of monsoon	Heavy wind	High rainfall	High rainfall	High rainfall	Dew	Intermittent dry spell	Intermittent dry spell	Intermittent dry spell
Direct Impact	Physical damages to horticultural plantation	Low Moisture availability at critical growth stage of the crop	Physical damage of crops / Crop loss	Soil erosion	Soil erosion	Soil erosion	Crop Damage	Low soil moisture Reduction in crop productivity and low quality	Low soil moisture Reduction in crop	Low soil moisture Reduction in crop productivity

								produces	productivity and low quality produces	and low quality produces
	Damage to fruits	Poor pasture growth	Reduction of crop yield	Crop damage	Crop damage	Crop damage	Incidence of disease	Low animal productivity	Low animal productivity	Low animal productivity
			Soil erosion	Silting in water harvesting structure	Silting in water harvesting structure	Silting in water harvesting structure				
				Poor recharging in soil	Poor recharging in soil	Poor recharging in soil				
				Damaging of water conservation structures	Damaging of water conservation structures	Damaging of water conservation structures				
				Flower shedding	Flower shedding	Flower shedding				
				Fruit damage	Fruit damage	Fruit damage				
				Livestock diseases	Livestock diseases	Livestock diseases				
Indirect Impact		Poor flowering and seeding	Loss of income	Development of pest and disease	Development of pest and disease	Development of pest and disease		Low income to farmers	Low income to farmers	Low income to farmers
		Poor crop productivity & Crop Failure	Migration	Low income	Low income	Low income				
Non-Climatic Stress	Loss of yield			More cost of cultivation	More cost of cultivation	More cost of cultivation	Poor quality of food grain			
	Reduction of income			-						
Sensitivity		Choice of varieties suitable for the condition are not cultivated	High dependency on agricultural production	Low irrigation management	Low irrigation management	Low irrigation management	Less market price	Lack of soil mulching	Lack of soil mulching	Lack of soil mulching
		Lack of cultivation of alternative crops	Lack of vegetation / trees		-	-				
Local Adaptive Capacity	Dependent on plantation horticulture for livelihood	Left as fallow land	Tree shelters around fields and houses				Spraying of water in the morning	Irrigation (Open well) at critical period by some farmers	Irrigation (Open well) at critical period by some farmers	Irrigation (Open well) at critical period by some farmers
Suggested Adaptation Strategy	Scientific management of plantation	Agronomic interventions to increase the crops productivity	Soil conservation	Improved shelter facilities to live stock	Improved shelter facilities to live stock	Improved shelter facilities to live stock	Irrigation in the evening	Increasing water use efficiency by Promoting Drip irrigation	Increasing water use efficiency by Promoting Drip irrigation	Increasing water use efficiency by Promoting Drip irrigation
	Crop Insurance	Short duration varieties suitable for late sowing condition	Growing shelter Belts / wind breaks: Cashurina	Creating drainage facilities in fields	Creating drainage facilities in fields	Creating drainage facilities in fields	Mulching	Shade net cultivation	Shade net cultivation	Shade net cultivation
		Crop diversification: Growing alternate		Creating water storage structures	Creating water storage structures	Creating water storage structures	Crop insurance			

		crops that mature in 60 – 70 days								
		Intercropping in horticulture farms								
Activities proposed										
V. 6	High temperature coupled with continuous rainfall	High wind speed	Cold wave				High wind			
Direct Impact	Soil moisture evaporation	Damage to crops in particular to horticulture Plants	Crop Damage				Physical damage to standing crop			
		Low yield	Increased Livestock Mortality				Soil erosion			
		Poor quality								
Indirect Impact	Withering of flowers mango plantations	Low income	Soil erosion				Moisture evaporation			
	Loss of mango yield						Increase irrigation time			
	Reduction of income						Reduction of yield			
Non-Climatic Stress		Mental stress due to crop loss in one day	Poor quality of food grain							
Sensitivity		Lack of wind barriers around the farm	Less market price							
		Lack of crop insurance								
Local Adaptive Capacity	Spraying chemicals to minimize the flower withering	Artificial support to trees during heavy wind periods	Traditional methods being used for crop protection				Growing of borders crops in the field around the standing crop			
			Temporary cattle shed being built				Growing trees around field boundaries			
Suggested Adaptation Strategy	Improved resistant varieties of mango	Introducing crop insurance	Livestock insurance				Creation of wind breaks across the wind direction			
	Scientific management of orchards	Establishing wind barriers	Crop insurance							
Activities proposed										

V. 7			Flood				Temperature extremes			
Direct Impact			Soil erosion				Increased soil evaporation			
			Loss of fertile top soils							
Indirect Impact			Loss of agricultural land				more crop water demand			
							Reduction / Loss of yield			
							Fertility loss			
Non-Climatic Stress			Pressure of grazing (goat) and tree cutting							
Sensitivity			Sandy soils/ exposed topsoil due to lack of vegetation							
Local Adaptive Capacity			Small rainwater harvesting structures							
			Field bunds							
Suggested Adaptation Strategy			Farm ponds and stone bunds				Crop Insurance			
							Introduction of tolerant varieties			

Climate Proofing of Watershed Projects in Rajasthan and Tamil Nadu Businees as usual – no fund support sou

Component-wise Cost Details for Watereshed Projects in Rajasthan

Exchange rate 60 Rs/ USD

Sl.No	Description of treatments	Balua Watershed Projects in Udaipur District			
		Total cost	Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB
I	**Improvement in soil water regime**				
A	**Area Treatment-Crop Cultivated Area**				
1	Earthen Field bund	78525	15705	62820	0
2	Waste weir	42009	8402	33607	0
3	Grass seeding				
4	Stone field Bund	552012	110402	441610	0
5	Earthen Gully Plug	0			
6	Stone Gully Plug	263210	52642	210568	0
7	Water Absorption Trench (WAT) - on arable land periphery/ upslope				
8	Farm Pond				
9	Drainage system in crop cultivated area				
	Sub Total – Crop cultivation	**935756**	**187151**	**748605**	**0**
B	**Drainage line treatment**				
1	Sub-surface polyurethane check for recharge	700000	67200	632800	0
2	Earthen Embankment with spillway	1634428	215497	1418931	0
3	Masonry Gabion	66250	8048	58202	0
4	L.D.P.E Sheet lining for seepage control in existing structures	215218	0		215218

5	Masonry Check Dam/ Water Harvesting structure				
6	Earthen Gully Plugs	174592	21901	152691	0
7	Stone Gully Plugs				
8	Recharge pit on upslope side of gully plugs	156000	0	0	156000
9	Open Recharge Pit in drainage line				
10	Loose Stone Check Dam (LSCD)				
	Sub Total Drainage line treatment	**2946488**	**312646**	**2262624**	**371218**
	Total – improvement in soil water regime	**3882244**	**499797**	**3011229**	**371218**
II	**Climate Resilient Farming System and improved livelihood**				
A	**Afforestation & Pasture land development**				
1	Water absorption trench	394680	63149	331531	0
2	Gradonis (bench terracing) - demo	42300	0		42300
3	(Contour) Stone Bund	1857042	321861	1535181	0
4	Continuous/ Staggered contour trench/ V-trench	2517286	428094	2089192	0
5	Refilling of alternate CCTs and tree seeding	54250	0		54250
6	Box trench for regeneration of plants	7360	1214	6146	0
7	(Stone pitched) Thawala/ Crescent Bund for regeneration of plants	38130	0		38130
8	Tree seeding	35420	5291	30128	0
9	Aloe vera Plantation	324302	25503	298798	0
10	Plantation of fuel/fodder trees in SP site/ stone bund	457024	43734	413290	0
11	Plantation for fodder/ fuel wood/ timber	81180	8984	72196	0
12	Grass seeding in pasture + silvi pasture land	271596	27383	244214	0
13	Avenue plantation	120590	4492	116098	0
14	1 cft (0.3x0.3x0.3 m) pitting and tree seeding	105400	0		105400

15	Nursery for Forestry Plants				
16	Gully Plug	816637	142396	674241	0
17	Plantation of fodder trees for gully stabilization	51120			51120
18	Use of Water absorption Material during plantation				
19	Pitcher irrigation (gheda)				
20	Thoor bio-fencing/ barrier	1862	372	1490	0
21	Stone Fencing bund				
22	Creation of Pasture group and fodder bank	50000	0		50000
23	Bund planting/ Tree seeding	0			
	Sub Total – Afforestation & Pasture land development	**7226179**	**1072473**	**5812505**	**341200**
B	**Other Climate resilient farming/ Livelihood Support**				
1	Wadi/ Horti-Plantation				
2	Vegetable cultivation with Trellis	305000	0		305000
3	Kitchen Garden	40000			40000
4	RWHS for Backyard plantation	139980			139980
5	Well recharge				
6	Enhancing water use efficiency by use of micro irrigation/ UG pipes & outlets	100000	0		100000
7	Seed bank				
8	Short duration and low water required variety of maize and wheat promotion of mixed cropping	36000	0		36000
9	Improved Farm Implements and equipments (BBF implement, Zero Tiller; Weeder; Fertigation; Reaper, Thresher etc.)				
10	Best package of practices incl. seed treatment, INM, IPM, organic farming, etc.	100000	0		100000
11	Crop insurance awareness programme	50000			50000

12	Silage making demo				
13	Azolla Cultivation	65000			65000
14	Improved animal husbandry practices including feed management, mineral bricks, silage, AI services of improved desi breed, etc.,	420400	0		420400
15	Community based livestock insurance	90000	0	0	90000
16	Backyard Poultry units	40000	0	0	40000
	Sub Total – Other livelihood	**1386380**	**0**	**0**	**1386380**
C	**Energy Efficient System**				
1	Improved cook stove	32500	8125	24375	0
2	Biogas unit	38000	0	0	38000
3	Solar Light (home lighting)	210000	0		210000
4	Solar Pump	125000	0	0	125000
	Sub Total – Energy Efficient System	**405500**	**8125**	**24375**	**373000**
	Sub Total – Climate Resilient Farming System and improved livelihood	**9018059**	**1080598**	**5836880**	**2100580**
III	**Risk Mitigation**				
1	AWS and agro-advisory	520000	0	0	520000
2	RML subscription (3 years) on crop, weather & market info	150000	0	0	150000
3	Sediment Observation Unit and Data Analysis				
4	Geo- hydrological study and crop water budgeting	150000			150000
	Sub Total Risk Mitigation	**820000**	**0**	**0**	**820000**
IV	**Knowledge management**				
1	Grassland ecology study	60000	0	0	60000
2	Educational kit – Manual of Climate Change Adaptation	100000	0	0	100000

3	Posters and pamphlet on climate change adaptation	25000	0	0	25000
4	Awareness camps				
5	Community sensitisation Programs	50000	0	0	50000
6	Audio Visual Tools – short films	70000	0	0	70000
7	Exposure visits, peer learning	100000			100000
8	Exposure visits for succesful study	15000		15000	
9	Training on NRM/Climate Change	40000	0	40000	0
10	Training for skill upgradation	35000	3500	31500	0
11	Environment day Celebration				
12	Watershed Impact Study				
	Sub Total Knowledge management	**495000**	**3500**	**86500**	**405000**
V	**Other Component (NABARD Supported)**				
1	Women Development and other related activities	189000	6000	183000	0
2	Training & Capacity Building – watershed aspects	0	0	0	0
3	Agriculture Development – watershed component	1810563	934225	876338	0
4	Livestock Development – watershed component	654920	166768	488152	0
5	Community mobilisation -– watershed component	80000		80000	
6	Maintenance Fund – watershed treatment	841000	0	841000	0
7	Unallocated fund – watershed contingencies	397501	0	397501	0
8	Supervision cost for Village Watershed Committee	1325300	0	1325300	0
9	Management Cost for watershed project implementation – Business As Usual	3021400	0	3021400	0
	Sub Total – Other Components	**8319684**	**1106993**	**7212691**	**0**

	Grand Total	**22534987**	**2690888**	**16147300**	**3696798**

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Chainpuria Watershed Projects in Chittorgarh District				Dhuwala Watershed Projects in Bhilwara District			
Total cost	Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB	Total cost	Contribution by Beneficiaries / FES	Fund support by NABARD	Fund support sought from AFB
234880	46976	187904	0	2723357	435738	2287619	0
40303	8061	32242	0		0		
					0		
2784504	688989	2095515	0	334160	53466	280694	0
			0	6585	1053	5532	0
			0		0		
103887	20777	83109	0		0		
114170	22834	91336	0		0		
93780	0	93780			0		
3371524	**787637**	**2583886**	**0**	**3064102**	**490257**	**2573845**	**0**
					0		
				498346	0		498346
				139888	4455	135433	0
					0		0

18200	518	17682	0	427519	9480	418039	0
					0		
137730	22037	115693	0		0		
					0		
75024			75024		0		
				47234	1730	45504	0
230954	**22555**	**133375**	**75024**	**1112987**	**15665**	**598976**	**498346**
3602478	**810192**	**2717261**	**75024**	**4177089**	**505922**	**3172821**	**498346**
					0		
					0		
					0		
1661122	270847	1390274	0	75555	12089	63466	0
					0		
18087	2894	15193	0		0		
					0		
				15570	0		15570
					0		
60885	5390	55495		567300	0		567300
114375	0	114375	0		0		
164016	10198	153820		89640	0		89640
					0		
55500	0	0	55500		0		

					0		
25521	4084	21437	0		0		
					0		
					0		
					0		
86460	0	86460	0		0		
190058	24829	165229	0	169826	0		169826
50000	0	0	50000	50000	0		50000
					0		
2426024	**318242**	**2002283**	**105500**	**967891**	**12089**	**63466**	**892336**
341000			341000		0		
702200	0	0	702200		0		
				20000	0		20000
69990	0	0	69990	139980	0		139980
240000	0	0	240000		0		
240000			240000		0		
				180000	0		180000
					0		
					0		
300000	0	0	300000		0		
50000			50000	50000	0		50000

					0		
35000	0	0	35000	35000	0		35000
					0		
50000			50000	50000	0		50000
60000			60000	60000	0		60000
2088190	**0**	**0**	**2088190**	**534980**	**0**	**0**	**534980**
					0		
				45000	45000	0	0
63000	44100	18900		140000	0		140000
				375000	0		375000
63000	**44100**	**18900**	**0**	**560000**	**45000**	**0**	**515000**
4577214	**362342**	**2021183**	**2193690**	**2062871**	**57089**	**63466**	**1942316**
					0		
150000	0	0	150000	150000	0	0	150000
					0		
150000			150000	150000	0		150000
300000	**0**	**0**	**300000**	**300000**	**0**	**0**	**300000**
0	0	0	0	60000	0		60000
100000		0	100000	100000	0		100000

25000		0	25000	25000	0		25000
				133911	133911	0	0
50000		0	50000	100000	0		100000
100000		0	100000	70000	0		70000
120000		0	120000	100000	0		100000
20000	0	20000	0	30000	30000	0	0
95000	0	95000	0	77000	77000	0	0
16000	0	16000	0		0		0
					0		0
					0		
526000	**0**	**131000**	**395000**	**695911**	**240911**	**0**	**455000**
1013820	247671	766149	0	162128	162128	0	0
					0		
498840	115168	383672	0		0		
1616975	551490	1065485	0	181237	181237	0	0
980684	422136	558548	0	18000	18000	0	0
648344	0	648344		259000	0	259000	0
327783	0	327783			0		0
1093052	0	1093052		259005	0	259005	0
2479700	0	2479700		1035642	1035642	0	0
8659198	**1336465**	**7322733**	**0**	**1915012**	**1397007**	**518005**	**0**

17664890	**2508999**	**12192177**	**2963714**	**9150883**	**2200929**	**3754292**	**3195662**

Jhabla Watershed Projects in Udaipur District				Khad Watershed Projects in Udaipur District				Ma
Total cost	Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB	Total cost	Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB	Total cost
49005	9801	39204	0	22725	4545	18180	0	1546024
				11025	2205	8820	0	254320
6678	613	6066	0					135560
1577013	315403	1261610		693738	125040	568698	0	471785
				219596	43919	175677	0	
1830917	366183	1464734	0	13555	1176	12379	0	
3463613	**692000**	**2771614**	**0**	**960639**	**176885**	**783754**	**0**	**2407689**
				220752			220752	
112170	10604	101566	0					
				215218			215218	

								170641
				604931	39686	565245		62529
								644714
124800			124800	135600			135600	
279470	5744	273726	0					109080
								177258
516440	**16348**	**375292**	**124800**	**1176501**	**39686**	**565245**	**571570**	**1164222**
3980053	**708348**	**3146906**	**124800**	**2137140**	**216571**	**1348999**	**571570**	**3571911**
				42300			42300	132500
				4728241	860117	3868124	0	41700
6052645	968423	5084222		1208830	205989	1002841		2907026
				38750			38750	
				57298	9219	48079	0	46125
177940			177940	43920			43920	12000
59280	7085	52195		63127	9430	53697	0	53340
				357699	28130	329569		
336900	53904	282996		924843	102350	822493		608850
				117532	13007	104525		156500
53560	4320	49240		267189	26938	240251	0	53560
				59764	2226	57538		
60000			60000	79050			79050	27500

75000	12000	63000						
4194874	671180	3523694		1989553	361809	1627744		
				51120			51120	148500
				108349	21670	86679		36625
				205080			205080	
				100000			100000	100000
22260	0	7260	15000					
11032459	**1716912**	**9062607**	**252940**	**10442645**	**1640885**	**8241540**	**560220**	**4324226**
325700			325700					279200
210660			210660	122000			122000	280880
								20000
139980			139980	139980			139980	139980
160000			160000	260000			260000	360000
				25000			25000	
40000			40000	50000			50000	
50000			50000	50000		0	50000	50000

37000	0		37000					
35000	0		35000	50000			50000	65000
265336	0	0	265336	420400			420400	
50000	0		50000	90000		0	90000	50000
				40000			40000	
1313676	**0**	**0**	**1313676**	**1247380**	**0**	**0**	**1247380**	**1245060**
112500	28125	84375	0	32500	6500	26000		180000
				38000			38000	95000
				240000	48000	192000		210000
950000			950000	125000		0	125000	500000
1062500	**28125**	**84375**	**950000**	**435500**	**54500**	**218000**	**163000**	**985000**
13408635	**1745037**	**9146982**	**2516616**	**12125525**	**1695385**	**8459540**	**1970600**	**6554286**
520000	0		520000	520000			520000	
150000	0	0	150000	150000	0	0	150000	150000
150000	0		150000	150000			150000	150000
820000	**0**	**0**	**820000**	**820000**	**0**	**0**	**820000**	**300000**
				46000		46000	0	46000
50000			50000	100000			100000	100000

25000			25000	25000			25000	25000
								154000
50000			50000	50000			50000	50000
50000	0		50000	70000			70000	70000
50000			50000	100000			100000	100000
40000	0	40000	0					
265000	**0**	**40000**	**225000**	**391000**	**0**	**46000**	**345000**	**545000**
778814	130836	647978	0	189000		189000	0	857200
				139000	7000	132000		
423000	169200	253800	0	511052	262658	248394		825500
549000	173600	375400	0	1593061	679543	913518		1084250
1061000	418000	643000	0	401856	7878	393978	0	30000
1289611	0	1289611		978373		978373		727399
527915	0	527915		437953		437953		315100
1759909	0	1759909		1460046		1460046		1050217
3883300	0	3883300		3301000		3301000		2310400
10272549	**891636**	**9380913**	**0**	**9011341**	**957079**	**8054262**	**0**	**7200066**

28746237	**3345021**	**21714801**	**3686416**	**24485006**	**2869035**	**17908801**	**3707170**	**18171263**

lvi Watershed Projects in Dungarpur District			Mandali Watershed Projects in Udaipur District			
Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB	Total cost	Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB
309205	1236819		1353015	270603	1082412	
44880	209440		110550	22110	88440	
12434	123126		219836	21615	198221	
94357	377428		32460	6492	25968	
460876	**1946813**	**0**	**1715861**	**320820**	**1395041**	**0**
			297452	178822	118630	

6583	164058		705125			705125
12506	50023					
128943	515771		998111	181919	816191	0
0	0	109080	108000	0	0	108000
35452	141806					
183484	**871658**	**109080**	**2108688**	**360741**	**934822**	**813125**
644360	**2818471**	**109080**	**3824549**	**681561**	**2329863**	**813125**
0	0	132500				
8340	33360	0	1988500	363157	1625342	
545293	2361733		2028915	370538	1658377	0
7380	38745		375728	68619	307109	
1920	10080	0	389629	71157	318471	0
0	0	53340	29640	3542	26098	
82380	526470	0	444461	44740	399720	0
16400	140100	0				
4320	49240	0	132293	11750	120543	0
			72140	0	0	72140
0	0	27500				

0	0	148500	41175	0	0	41175
			15000	0	0	15000
			40000	0	0	40000
5860	30765		178000	0	0	178000
0	0	100000	100000	0	0	100000
			319332	0	319332	
671893	**3190493**	**461840**	**6154812**	**933505**	**4774992**	**446315**
0	0	279200	400000	0	0	400000
		280880	70220			70220
		20000				
0	0	139980	69990			69990
			160500		0	160500
0	0	360000	160000		0	160000
			20000	0	0	20000
0	0	50000	50000			50000

0	0	65000	35000			35000
			89250		0	89250
0	0	50000	50000			50000
0	**0**	**1245060**	**1104960**	**0**	**0**	**1104960**
72000	108000		15000		0	15000
		95000				
	0	210000	70000		0	70000
	0	500000				
72000	**108000**	**805000**	**85000**	**0**	**0**	**85000**
743893	**3298493**	**2511900**	**7344772**	**933505**	**4774992**	**1636275**
			520000		0	520000
0	0	150000	150000	0	0	150000
			315000			315000
0	0	150000	150000			150000
0	**0**	**300000**	**1135000**	**0**	**0**	**1135000**
0	46000	0	60000	0	0	60000
0	0	100000	100000		0	100000

0	0	25000	25000		0	25000
	154000		50000	20000	30000	0
0	0	50000	100000		0	100000
0	0	70000	70000		0	70000
0	0	100000	100000		0	100000
			136000		136000	
0	**200000**	**345000**	**641000**	**20000**	**166000**	**455000**
81780	775420		200000	0	200000	0
330200	495300	0	1272500	504500	768000	0
283150	801100	0	689000	226400	462600	0
0	30000	0	140000	20000	120000	0
0	727399	0	818000		818000	
0	315100	0	336146		336145	
0	1050217	0	1120700		1120700	
0	2310400	0	2511500		2511500	
695130	**6504936**	**0**	**7087846**	**750900**	**6336945**	**0**

2083383	**12821900**	**3265980**	**20033166**	**2385965**	**13607800**	**4039400**

Nayagaon 1 - Watershed Projects in Jhalawar District				Nayagaon 2 - Watershed Projects in Jhalawar District				Vagda W
Total cost	Contribution by Beneficiaries / ITC-RDT	Fund support by NABARD	Fund support sought from AFB	Total cost	Contributio n by Beneficiarie s / ITC-RDT	Fund support by NABARD	Fund support sought from AFB	Total cost
2455291	1001759	1453532	0	2665056	1257916	1407140	0	0
621722	32022	589700	0	517010	26675	490335		
315755	146495	169260	0	199424	31096	168328	0	
	0				0			2616340
	0				0			
	0				0			
	0				0			
300000	0		300000	150000	0		150000	
	0				0			
3692768	**1180276**	**2212492**	**300000**	**3531490**	**1315687**	**2065803**	**150000**	**2616340**
	0				0			
	0				0			
	0				0			125483
	0				0			

158980	0		158980	238470	0		238470	
	0				0			
197604	8143	189461	0	380240	15249	364991	0	1142968
	0				0			250080
	0				0			
	0				0			552091
356584	**8143**	**189461**	**158980**	**618710**	**15249**	**364991**	**238470**	**2070622**
4049352	**1188419**	**2401953**	**458980**	**4150200**	**1330936**	**2430794**	**388470**	**4686962**
48288	9657	38631	0	237984	47581	190403	0	
	0				0			84600
	0				0			1691625
	0			229006	45802	183204	0	1035282
	0				0			38750
	0				0			225216
	0				0			185083
	0				0			
	0				0			
70000	0		70000	70000	0		70000	304425
	0				0			
2985	0		2985	4179	0		4179	26780
	0				0			
	0				0			105400

	0				0			
	0				0			
34125	0		34125	34125	0		34125	204480
	0				0			
	0				0			
24000	0		24000	24000	0		24000	14200
	0				0			148418
	0				0			50000
68250	0		68250	34125	0		34125	
247648	**9657**	**38631**	**199360**	**633419**	**93383**	**373607**	**166429**	**4114259**
591941	349541	242400	0	760536	449096	311440	0	
	0				0			175550
70000	70000		0	84000	84000			40000
69990	0		69990	69990	0		69990	139980
71694	0		71694	23898	0		23898	
160000	0		160000	80000	0		80000	280000
80000	0		80000	80000	0		80000	
	0				0			50000
250000	0		250000	250000	0		250000	
105000	0		105000	87500	0		87500	40000
50000	0		50000	50000	0		50000	50000

	0				0			
95000	0		95000	95000	0		95000	57500
217000	0		217000	173800	0		173800	82300
50000	0		50000	50000	0		50000	50000
	0				0			60000
1810625	**419541**	**242400**	**1148684**	**1804724**	**533096**	**311440**	**960188**	**1025330**
15000	0		15000	75000	0		75000	60000
32190	0		32190	160950	0		160950	
	0				0			210000
625000	0		625000	625000	0		625000	125000
672190	**0**	**0**	**672190**	**860950**	**0**	**0**	**860950**	**395000**
2730463	**429198**	**281031**	**2020234**	**3299093**	**626479**	**685047**	**1987567**	**5534589**
520000	0		520000		0			
150000	0	0	150000	150000	0	0	150000	150000
0	0	0	0		0			
150000	0		150000	150000	0		150000	150000
820000	**0**	**0**	**820000**	**300000**	**0**	**0**	**300000**	**300000**
60000	0		60000	60000	0		60000	60000
50000	0		50000	100000	0		100000	100000

25000	0		25000	25000	0		25000	25000
	0				0			76000
30000	0		30000	60000	0		60000	50000
70000	0		70000	70000	0		70000	70000
50000	0		50000	100000	0		100000	100000
104000	104000		0	104000	104000			46500
44000	44000		0	44000	44000			170000
30000	30000		0	30000	30000			64000
	0				0			
50000	50000		0	50000	50000			
513000	**228000**	**0**	**285000**	**643000**	**228000**	**0**	**415000**	**761500**
185000	185000	0	0	185000	185000	0	0	325750
	0				0			
596139	596139			616139	616139			269875
138000	138000			138000	138000			574250
126000	126000		0	126000	126000			105000
497754	0	497754		616666	0	616666		792629
156250	0	156250		183498	0	183498		282105
247616	0	247616		307458	0	307458		940380
1072916	1072916			1260020	1260020			2098100
3019675	**2118055**	**901620**	**0**	**3432781**	**2325159**	**1107622**	**0**	**5388089**

11132490	**3963672**	**3584604**	**3584214**	**11825074**	**4510574**	**4223463**	**3091037**	**16671140**

Watershed Projects in Udaipur District			Grand Total			
Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB	**Total cost**	**Beneficiaries contribution**	**Fund support by NABARD**	**Fund support sought from AFB**
			11127878	3352248	7775630	0
			1596939	144355	1452584	0
			877253	212253	665001	0
523268	2093072		9062012	1917417	7144595	0
			226181	44972	181209	0
			2107682	420001	1687681	0
			103887	20777	83109	0
			564170	22834	91336	450000
			93780	0	93780	0
523268	**2093072**	**0**	**25759782**	**6134857**	**19174925**	**450000**
			700000	67200	632800	0
			2650978	394319	1537561	719098
0		125483	443791	23107	295201	125483
			430436	0	0	430436

			1718935	16581	599779	1102575
			842052	74093	767959	0
228593	914374		3501367	584884	2916481	0
0	0	250080	666480	0	0	666480
			571574	5744	273726	292104
110418	441673		776583	147600	628983	0
339011	**1356047**	**375563**	**12302196**	**1313528**	**7652491**	**3336176**
862279	**3449119**	**375563**	**38061978**	**7448385**	**26827416**	**3786176**
			680952	120387	560565	0
0		84600	301700	0	0	301700
270660	1420965		10307108	1824135	8482973	0
165645	869636		17715666	3012720	14702945	0
0		38750	131750	0	0	131750
36035	189181	0	729814	125360	604454	0
29613	155470	0	846702	102691	484021	259990
			256377	25348	162118	68910
			682001	53633	628367	0
51342	253083	0	3844688	383840	2753547	707300
			469587	38391	431196	0
2160	24620	0	1065798	87069	881928	96804
			252494	6718	173636	72140
0		105400	432850	0	0	432850

			75000	12000	63000	0
			7026585	1179469	5847116	0
0		204480	564645	0	0	564645
			15000	0	0	15000
			40000	0	0	40000
2272	11928	0	473496	30174	217322	226000
23747	124671	0	713382	48576	289900	374906
0		50000	500000	0	0	500000
			443967	0	326592	117375
581474	**3049555**	**483230**	**47569562**	**7050512**	**36609680**	**3909370**
			2698377	798637	553840	1345900
0		175550	1866510	0	0	1866510
		40000	274000	154000	0	120000
0	0	139980	1119840	0	0	1119840
			496092	0	0	496092
0		280000	1800000	0	0	1800000
			340000	0	0	340000
0		50000	111000	0	0	111000
			500000	0	0	500000
0		40000	742500	0	0	742500
0	0	50000	500000	0	0	500000

			37000	0	0	37000
		57500	567500	0	0	567500
0		82300	1668486	0	0	1668486
0	0	50000	580000	0	0	580000
0	0	60000	260000	0	0	260000
0	**0**	**1025330**	**13561305**	**952637**	**553840**	**12054828**
0	0	60000	522500	114750	242750	165000
			409140	45000	0	364140
0		210000	1143000	92100	210900	840000
0	0	125000	3450000	0	0	3450000
0	**0**	**395000**	**5524640**	**251850**	**453650**	**4819140**
581474	**3049555**	**1903560**	**66655507**	**8254999**	**37617170**	**20783338**
			2600000	0	0	2600000
0	0	150000	1500000	0	0	1500000
			315000	0	0	315000
		150000	1500000	0	0	1500000
0	**0**	**300000**	**5915000**	**0**	**0**	**5915000**
0	0	60000	452000	0	92000	360000
0	0	100000	900000	0	0	900000

0	0	25000	250000	0	0	250000
	76000		413911	153911	260000	0
0	0	50000	590000	0	0	590000
0	0	70000	710000	0	0	710000
0	0	100000	920000	0	0	920000
	46500		319500	238000	81500	0
		170000	606000	165000	271000	170000
	64000		175000	63500	111500	0
			40000	0	40000	0
			100000	100000	0	0
0	**186500**	**575000**	**5476411**	**720411**	**856000**	**3900000**
30375	295375	0	4085712	1028790	3056922	0
			139000	7000	132000	0
107950	161925	0	6823608	3636179	3187429	0
222140	352110	0	7218693	2760328	4458365	0
0	105000	0	3068540	1138014	1930526	0
	792629		7468776	0	7468776	0
	282105		2964251	0	2964250	0
	940380		9563683	0	9563683	0
	2098100		22973978	3368578	19605400	0
360465	**5027624**	**0**	**64306241**	**11938889**	**52367351**	**0**

1804218	**11712798**	**3154123**	**180415136**	**28362684**	**117667937**	**34384514**

Annexure - III (A)

Component-wise Cost Details for Watereshed Projects in Rajasthan

Sl.No	Description of treatments	Grand Total			
		Total cost	**Beneficiaries contribution**	**Fund support by NABARD**	**Fund support sought from AFB**
I	**Improvement in soil water regime**				
A	**Area Treatment-Crop Cultivated Area**				
1	Earthen Field bund	185465	55871	129594	0
2	Waste weir	26616	2406	24210	0
3	Grass seeding	14621	3538	11083	0
4	Stone field Bund	151034	31957	119077	0
5	Earthen Gully Plug	3770	750	3020	0
6	Stone Gully Plug	35128	7000	28128	0
7	Water Absorption Trench (WAT) - on arable land periphery/ upslope	1731	346	1385	0
8	Farm Pond	9403	381	1522	7500
9	Drainage system in crop cultivated area	1563	0	1563	0
	Sub Total – Crop cultivation	**429330**	**102248**	**319582**	**7500**
B	**Drainage line treatment**				
1	Sub-surface polyurethane check for recharge	11667	1120	10547	0
2	Earthen Embankment with spillway	44183	6572	25626	11985
3	Masonry Gabion	7397	385	4920	2091
4	L.D.P.E Sheet lining for seepage control in existing structures	7174	0	0	7174
5	Masonry Check Dam/ Water Harvesting structure	28649	276	9996	18376
6	Earthen Gully Plugs	14034	1235	12799	0
7	Stone Gully Plugs	58356	9748	48608	0
8	Recharge pit on upslope side of gully plugs	11108	0	0	11108
9	Open Recharge Pit in drainage line	9526	96	4562	4868
10	Loose Stone Check Dam (LSCD)	12943	2460	10483	0
	Sub Total Drainage line treatment	**205037**	**21892**	**127542**	**55603**
	Total – improvement in soil water regime	**634366**	**124140**	**447124**	**63103**
II	**Climate Resilient Farming System and improved livelihood**				
A	**Afforestation & Pasture land development**				
1	Water absorption trench	11349	2006	9343	0
2	Gradonis (bench terracing) - demo	5028	0	0	5028
3	(Contour) Stone Bund	171785	30402	141383	0
4	Continuous/ Staggered contour trench/ V-trench	295261	50212	245049	0
5	Refilling of alternate CCTs and tree seeding	2196	0	0	2196
6	Box trench for regeneration of plants	12164	2089	10074	0
7	(Stone pitched) Thawala/ Crescent Bund for regeneration of plants	14112	1712	8067	4333
8	Tree seeding	4273	422	2702	1149

9	Aloe vera Plantation	11367	894	10473	0
10	Plantation of fuel/fodder trees in SP site/ stone bund	64078	6397	45892	11788
11	Plantation for fodder/ fuel wood/ timber	7826	640	7187	0
12	Grass seeding in pasture + silvi pasture land	17763	1451	14699	1613
13	Avenue plantation	4208	112	2894	1202
14	1 cft (0.3x0.3x0.3 m) pitting and tree seeding	7214	0	0	7214
15	Nursery for Forestry Plants	1250	200	1050	0
16	Gully Plug	117110	19658	97452	0
17	Plantation of fodder trees for gully stabilization	9411	0	0	9411
18	Use of Water absorption Material during plantation	250	0	0	250
19	Pitcher irrigation (gheda)	667	0	0	667
20	Thoor bio-fencing/ barrier	7892	503	3622	3767
21	Stone Fencing bund	11890	810	4832	6248
22	Creation of Pasture group and fodder bank	8333	0	0	8333
23	Bund planting/ Tree seeding	7399	0	5443	1956
	Sub Total – Afforestation & Pasture land development	**792826**	**117509**	**610161**	**65156**
B	**Other Climate resilient farming/ Livelihood Support**				
1	Wadi/ Horti-Plantation	44973	13311	9231	22432
2	Vegetable cultivation with Trellis	31109	0	0	31109
3	Kitchen Garden	4567	2567	0	2000
4	RWHS for Backyard plantation	18664	0	0	18664
5	Well recharge	8268	0	0	8268
6	Enhancing water use efficiency by use of micro irrigation/ UG pipes & outlets	30000	0	0	30000
7	Seed bank	5667	0	0	5667
8	Short duration and low water required variety of maize and wheat promotion of mixed cropping	1850	0	0	1850
9	Improved Farm Implements and equipments (BBF implement, Zero Tiller; Weeder; Fertigation; Reaper, Thresher etc.)	8333	0	0	8333
10	Best package of practices incl. seed treatment, INM, IPM, organic farming, etc.	12375	0	0	12375
11	Crop insurance awareness programme	8333	0	0	8333
12	Silage making demo	617	0	0	617
13	Azolla Cultivation	9458	0	0	9458
14	Improved animal husbandry practices including feed management, mineral bricks, silage, AI services of improved desi breed, etc.,	27808	0	0	27808
15	Community based livestock insurance	9667	0	0	9667
16	Backyard Poultry units	4333	0	0	4333
	Sub Total – Other livelihood	**226022**	**15877**	**9231**	**200914**
C	**Energy Efficient System**				
1	Improved cook stove	8708	1913	4046	2750
2	Biogas unit	6819	750	0	6069
3	Solar Light (home lighting)	19050	1535	3515	14000
4	Solar Pump	57500	0	0	57500

	Sub Total – Energy Efficient System	**92077**	**4198**	**7561**	**80319**
	Sub Total – Climate Resilient Farming System and improved livelihood	**1110925**	**137583**	**626953**	**346389**
III	**Risk Mitigation**				
1	AWS and agro-advisory	43333	0	0	43333
2	RML subscription (3 years) on crop, weather & market info	25000	0	0	25000
3	Sediment Observation Unit and Data Analysis	5250	0	0	5250
4	Geo- hydrological study and crop water budgeting	25000	0	0	25000
	Sub Total Risk Mitigation	**98583**	**0**	**0**	**98583**
IV	**Knowledge management**				
1	Grassland ecology study	7533	0	1533	6000
2	Educational kit – Manual of Climate Change Adaptation	15000	0	0	15000
3	Posters and pamphlet on climate change adaptation	4167	0	0	4167
4	Awareness camps	6899	2565	4333	0
5	Community sensitisation Programs	9833	0	0	9833
6	Audio Visual Tools – short films	11833	0	0	11833
7	Exposure visits, peer learning	15333	0	0	15333
8	Exposure visits for succesful study	5325	3967	1358	0
9	Training on NRM/Climate Change	10100	2750	4517	2833
10	Training for skill upgradation	2917	1058	1858	0
11	Environment day Celebration	667	0	667	0
12	Watershed Impact Study	1667	1667	0	0
	Sub Total Knowledge management	**91274**	**12007**	**14267**	**65000**
V	**Other Component (NABARD Supported)**				
1	Women Development and other related activities	68095	17147	50949	0
2	Training & Capacity Building – watershed aspects	2317	117	2200	0
3	Agriculture Development – watershed component	113727	60603	53124	0
4	Livestock Development – watershed component	120312	46005	74306	0
5	Community mobilisation -– watershed component	51142	18967	32175	0
6	Maintenance Fund – watershed treatment	124480	0	124480	0
7	Unallocated fund – watershed contingencies	49404	0	49404	0
8	Supervision cost for Village Watershed Committee	159395	0	159395	0
9	Management Cost for watershed project implementation – Business As Usual	382900	56143	326757	0
	Sub Total – Other Components	**1071771**	**198981**	**872789**	**0**
	Grand Total	**3006919**	**472711**	**1961132**	**573075**

Sl.No	Description of treatments	Anjukulipatty	
		Total cost	Beneficiaries contribution
I	**Improvement in the soil water regime**		
A	**Area Treatment**		
1	Field Bund	5913940	946230
2	Farm Pond with outlet	135995	19887
3	WAT	360880	57741
4	CCT	0	0
5	Stone Gully Plugs	0	0
6	Field Bund Pipe outlet /Stone outlet	144560	2669
7	Stone wall / Stone Bund	0	0
8	Silvipasture	0	0
9	Agro-Forestry System	1474188	112013
10	Agro – Horticulture /Dry land Horticulture	840490	2709
11	Summer Ploughing /Disc Ploughing	525000	0
12	Catch Pit	205000	0
13	Well Recharge Pit	456500	0
14	Percolation tank	0	0
15	Sunken Pond with outlet	89507	13489
16	Deep Tillage	43750	0
	Sub Total Area Treatment	**10189810**	**1154738**
B	**Drainage Line Treatment**		
1	Loose Rock Check Dam	139840	7154
2	Gabion Check Dam/Check dam	304032	17716
3	Loose boulder structure	0	0
4	Check weir/ Retaining Wall	0	0

Sl.No	Description of treatments	Anjukulipatty	
		Total cost	Beneficiaries contribution
5	Gully Plugs	0	0
6	Bush Clearance	0	0
7	Renovation of WHS	0	0
8	Earthwork -Oorani	0	0
9	Channel Clearance	0	0
10	Channel Formation	0	0
	Sub Total- Drainage Line Treatment	**443872**	**24870**
	Total – improvement in soil – water regime	**10633682**	**1179608**
II	**Climate Resilient Farming System and improved livelihood**		
A	**Afforestation and Pasture Land Development**		
1	Fodder Development /Shaff Cutter	157500	2400
2	Grass Seeding (Ha)	0	0
3	Korangad Development	0	0
4	Nursary for Forestry specis	0	0
5	Green coverage (Gliricidia sepium)/manure	128000	0
6	Azolla Development	40000	0
12	Agro Forestry in channel/Castor Seeding	0	0
	Sub Total- Afforestation and Pasture Land Development	**325500**	**2400**
B	**Other Climate Resilient Farming/ Livelihood Support**		
1	Vermi compost /Pit	37500	0
2	Drip Irrigation Demonstration	0	0
3	Micro Sprinkler Demonstration	240000	0
4	Integrated Farming System	228000	0
5	Tank Silt Application and Soil Test	0	0

Sl.No	Description of treatments	Anjukulipatty	
		Total cost	Beneficiaries contribution
6	Demo Plot /Preparation for minor millet cultivation	0	0
7	Establishment of community Seed bank for mionor millet	0	0
8	Herbal Garden	0	0
9	Cattle Tank /Trevis Inatallation	0	0
10	Organic Farming System Promotion	0	0
11	Backyard Poultry Unit	0	0
12	Kitchen Garden	189000	0
13	Mushroom Cultivation	50000	0
14	Pitcher Irrigation	0	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**744500**	**0**
C	**Energy Efficinet Sysetm**		
1	Biogas	0	0
2	Improved Chullha	0	0
3	Solar water Pump	0	0
	Sub Total – Energy Efficient System	**0**	**0**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**1070000**	**2400**
III	**Risk Mitigation**		
1	Installation of Automatic Weather Station	520000	0
2	RML subscription (3 years) on crop, weather & market info	150000	0
3	Instrumentation, e.g. Run-off measurement, etc.	80000	0
4	Geo- hydrological study and crop water budgeting	150000	0

Sl.No	Description of treatments	Anjukulipatty	
		Total cost	Beneficiaries contribution
	Sub Total Risk Mitigation	**900000**	**0**
IV	**Knowledge management**		
1	Posters and pamphlet on climate change adaptation	25000	0
2	Educational kit – Manual of Climate Change Adaptation	0	0
3	Awareness and Mobilization / Capacity Building Programs	50000	0
4	Audio Visual Tools – short films	85000	0
5	Exposure visits, peer learning	150000	0
6	IEC Activities In the Project area	100000	0
7	Vetrinary camp / Silage Making /Para extention workers	0	0
8	Income Generation Skill Training	0	0
9	Information Board	0	0
10	Village Knowledge centre	0	0
	Sub Total Knowledge management	**410000**	**0**
V	**Other Component (NABARD Supported)**		
1	Productivity Enhancement measures under - watershed component	699000	0
2	Livelihood support for Landless and women - watershed component	1048000	0
3	Training and demonstration – watershed component	350000	0
4	Project management – watershed component	2382890	0
5	Maintenance fund for watershed treatment – business as usual Scenario	744250	0

Sl.No	Description of treatments	Anjukulipatty	
		Total cost	Beneficiaries contribution
6	Supervision Cost	591004	0
	Sub Total – Other Components (NABARD supported)	**5815144**	**0**
	Grand Total	**18828826**	**1182008**

Sl.No	Description of treatments	Watershed in Di
		Fund support by NABARD
I	**Improvement in the soil water regime**	
A	**Area Treatment**	
1	Field Bund	4967710
2	Farm Pond with outlet	116108
3	WAT	303139
4	CCT	0
5	Stone Gully Plugs	0
6	Field Bund Pipe outlet /Stone outlet	141891
7	Stone wall / Stone Bund	0
8	Silvipasture	0
9	Agro-Forestry System	1362175
10	Agro – Horticulture /Dry land Horticulture	837781
11	Summer Ploughing /Disc Ploughing	0
12	Catch Pit	0
13	Well Recharge Pit	0
14	Percolation tank	0
15	Sunken Pond with outlet	76018
16	Deep Tillage	0
	Sub Total Area Treatment	**7804822**
B	**Drainage Line Treatment**	
1	Loose Rock Check Dam	132686
2	Gabion Check Dam/Check dam	286316
3	Loose boulder structure	0
4	Check weir/ Retaining Wall	0

Sl.No	Description of treatments	Watershed in Di
		Fund support by NABARD
5	Gully Plugs	0
6	Bush Clearance	0
7	Renovation of WHS	0
8	Earthwork -Oorani	0
9	Channel Clearance	0
10	Channel Formation	0
	Sub Total- Drainage Line Treatment	**419002**
	Total – improvement in soil – water regime	**8223824**
II	**Climate Resilient Farming System and improved livelihood**	
A	**Afforestation and Pasture Land Development**	
1	Fodder Development /Shaff Cutter	42600
2	Grass Seeding (Ha)	0
3	Korangad Development	0
4	Nursary for Forestry specis	0
5	Green coverage (Gliricidia sepium)/manure	128000
6	Azolla Development	0
12	Agro Forestry in channel/Castor Seeding	0
	Sub Total- Afforestation and Pasture Land Development	**170600**
B	**Other Climate Resilient Farming/ Livelihood Support**	
1	Vermi compost /Pit	0
2	Drip Irrigation Demonstration	0
3	Micro Sprinkler Demonstration	0
4	Integrated Farming System	0
5	Tank Silt Application and Soil Test	0

Sl.No	Description of treatments	Watershed in Di
		Fund support by NABARD
6	Demo Plot /Preparation for minor millet cultivation	0
7	Establishment of community Seed bank for mionor millet	0
8	Herbal Garden	0
9	Cattle Tank /Trevis Inatallation	0
10	Organic Farming System Promotion	0
11	Backyard Poultry Unit	0
12	Kitchen Garden	0
13	Mushroom Cultivation	0
14	Pitcher Irrigation	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**0**
C	**Energy Efficinet Sysetm**	
1	Biogas	0
2	Improved Chullha	0
3	Solar water Pump	0
	Sub Total – Energy Efficient System	**0**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**170600**
III	**Risk Mitigation**	
1	Installation of Automatic Weather Station	0
2	RML subscription (3 years) on crop, weather & market info	0
3	Instrumentation, e.g. Run-off measurement, etc.	0
4	Geo- hydrological study and crop water budgeting	0

Sl.No	Description of treatments	Watershed in Di
		Fund support by NABARD
	Sub Total Risk Mitigation	**0**
IV	**Knowledge management**	
1	Posters and pamphlet on climate change adaptation	0
2	Educational kit – Manual of Climate Change Adaptation	0
3	Awareness and Mobilization / Capacity Building Programs	0
4	Audio Visual Tools – short films	0
5	Exposure visits, peer learning	0
6	IEC Activities In the Project area	0
7	Vetrinary camp / Silage Making /Para extention workers	0
8	Income Generation Skill Training	0
9	Information Board	0
10	Village Knowledge centre	0
	Sub Total Knowledge management	**0**
V	**Other Component (NABARD Supported)**	
1	Productivity Enhancement measures under - watershed component	699000
2	Livelihood support for Landless and women - watershed component	1048000
3	Training and demonstration – watershed component	350000
4	Project management – watershed component	2382890
5	Maintenance fund for watershed treatment – business as usual Scenario	744250

Sl.No	Description of treatments	Watershed in Di
		Fund support by NABARD
6	Supervision Cost	591004
	Sub Total – Other Components (NABARD supported)	**5815144**
	Grand Total	**14209568**

Sl.No	Description of treatments	ndigul District
		Fund support sought from AFB
I	**Improvement in the soil water regime**	
A	**Area Treatment**	
1	Field Bund	0
2	Farm Pond with outlet	0
3	WAT	0
4	CCT	0
5	Stone Gully Plugs	0
6	Field Bund Pipe outlet /Stone outlet	0
7	Stone wall / Stone Bund	0
8	Silvipasture	0
9	Agro-Forestry System	0
10	Agro – Horticulture /Dry land Horticulture	0
11	Summer Ploughing /Disc Ploughing	525000
12	Catch Pit	205000
13	Well Recharge Pit	456500
14	Percolation tank	0
15	Sunken Pond with outlet	0
16	Deep Tillage	43750
	Sub Total Area Treatment	**1230250**
B	**Drainage Line Treatment**	
1	Loose Rock Check Dam	0
2	Gabion Check Dam/Check dam	0
3	Loose boulder structure	0
4	Check weir/ Retaining Wall	0

Sl.No	Description of treatments	ndigul District
		Fund support sought from AFB
5	Gully Plugs	0
6	Bush Clearance	0
7	Renovation of WHS	0
8	Earthwork -Oorani	0
9	Channel Clearance	0
10	Channel Formation	0
	Sub Total- Drainage Line Treatment	**0**
	Total – improvement in soil – water regime	**1230250**
II	**Climate Resilient Farming System and improved livelihood**	
A	**Afforestation and Pasture Land Development**	
1	Fodder Development /Shaff Cutter	112500
2	Grass Seeding (Ha)	
3	Korangad Development	
4	Nursary for Forestry specis	0
5	Green coverage (Gliricidia sepium)/manure	0
6	Azolla Development	40000
12	Agro Forestry in channel/Castor Seeding	
	Sub Total- Afforestation and Pasture Land Development	**152500**
B	**Other Climate Resilient Farming/ Livelihood Support**	
1	Vermi compost /Pit	37500
2	Drip Irrigation Demonstration	
3	Micro Sprinkler Demonstration	240000
4	Integrated Farming System	228000
5	Tank Silt Application and Soil Test	0

Sl.No	Description of treatments	ndigul District
		Fund support sought from AFB
6	Demo Plot /Preparation for minor millet cultivation	0
7	Establishment of community Seed bank for mionor millet	0
8	Herbal Garden	0
9	Cattle Tank /Trevis Inatallation	0
10	Organic Farming System Promotion	0
11	Backyard Poultry Unit	0
12	Kitchen Garden	189000
13	Mushroom Cultivation	50000
14	Pitcher Irrigation	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**744500**
C	**Energy Efficinet Sysetm**	
1	Biogas	
2	Improved Chullha	0
3	Solar water Pump	0
	Sub Total – Energy Efficient System	**0**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**897000**
III	**Risk Mitigation**	
1	Installation of Automatic Weather Station	520000
2	RML subscription (3 years) on crop, weather & market info	150000
3	Instrumentation, e.g. Run-off measurement, etc.	80000
4	Geo- hydrological study and crop water budgeting	150000

Sl.No	Description of treatments	ndigul District
		Fund support sought from AFB
	Sub Total Risk Mitigation	**900000**
IV	**Knowledge management**	
1	Posters and pamphlet on climate change adaptation	25000
2	Educational kit – Manual of Climate Change Adaptation	
3	Awareness and Mobilization / Capacity Building Programs	50000
4	Audio Visual Tools – short films	85000
5	Exposure visits, peer learning	150000
6	IEC Activities In the Project area	100000
7	Vetrinary camp / Silage Making /Para extention workers	0
8	Income Generation Skill Training	0
9	Information Board	0
10	Village Knowledge centre	0
	Sub Total Knowledge management	**410000**
V	**Other Component (NABARD Supported)**	
1	Productivity Enhancement measures under - watershed component	0
2	Livelihood support for Landless and women - watershed component	0
3	Training and demonstration – watershed component	0
4	Project management – watershed component	0
5	Maintenance fund for watershed treatment – business as usual Scenario	0

Sl.No	Description of treatments	ndigul District
		Fund support sought from AFB
6	Supervision Cost	0
	Sub Total – Other Components (NABARD supported)	**0**
	Grand Total	**3437250**

Vannikonendal
Salivaram
Thally Kothanur
Bettamugilalam
Chinnapoolampatti
Peikulam
Chithalai
Sriramapuram- Malvarpatty
Ayyampalayam

Sl.No	Description of treatments	Vannikonendal -kurukkalpatti W	
		Total cost	Beneficiaries contribution
I	**Improvement in the soil water regime**		
A	**Area Treatment**		
1	Field Bund	3266359	522617
2	Farm Pond with outlet	654331	96762
3	WAT	0	0
4	CCT	0	0
5	Stone Gully Plugs	25680	1171
6	Field Bund Pipe outlet /Stone outlet	3972	182
7	Stone wall / Stone Bund	65000	6800
8	Silvipasture	186250	6400
9	Agro-Forestry System	438015	33387
10	Agro – Horticulture /Dry land Horticulture	4531560	240554
11	Summer Ploughing /Disc Ploughing	952000	0
12	Catch Pit	100352	3200
13	Well Recharge Pit	450000	0
14	Percolation tank	0	0
15	Sunken Pond with outlet	0	0
16	Deep Tillage	17500	0
	Sub Total Area Treatment	**10691019**	**911073**
B	**Drainage Line Treatment**		
1	Loose Rock Check Dam	11250	792
2	Gabion Check Dam/Check dam	74154	0
3	Loose boulder structure	22800	2394
4	Check weir/ Retaining Wall	459322	0

Sl.No	Description of treatments	Vannikonendal -kurukkalpatti W	
		Total cost	Beneficiaries contribution
5	Gully Plugs	0	0
6	Bush Clearance	506000	0
7	Renovation of WHS	0	0
8	Earthwork -Oorani	0	0
9	Channel Clearance	0	0
10	Channel Formation	0	0
	Sub Total- Drainage Line Treatment	**1073526**	**3186**
	Total – improvement in soil – water regime	**11764545**	**914258**
II	**Climate Resilient Farming System and improved livelihood**		
A	**Afforestation and Pasture Land Development**		
1	Fodder Development /Shaff Cutter	252000	0
2	Grass Seeding (Ha)	18000	576
3	Korangad Development		0
4	Nursary for Forestry specis	0	0
5	Green coverage (Gliricidia sepium)/manure	0	0
6	Azolla Development	45000	0
12	Agro Forestry in channel/Castor Seeding	0	0
	Sub Total- Afforestation and Pasture Land Development	**315000**	**576**
B	**Other Climate Resilient Farming/ Livelihood Support**		
1	Vermi compost /Pit	90000	0
2	Drip Irrigation Demonstration	70000	0
3	Micro Sprinkler Demonstration	50000	0
4	Integrated Farming System	228000	0
5	Tank Silt Application and Soil Test	600000	0

Sl.No	Description of treatments	Vannikonendal -kurukkalpatti W	
		Total cost	Beneficiaries contribution
6	Demo Plot /Preparation for minor millet cultivation	60000	0
7	Establishment of community Seed bank for mionor millet	15000	0
8	Herbal Garden	0	0
9	Cattle Tank /Trevis Inatallation	0	0
10	Organic Farming System Promotion	0	0
11	Backyard Poultry Unit	0	0
12	Kitchen Garden	75000	0
13	Mushroom Cultivation		0
14	Pitcher Irrigation	0	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**1188000**	**0**
C	**Energy Efficinet Sysetm**		
1	Biogas	44000	0
2	Improved Chullha	0	0
3	Solar water Pump	125000	0
	Sub Total – Energy Efficient System	**169000**	**0**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**1672000**	**576**
III	**Risk Mitigation**		
1	Installation of Automatic Weather Station	520000	0
2	RML subscription (3 years) on crop, weather & market info	150000	0
3	Instrumentation, e.g. Run-off measurement, etc.		
4	Geo- hydrological study and crop water budgeting	150000	0

Sl.No	Description of treatments	Vannikonendal -kurukkalpatti W	
		Total cost	Beneficiaries contribution
	Sub Total Risk Mitigation	**820000**	**0**
IV	**Knowledge management**		
1	Posters and pamphlet on climate change adaptation	25000	0
2	Educational kit – Manual of Climate Change Adaptation	100000	0
3	Awareness and Mobilization / Capacity Building Programs	80000	0
4	Audio Visual Tools – short films	70000	0
5	Exposure visits, peer learning	100000	0
6	IEC Activities In the Project area	20000	0
7	Vetrinary camp / Silage Making /Para extention workers	60000	0
8	Income Generation Skill Training	50000	0
9	Information Board		0
10	Village Knowledge centre	100000	0
	Sub Total Knowledge management	**605000**	**0**
V	**Other Component (NABARD Supported)**		
1	Productivity Enhancement measures under - watershed component	786750	0
2	Livelihood support for Landless and women - watershed component	1190000	0
3	Training and demonstration – watershed component	395000	0
4	Project management – watershed component	2345250	0
5	Maintenance fund for watershed treatment – business as usual Scenario	605740	0

Sl.No	Description of treatments	Vannikonendal -kurukkalpatti W	
		Total cost	Beneficiaries contribution
6	Supervision Cost	457401	0
	Sub Total – Other Components (NABARD supported)	**5780141**	**0**
	Grand Total	**20641686**	**914834**

20641686	914834
19184331	1151923
16964702	1014226
17941349	2611837
8052718	435227
7180296	426797
11895127	772727
17733241	1039486
19766995	1143164

Sl.No	Description of treatments	Watershed in Tirunelveli District	
		Fund support by NABARD	Fund support sought from AFB
I	**Improvement in the soil water regime**		
A	**Area Treatment**		
1	Field Bund	2743742	0
2	Farm Pond with outlet	557569	0
3	WAT	0	0
4	CCT	0	0
5	Stone Gully Plugs	24509	0
6	Field Bund Pipe outlet /Stone outlet	3790	0
7	Stone wall / Stone Bund	58200	0
8	Silvipasture	179850	0
9	Agro-Forestry System	404628	0
10	Agro – Horticulture /Dry land Horticulture	4291006	0
11	Summer Ploughing /Disc Ploughing	252000	700000
12	Catch Pit	16800	80352
13	Well Recharge Pit	0	450000
14	Percolation tank	0	0
15	Sunken Pond with outlet	0	0
16	Deep Tillage	0	17500
	Sub Total Area Treatment	**8532094**	**1247852**
B	**Drainage Line Treatment**		
1	Loose Rock Check Dam	10458	0
2	Gabion Check Dam/Check dam	74154	0
3	Loose boulder structure	20406	0
4	Check weir/ Retaining Wall	459322	0

Sl.No	Description of treatments	Watershed in Tirunelveli District	
		Fund support by NABARD	Fund support sought from AFB
5	Gully Plugs	0	0
6	Bush Clearance	506000	0
7	Renovation of WHS	0	0
8	Earthwork -Oorani	0	0
9	Channel Clearance	0	0
10	Channel Formation	0	0
	Sub Total- Drainage Line Treatment	**1070340**	**0**
	Total – improvement in soil – water regime	**9602435**	**1247852**
II	**Climate Resilient Farming System and improved livelihood**		
A	**Afforestation and Pasture Land Development**		
1	Fodder Development /Shaff Cutter		252000
2	Grass Seeding (Ha)	17424	
3	Korangad Development	0	0
4	Nursary for Forestry specis	0	0
5	Green coverage (Gliricidia sepium)/manure	0	
6	Azolla Development	0	45000
12	Agro Forestry in channel/Castor Seeding	0	0
	Sub Total- Afforestation and Pasture Land Development	**17424**	**297000**
B	**Other Climate Resilient Farming/ Livelihood Support**		
1	Vermi compost /Pit	0	90000
2	Drip Irrigation Demonstration	0	70000
3	Micro Sprinkler Demonstration	0	50000
4	Integrated Farming System	0	228000
5	Tank Silt Application and Soil Test	0	600000

Sl.No	Description of treatments	Watershed in Tirunelveli District	
		Fund support by NABARD	Fund support sought from AFB
6	Demo Plot /Preparation for minor millet cultivation	0	60000
7	Establishment of community Seed bank for mionor millet	0	15000
8	Herbal Garden	0	0
9	Cattle Tank /Trevis Inatallation	0	0
10	Organic Farming System Promotion	0	0
11	Backyard Poultry Unit	0	0
12	Kitchen Garden	0	75000
13	Mushroom Cultivation	0	
14	Pitcher Irrigation	0	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**0**	**1188000**
C	**Energy Efficinet Sysetm**		
1	Biogas	0	44000
2	Improved Chullha	0	0
3	Solar water Pump	0	125000
	Sub Total – Energy Efficient System	**0**	**169000**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**17424**	**1654000**
III	**Risk Mitigation**		
1	Installation of Automatic Weather Station	0	520000
2	RML subscription (3 years) on crop, weather & market info	0	150000
3	Instrumentation, e.g. Run-off measurement, etc.		
4	Geo- hydrological study and crop water budgeting	0	150000

Sl.No	Description of treatments	Watershed in Tirunelveli District	
		Fund support by NABARD	Fund support sought from AFB
	Sub Total Risk Mitigation	**0**	**820000**
IV	**Knowledge management**		
1	Posters and pamphlet on climate change adaptation	0	25000
2	Educational kit – Manual of Climate Change Adaptation	0	100000
3	Awareness and Mobilization / Capacity Building Programs	0	80000
4	Audio Visual Tools – short films	0	70000
5	Exposure visits, peer learning	0	100000
6	IEC Activities In the Project area	0	20000
7	Vetrinary camp / Silage Making /Para extention workers	0	60000
8	Income Generation Skill Training	0	50000
9	Information Board	0	
10	Village Knowledge centre	0	100000
	Sub Total Knowledge management	**0**	**605000**
V	**Other Component (NABARD Supported)**		
1	Productivity Enhancement measures under - watershed component	786750	0
2	Livelihood support for Landless and women - watershed component	1190000	0
3	Training and demonstration – watershed component	395000	0
4	Project management – watershed component	2345250	0
5	Maintenance fund for watershed treatment – business as usual Scenario	605740	0

Sl.No	Description of treatments	Watershed in Tirunelveli District	
		Fund support by NABARD	Fund support sought from AFB
6	Supervision Cost	457401	
	Sub Total – Other Components (NABARD supported)	**5780141**	**0**
	Grand Total	**15400000**	**4326852**

15400000	4326852
14469617	3562791
12429019	3521456
12459900	2869612
4653916	2963575
4412599	2340900
7366499	3755900
13234980	3458775
14278131	4345700

Sl.No	Description of treatments	Salivaram Watershed	
		Total cost	Beneficiaries contribution
I	**Improvement in the soil water regime**		
A	**Area Treatment**		
1	Field Bund	3764993	602399
2	Farm Pond with outlet	382426	56870
3	WAT	493863	79018
4	CCT	929572	148732
5	Stone Gully Plugs	121980	6840
6	Field Bund Pipe outlet /Stone outlet	324093	21111
7	Stone wall / Stone Bund	0	0
8	Silvipasture	0	0
9	Agro-Forestry System	1956020	119662
10	Agro – Horticulture /Dry land Horticulture	284900	2464
11	Summer Ploughing /Disc Ploughing	0	0
12	Catch Pit	0	0
13	Well Recharge Pit	397491	0
14	Percolation tank	256122	40980
15	Sunken Pond with outlet	188325	30132
16	Deep Tillage	0	0
	Sub Total Area Treatment	**9099786**	**1108208**
B	**Drainage Line Treatment**		
1	Loose Rock Check Dam	67284	4669
2	Gabion Check Dam/Check dam	0	0
3	Loose boulder structure	0	0
4	Check weir/ Retaining Wall	635082	35046

Sl.No	Description of treatments	Salivaram Watershed	
		Total cost	Beneficiaries contribution
5	Gully Plugs	0	0
6	Bush Clearance	0	0
7	Renovation of WHS	0	0
8	Earthwork -Oorani	0	0
9	Channel Clearance	0	0
10	Channel Formation	0	0
	Sub Total- Drainage Line Treatment	**702366**	**39715**
	Total – improvement in soil – water regime	**9802152**	**1147923**
II	**Climate Resilient Farming System and improved livelihood**		
A	**Afforestation and Pasture Land Development**		
1	Fodder Development /Shaff Cutter	118300	0
2	Grass Seeding (Ha)	100000	4000
3	Korangad Development	0	0
4	Nursary for Forestry specis	0	0
5	Green coverage (Gliricidia sepium)/manure	165000	0
6	Azolla Development	169000	0
12	Agro Forestry in channel/Castor Seeding	0	0
	Sub Total- Afforestation and Pasture Land Development	**552300**	**4000**
B	**Other Climate Resilient Farming/ Livelihood Support**		
1	Vermi compost /Pit	1341000	0
2	Drip Irrigation Demonstration	0	0
3	Micro Sprinkler Demonstration		
4	Integrated Farming System	0	0
5	Tank Silt Application and Soil Test	495000	

Sl.No	Description of treatments	Salivaram Watershed	
		Total cost	Beneficiaries contribution
6	Demo Plot /Preparation for minor millet cultivation	0	0
7	Establishment of community Seed bank for mionor millet	0	0
8	Herbal Garden	0	0
9	Cattle Tank /Trevis Inatallation	0	0
10	Organic Farming System Promotion	0	0
11	Backyard Poultry Unit	0	0
12	Kitchen Garden	150000	0
13	Mushroom Cultivation	0	0
14	Pitcher Irrigation	0	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**1986000**	**0**
C	**Energy Efficinet Sysetm**		
1	Biogas	225000	
2	Improved Chullha	0	0
3	Solar water Pump	0	0
	Sub Total – Energy Efficient System	**225000**	**0**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**2763300**	**4000**
III	**Risk Mitigation**		
1	Installation of Automatic Weather Station	520000	0
2	RML subscription (3 years) on crop, weather & market info	150000	0
3	Instrumentation, e.g. Run-off measurement, etc.		
4	Geo- hydrological study and crop water budgeting	150000	0

Sl.No	Description of treatments	Salivaram Watershed	
		Total cost	Beneficiaries contribution
	Sub Total Risk Mitigation	**820000**	**0**
IV	**Knowledge management**		
1	Posters and pamphlet on climate change adaptation	10000	0
2	Educational kit – Manual of Climate Change Adaptation		0
3	Awareness and Mobilization / Capacity Building Programs	18000	0
4	Audio Visual Tools – short films	5000	0
5	Exposure visits, peer learning	0	0
6	IEC Activities In the Project area	0	0
7	Vetrinary camp / Silage Making /Para extention workers	0	0
8	Income Generation Skill Training	0	0
9	Information Board	0	0
10	Village Knowledge centre	0	0
	Sub Total Knowledge management	**33000**	**0**
V	**Other Component (NABARD Supported)**		
1	Productivity Enhancement measures under - watershed component	700000	0
2	Livelihood support for Landless and women - watershed component	1092130	0
3	Training and demonstration – watershed component	220000	0
4	Project management – watershed component	2444751	0
5	Maintenance fund for watershed treatment – business as usual Scenario	733037	0

Sl.No	Description of treatments	Salivaram Watershed	
		Total cost	Beneficiaries contribution
6	Supervision Cost	575961	0
	Sub Total – Other Components (NABARD supported)	**5765879**	**0**
	Grand Total	**19184331**	**1151923**

20641708	914835
19184334.2	1151929.069
16964702.9	1014226.141
17942987.3	2613759.531
8052719	435228
7180323	426796
11895127	772727
17733242	1039483
19766995	1143164

Sl.No	Description of treatments	in Krishnagiri District	
		Fund support by NABARD	Fund support sought from AFB
I	**Improvement in the soil water regime**		
A	**Area Treatment**		
1	Field Bund	3162594	0
2	Farm Pond with outlet	325556	0
3	WAT	414845	0
4	CCT	780841	0
5	Stone Gully Plugs	115140	0
6	Field Bund Pipe outlet /Stone outlet	302982	0
7	Stone wall / Stone Bund	0	0
8	Silvipasture	0	0
9	Agro-Forestry System	1836358	0
10	Agro – Horticulture /Dry land Horticulture	282436	0
11	Summer Ploughing /Disc Ploughing	0	0
12	Catch Pit	0	0
13	Well Recharge Pit	0	397491
14	Percolation tank	215142	0
15	Sunken Pond with outlet	158193	0
16	Deep Tillage	0	0
	Sub Total Area Treatment	**7594087**	**397491**
B	**Drainage Line Treatment**		
1	Loose Rock Check Dam	62615	0
2	Gabion Check Dam/Check dam	0	0
3	Loose boulder structure	0	0
4	Check weir/ Retaining Wall	600036	0

Sl.No	Description of treatments	in Krishnagiri District	
		Fund support by NABARD	Fund support sought from AFB
5	Gully Plugs	0	0
6	Bush Clearance	0	0
7	Renovation of WHS	0	0
8	Earthwork -Oorani	0	0
9	Channel Clearance	0	0
10	Channel Formation	0	0
	Sub Total- Drainage Line Treatment	**662651**	**0**
	Total – improvement in soil – water regime	**8256738**	**397491**
II	**Climate Resilient Farming System and improved livelihood**		
A	**Afforestation and Pasture Land Development**		
1	Fodder Development /Shaff Cutter	0	118300
2	Grass Seeding (Ha)	96000	
3	Korangad Development	0	0
4	Nursary for Forestry specis	0	0
5	Green coverage (Gliricidia sepium)/manure	0	165000
6	Azolla Development	0	169000
12	Agro Forestry in channel/Castor Seeding	0	
	Sub Total- Afforestation and Pasture Land Development	**96000**	**452300**
B	**Other Climate Resilient Farming/ Livelihood Support**		
1	Vermi compost /Pit	201000	1140000
2	Drip Irrigation Demonstration	0	0
3	Micro Sprinkler Demonstration		
4	Integrated Farming System	0	0
5	Tank Silt Application and Soil Test		495000

Sl.No	Description of treatments	in Krishnagiri District	
		Fund support by NABARD	Fund support sought from AFB
6	Demo Plot /Preparation for minor millet cultivation	0	0
7	Establishment of community Seed bank for mionor millet	0	0
8	Herbal Garden	0	0
9	Cattle Tank /Trevis Inatallation	0	0
10	Organic Farming System Promotion	0	0
11	Backyard Poultry Unit	0	0
12	Kitchen Garden	150000	0
13	Mushroom Cultivation	0	0
14	Pitcher Irrigation	0	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**351000**	**1635000**
C	**Energy Efficinet Sysetm**		
1	Biogas		225000
2	Improved Chullha	0	0
3	Solar water Pump	0	0
	Sub Total – Energy Efficient System	**0**	**225000**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**447000**	**2312300**
III	**Risk Mitigation**		
1	Installation of Automatic Weather Station	0	520000
2	RML subscription (3 years) on crop, weather & market info	0	150000
3	Instrumentation, e.g. Run-off measurement, etc.		
4	Geo- hydrological study and crop water budgeting	0	150000

Sl.No	Description of treatments	in Krishnagiri District	
		Fund support by NABARD	Fund support sought from AFB
	Sub Total Risk Mitigation	**0**	**820000**
IV	**Knowledge management**		
1	Posters and pamphlet on climate change adaptation	0	10000
2	Educational kit – Manual of Climate Change Adaptation	0	0
3	Awareness and Mobilization / Capacity Building Programs	0	18000
4	Audio Visual Tools – short films	0	5000
5	Exposure visits, peer learning	0	0
6	IEC Activities In the Project area	0	0
7	Vetrinary camp / Silage Making /Para extention workers	0	0
8	Income Generation Skill Training	0	0
9	Information Board	0	0
10	Village Knowledge centre	0	0
	Sub Total Knowledge management	**0**	**33000**
V	**Other Component (NABARD Supported)**		
1	Productivity Enhancement measures under - watershed component	700000	0
2	Livelihood support for Landless and women - watershed component	1092130	0
3	Training and demonstration – watershed component	220000	0
4	Project management – watershed component	2444751	
5	Maintenance fund for watershed treatment – business as usual Scenario	733037	0

Sl.No	Description of treatments	in Krishnagiri District	
		Fund support by NABARD	Fund support sought from AFB
6	Supervision Cost	575961	0
	Sub Total – Other Components (NABARD supported)	**5765879**	**0**
	Grand Total	**14469617**	**3562791**

15400021	4326852
14469614.15	3562791
12429020.73	3521456
12459615.78	2869612
4653916	2963575
4412670	2340900
7366500	3755900
13234982	3458775
14278131	4345700

Sl.No	Description of treatments	Thally Kothanur Watersl	
		Total cost	Beneficiaries contribution
I	**Improvement in the soil water regime**		
A	**Area Treatment**		
1	Field Bund	4080074	652812
2	Farm Pond with outlet	242203	36016
3	WAT	288263	46122
4	CCT	590889	94542
5	Stone Gully Plugs	161310	9056
6	Field Bund Pipe outlet /Stone outlet	227700	14832
7	Stone wall / Stone Bund	0	0
8	Silvipasture		
9	Agro-Forestry System	1685992	103143
10	Agro – Horticulture /Dry land Horticulture	229548	1985
11	Summer Ploughing /Disc Ploughing	0	0
12	Catch Pit	0	0
13	Well Recharge Pit	472692	0
14	Percolation tank	0	0
15	Sunken Pond with outlet	76837	12302
16	Deep Tillage	0	0
	Sub Total Area Treatment	**8055507**	**970810**
B	**Drainage Line Treatment**		
1	Loose Rock Check Dam	81480	5643
2	Gabion Check Dam/Check dam	0	0
3	Loose boulder structure	0	0
4	Check weir/ Retaining Wall	641304	35373

Sl.No	Description of treatments	Thally Kothanur Waters	
		Total cost	Beneficiaries contribution
5	Gully Plugs	0	0
6	Bush Clearance	0	0
7	Renovation of WHS	0	0
8	Earthwork -Oorani	0	0
9	Channel Clearance	0	0
10	Channel Formation	0	0
	Sub Total- Drainage Line Treatment	**722784**	**41016**
	Total – improvement in soil – water regime	**8778291**	**1011826**
II	**Climate Resilient Farming System and improved livelihood**		
A	**Afforestation and Pasture Land Development**		
1	Fodder Development /Shaff Cutter	140000	0
2	Grass Seeding (Ha)	60000	2400
3	Korangad Development	0	0
4	Nursary for Forestry specis	0	0
5	Green coverage (Gliricidia sepium)/manure	223500	0
6	Azolla Development	200100	0
12	Agro Forestry in channel/Castor Seeding	0	0
	Sub Total- Afforestation and Pasture Land Development	**623600**	**2400**
B	**Other Climate Resilient Farming/ Livelihood Support**		
1	Vermi compost /Pit	1268164	0
2	Drip Irrigation Demonstration	0	0
3	Micro Sprinkler Demonstration		
4	Integrated Farming System	0	0
5	Tank Silt Application and Soil Test	645000	

Sl.No	Description of treatments	Thally Kothanur Watersl	
		Total cost	Beneficiaries contribution
6	Demo Plot /Preparation for minor millet cultivation	0	0
7	Establishment of community Seed bank for mionor millet	0	0
8	Herbal Garden	0	0
9	Cattle Tank /Trevis Inatallation	0	0
10	Organic Farming System Promotion	0	0
11	Backyard Poultry Unit	0	0
12	Kitchen Garden	150000	0
13	Mushroom Cultivation	0	0
14	Pitcher Irrigation	0	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**2063164**	**0**
C	**Energy Efficinet Sysetm**		
1	Biogas	300000	
2	Improved Chullha	0	0
3	Solar water Pump	0	0
	Sub Total – Energy Efficient System	**300000**	**0**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**2986764**	**2400**
III	**Risk Mitigation**		
1	Installation of Automatic Weather Station	0	0
2	RML subscription (3 years) on crop, weather & market info	150000	0
3	Instrumentation, e.g. Run-off measurement, etc.		
4	Geo- hydrological study and crop water budgeting	150000	0

Sl.No	Description of treatments	Thally Kothanur Watersl	
		Total cost	Beneficiaries contribution
	Sub Total Risk Mitigation	**300000**	**0**
IV	**Knowledge management**		
1	Posters and pamphlet on climate change adaptation	10000	0
2	Educational kit – Manual of Climate Change Adaptation	0	0
3	Awareness and Mobilization / Capacity Building Programs	24000	0
4	Audio Visual Tools – short films	5000	0
5	Exposure visits, peer learning	0	0
6	IEC Activities In the Project area	0	0
7	Vetrinary camp / Silage Making /Para extention workers	0	0
8	Income Generation Skill Training	0	0
9	Information Board	0	0
10	Village Knowledge centre	0	0
	Sub Total Knowledge management	**39000**	**0**
V	**Other Component (NABARD Supported)**		
1	Productivity Enhancement measures under - watershed component	500000	0
2	Livelihood support for Landless and women - watershed component	925000	0
3	Training and demonstration – watershed component	150000	0
4	Project management – watershed component	2105956	0
5	Maintenance fund for watershed treatment – business as usual Scenario	657513	0

Sl.No	Description of treatments	Thally Kothanur Watersl	
		Total cost	Beneficiaries contribution
6	Supervision Cost	522179	0
	Sub Total – Other Components (NABARD supported)	**4860648**	**0**
	Grand Total	**16964702**	**1014226**

-22	-1
-3	-6
-1	0
-1638	-1923
-1	-1
-27	1
0	0
-2	3
0	0

Sl.No	Description of treatments	hed in Krishnagiri District	
		Fund support by NABARD	Fund support sought from AFB
I	**Improvement in the soil water regime**		
A	**Area Treatment**		
1	Field Bund	3427262	0
2	Farm Pond with outlet	206186	0
3	WAT	242141	0
4	CCT	496346	0
5	Stone Gully Plugs	152254	0
6	Field Bund Pipe outlet /Stone outlet	212868	0
7	Stone wall / Stone Bund	0	0
8	Silvipasture		0
9	Agro-Forestry System	1582849	0
10	Agro – Horticulture /Dry land Horticulture	227563	0
11	Summer Ploughing /Disc Ploughing	0	0
12	Catch Pit	0	0
13	Well Recharge Pit	0	472692
14	Percolation tank	0	0
15	Sunken Pond with outlet	64535	0
16	Deep Tillage	0	0
	Sub Total Area Treatment	**6612004**	**472692**
B	**Drainage Line Treatment**		
1	Loose Rock Check Dam	75837	0
2	Gabion Check Dam/Check dam	0	0
3	Loose boulder structure	0	0
4	Check weir/ Retaining Wall	605931	0

Sl.No	Description of treatments	hed in Krishnagiri District	
		Fund support by NABARD	Fund support sought from AFB
5	Gully Plugs	0	0
6	Bush Clearance	0	0
7	Renovation of WHS	0	0
8	Earthwork -Oorani	0	0
9	Channel Clearance	0	0
10	Channel Formation	0	0
	Sub Total- Drainage Line Treatment	**681768**	**0**
	Total – improvement in soil – water regime	**7293772**	**472692**
II	**Climate Resilient Farming System and improved livelihood**		
A	**Afforestation and Pasture Land Development**		
1	Fodder Development /Shaff Cutter	0	140000
2	Grass Seeding (Ha)	57600	
3	Korangad Development	0	0
4	Nursary for Forestry specis	0	0
5	Green coverage (Gliricidia sepium)/manure	0	223500
6	Azolla Development	0	200100
12	Agro Forestry in channel/Castor Seeding	0	
	Sub Total- Afforestation and Pasture Land Development	**57600**	**563600**
B	**Other Climate Resilient Farming/ Livelihood Support**		
1	Vermi compost /Pit	67000	1201164
2	Drip Irrigation Demonstration	0	0
3	Micro Sprinkler Demonstration		
4	Integrated Farming System	0	0
5	Tank Silt Application and Soil Test		645000

Sl.No	Description of treatments	hed in Krishnagiri District	
		Fund support by NABARD	Fund support sought from AFB
6	Demo Plot /Preparation for minor millet cultivation	0	0
7	Establishment of community Seed bank for mionor millet	0	0
8	Herbal Garden	0	0
9	Cattle Tank /Trevis Inatallation	0	0
10	Organic Farming System Promotion	0	0
11	Backyard Poultry Unit	0	0
12	Kitchen Garden	150000	0
13	Mushroom Cultivation	0	0
14	Pitcher Irrigation	0	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**217000**	**1846164**
C	**Energy Efficinet Sysetm**		
1	Biogas		300000
2	Improved Chullha	0	0
3	Solar water Pump	0	0
	Sub Total – Energy Efficient System	**0**	**300000**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**274600**	**2709764**
III	**Risk Mitigation**		
1	Installation of Automatic Weather Station	0	0
2	RML subscription (3 years) on crop, weather & market info	0	150000
3	Instrumentation, e.g. Run-off measurement, etc.		
4	Geo- hydrological study and crop water budgeting	0	150000

Sl.No	Description of treatments	hed in Krishnagiri District	
		Fund support by NABARD	Fund support sought from AFB
	Sub Total Risk Mitigation	**0**	**300000**
IV	**Knowledge management**		
1	Posters and pamphlet on climate change adaptation	0	10000
2	Educational kit – Manual of Climate Change Adaptation	0	0
3	Awareness and Mobilization / Capacity Building Programs	0	24000
4	Audio Visual Tools – short films	0	5000
5	Exposure visits, peer learning	0	0
6	IEC Activities In the Project area	0	0
7	Vetrinary camp / Silage Making /Para extention workers	0	0
8	Income Generation Skill Training	0	0
9	Information Board	0	0
10	Village Knowledge centre	0	0
	Sub Total Knowledge management	**0**	**39000**
V	**Other Component (NABARD Supported)**		
1	Productivity Enhancement measures under - watershed component	500000	0
2	Livelihood support for Landless and women - watershed component	925000	0
3	Training and demonstration – watershed component	150000	0
4	Project management – watershed component	2105956	0
5	Maintenance fund for watershed treatment – business as usual Scenario	657513	0

Sl.No	Description of treatments	hed in Krishnagiri District	
		Fund support by NABARD	Fund support sought from AFB
6	Supervision Cost	522179	0
	Sub Total – Other Components (NABARD supported)	**4860648**	**0**
	Grand Total	**12429019**	**3521456**

-21	0
3	0
-2	0
284	0
0	0
-71	0
-1	0
-2	0
0	0

Sl.No	Description of treatments	Bettamugilalam Watersh	
		Total cost	Beneficiaries contribution
I	**Improvement in the soil water regime**		
A	**Area Treatment**		
1	Field Bund	1242443	434855
2	Farm Pond with outlet	1746479	586919
3	WAT	227246	36359
4	CCT	2036923	325908
5	Stone Gully Plugs	715020	18115
6	Field Bund Pipe outlet /Stone outlet	282000	18075
7	Stone wall / Stone Bund	2582010	1158721
8	Silvipasture		
9	Agro-Forestry System	445998	13575
10	Agro – Horticulture /Dry land Horticulture	989246	15598
11	Summer Ploughing /Disc Ploughing	0	0
12	Catch Pit	0	0
13	Well Recharge Pit	386748	0
14	Percolation tank	0	0
15	Sunken Pond with outlet	0	0
16	Deep Tillage	0	0
	Sub Total Area Treatment	**10654113**	**2608125**
B	**Drainage Line Treatment**		
1	Loose Rock Check Dam	112187	2912
2	Gabion Check Dam/Check dam	0	0
3	Loose boulder structure	0	0
4	Check weir/ Retaining Wall	0	0

Sl.No	Description of treatments	Bettamugilalam Watersh	
		Total cost	Beneficiaries contribution
5	Gully Plugs	0	0
6	Bush Clearance	0	0
7	Renovation of WHS	0	0
8	Earthwork -Oorani	0	0
9	Channel Clearance	0	0
10	Channel Formation	0	0
	Sub Total- Drainage Line Treatment	**112187**	**2912**
	Total – improvement in soil – water regime	**10766300**	**2611037**
II	**Climate Resilient Farming System and improved livelihood**		
A	**Afforestation and Pasture Land Development**		
1	Fodder Development /Shaff Cutter	123200	0
2	Grass Seeding (Ha)	20000	800
3	Korangad Development	0	0
4	Nursary for Forestry specis	0	0
5	Green coverage (Gliricidia sepium)/manure	172000	0
6	Azolla Development	176000	0
12	Agro Forestry in channel/Castor Seeding	0	0
	Sub Total- Afforestation and Pasture Land Development	**491200**	**800**
B	**Other Climate Resilient Farming/ Livelihood Support**		
1	Vermi compost /Pit	1149664	0
2	Drip Irrigation Demonstration	0	0
3	Micro Sprinkler Demonstration		
4	Integrated Farming System	0	0
5	Tank Silt Application and Soil Test	195000	

Sl.No	Description of treatments	Bettamugilalam Watersh	
		Total cost	Beneficiaries contribution
6	Demo Plot /Preparation for minor millet cultivation	0	0
7	Establishment of community Seed bank for mionor millet	0	0
8	Herbal Garden	0	0
9	Cattle Tank /Trevis Inatallation	0	0
10	Organic Farming System Promotion	0	0
11	Backyard Poultry Unit	0	0
12	Kitchen Garden	172000	0
13	Mushroom Cultivation		0
14	Pitcher Irrigation	0	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**1516664**	**0**
C	**Energy Efficinet Sysetm**		
1	Biogas	150000	
2	Improved Chullha	0	0
3	Solar water Pump	0	0
	Sub Total – Energy Efficient System	**150000**	**0**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**2157864**	**800**
III	**Risk Mitigation**		
1	Installation of Automatic Weather Station	0	0
2	RML subscription (3 years) on crop, weather & market info	150000	0
3	Instrumentation, e.g. Run-off measurement, etc.		
4	Geo- hydrological study and crop water budgeting	150000	0

Sl.No	Description of treatments	Bettamugilalam Watersh	
		Total cost	Beneficiaries contribution
	Sub Total Risk Mitigation	**300000**	**0**
IV	**Knowledge management**		
1	Posters and pamphlet on climate change adaptation	10000	0
2	Educational kit – Manual of Climate Change Adaptation	0	0
3	Awareness and Mobilization / Capacity Building Programs	30000	0
4	Audio Visual Tools – short films	5000	0
5	Exposure visits, peer learning	0	0
6	IEC Activities In the Project area	0	0
7	Vetrinary camp / Silage Making /Para extention workers	0	0
8	Income Generation Skill Training	0	0
9	Information Board	0	0
10	Village Knowledge centre	0	0
	Sub Total Knowledge management	**45000**	**0**
V	**Other Component (NABARD Supported)**		
1	Productivity Enhancement measures under - watershed component	0	0
2	Livelihood support for Landless and women - watershed component	1024500	0
3	Training and demonstration – watershed component	165000	0
4	Project management – watershed component	2379900	0
5	Maintenance fund for watershed treatment – business as usual Scenario	627300	0

Sl.No	Description of treatments	Bettamugilalam Watersh	
		Total cost	Beneficiaries contribution
6	Supervision Cost	475485	0
	Sub Total – Other Components (NABARD supported)	**4672185**	**0**
	Grand Total	**17941349**	**2611837**

Sl.No	Description of treatments	ed in Krishnagiri District	
		Fund support by NABARD	Fund support sought from AFB
I	**Improvement in the soil water regime**		
A	**Area Treatment**		
1	Field Bund	807588	0
2	Farm Pond with outlet	1159560	0
3	WAT	190887	0
4	CCT	1711015	0
5	Stone Gully Plugs	696905	0
6	Field Bund Pipe outlet /Stone outlet	263925	0
7	Stone wall / Stone Bund	1423289	0
8	Silvipasture		0
9	Agro-Forestry System	432423	0
10	Agro – Horticulture /Dry land Horticulture	973648	0
11	Summer Ploughing /Disc Ploughing	0	0
12	Catch Pit	0	0
13	Well Recharge Pit	0	386748
14	Percolation tank	0	0
15	Sunken Pond with outlet	0	0
16	Deep Tillage	0	0
	Sub Total Area Treatment	**7659240**	**386748**
B	**Drainage Line Treatment**		
1	Loose Rock Check Dam	109275	0
2	Gabion Check Dam/Check dam	0	0
3	Loose boulder structure	0	0
4	Check weir/ Retaining Wall	0	0

Sl.No	Description of treatments	ıed in Krishnagiri District	
		Fund support by NABARD	Fund support sought from AFB
5	Gully Plugs	0	0
6	Bush Clearance	0	0
7	Renovation of WHS	0	0
8	Earthwork -Oorani	0	0
9	Channel Clearance	0	0
10	Channel Formation	0	0
	Sub Total- Drainage Line Treatment	**109275**	**0**
	Total – improvement in soil – water regime	**7768515**	**386748**
II	**Climate Resilient Farming System and improved livelihood**		
A	**Afforestation and Pasture Land Development**		
1	Fodder Development /Shaff Cutter	0	123200
2	Grass Seeding (Ha)	19200	
3	Korangad Development	0	0
4	Nursary for Forestry specis	0	0
5	Green coverage (Gliricidia sepium)/manure	0	172000
6	Azolla Development	0	176000
12	Agro Forestry in channel/Castor Seeding	0	0
	Sub Total- Afforestation and Pasture Land Development	**19200**	**471200**
B	**Other Climate Resilient Farming/ Livelihood Support**		
1	Vermi compost /Pit	0	1149664
2	Drip Irrigation Demonstration	0	0
3	Micro Sprinkler Demonstration		
4	Integrated Farming System	0	0
5	Tank Silt Application and Soil Test		195000

Sl.No	Description of treatments	ed in Krishnagiri District	
		Fund support by NABARD	Fund support sought from AFB
6	Demo Plot /Preparation for minor millet cultivation	0	0
7	Establishment of community Seed bank for mionor millet	0	0
8	Herbal Garden	0	0
9	Cattle Tank /Trevis Inatallation	0	0
10	Organic Farming System Promotion	0	0
11	Backyard Poultry Unit	0	0
12	Kitchen Garden	0	172000
13	Mushroom Cultivation	0	
14	Pitcher Irrigation	0	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**0**	**1516664**
C	**Energy Efficinet Sysetm**		
1	Biogas		150000
2	Improved Chullha	0	0
3	Solar water Pump	0	0
	Sub Total – Energy Efficient System	**0**	**150000**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**19200**	**2137864**
III	**Risk Mitigation**		
1	Installation of Automatic Weather Station	0	0
2	RML subscription (3 years) on crop, weather & market info	0	150000
3	Instrumentation, e.g. Run-off measurement, etc.		
4	Geo- hydrological study and crop water budgeting	0	150000

Sl.No	Description of treatments	ed in Krishnagiri District	
		Fund support by NABARD	Fund support sought from AFB
	Sub Total Risk Mitigation	**0**	**300000**
IV	**Knowledge management**		
1	Posters and pamphlet on climate change adaptation	0	10000
2	Educational kit – Manual of Climate Change Adaptation	0	
3	Awareness and Mobilization / Capacity Building Programs	0	30000
4	Audio Visual Tools – short films	0	5000
5	Exposure visits, peer learning	0	
6	IEC Activities In the Project area	0	
7	Vetrinary camp / Silage Making /Para extention workers	0	0
8	Income Generation Skill Training	0	0
9	Information Board	0	0
10	Village Knowledge centre	0	0
	Sub Total Knowledge management	**0**	**45000**
V	**Other Component (NABARD Supported)**		
1	Productivity Enhancement measures under - watershed component	0	0
2	Livelihood support for Landless and women - watershed component	1024500	0
3	Training and demonstration – watershed component	165000	0
4	Project management – watershed component	2379900	
5	Maintenance fund for watershed treatment – business as usual Scenario	627300	0

Sl.No	Description of treatments	ed in Krishnagiri District	
		Fund support by NABARD	Fund support sought from AFB
6	Supervision Cost	475485	0
	Sub Total – Other Components (NABARD supported)	**4672185**	**0**
	Grand Total	**12459900**	**2869612**

Sl.No	Description of treatments	Chinnapoolampatti Watershed in Mad		
		Total cost	Beneficiaries contribution	Fund support by NABARD
I	**Improvement in the soil water regime**			
A	**Area Treatment**			
1	Field Bund	1928460	308554	1619906
2	Farm Pond with outlet	69598	10917	58681
3	WAT	0	0	0
4	CCT	0	0	0
5	Stone Gully Plugs	44280	2152	42128
6	Field Bund Pipe outlet /Stone outlet	102060	3966	98094
7	Stone wall / Stone Bund	0	0	0
8	Silvipasture	0	0	0
9	Agro-Forestry System	408000	23808	384192
10	Agro – Horticulture /Dry land Horticulture	233450	12150	221300
11	Summer Ploughing /Disc Ploughing	275750	0	92000
12	Catch Pit	0	0	0
13	Well Recharge Pit	126000	0	0
14	Percolation tank	0	0	0
15	Sunken Pond with outlet	0	0	0
16	Deep Tillage	18375	0	0
	Sub Total Area Treatment	**3205973**	**361547**	**2516301**
B	**Drainage Line Treatment**			
1	Loose Rock Check Dam	0	0	0
2	Gabion Check Dam/Check dam	0	0	0
3	Loose boulder structure	0	0	0
4	Check weir/ Retaining Wall	0	0	0

Sl.No	Description of treatments	Chinnapoolampatti Watershed in Mad		
		Total cost	Beneficiaries contribution	Fund support by NABARD
5	Gully Plugs		0	0
6	Bush Clearance	0	0	0
7	Renovation of WHS	187099	29935	157164
8	Earthwork -Oorani	0	0	0
9	Channel Clearance	20190	3230	16960
10	Channel Formation	248393	39743	208650
	Sub Total- Drainage Line Treatment	**455682**	**72908**	**382774**
	Total – improvement in soil – water regime	**3661655**	**434455**	**2899075**
II	**Climate Resilient Farming System and improved livelihood**			
A	**Afforestation and Pasture Land Development**			
1	Fodder Development /Shaff Cutter	273600	0	0
2	Grass Seeding (Ha)	40200	772	39428
3	Korangad Development	0	0	0
4	Nursary for Forestry specis	0	0	0
5	Green coverage (Gliricidia sepium)/manure	0	0	0
6	Azolla Development	0	0	0
12	Agro Forestry in channel/Castor Seeding	0	0	0
	Sub Total- Afforestation and Pasture Land Development	**313800**	**772**	**39428**
B	**Other Climate Resilient Farming/ Livelihood Support**			
1	Vermi compost /Pit	68000	0	0
2	Drip Irrigation Demonstration	100000	0	0
3	Micro Sprinkler Demonstration	200000	0	0
4	Integrated Farming System	142500	0	0
5	Tank Silt Application and Soil Test	420000	0	0

Sl.No	Description of treatments	Chinnapoolampatti Watershed in Mad		
		Total cost	Beneficiaries contribution	Fund support by NABARD
6	Demo Plot /Preparation for minor millet cultivation	250000	0	0
7	Establishment of community Seed bank for mionor millet	0	0	0
8	Herbal Garden	25000	0	0
9	Cattle Tank /Trevis Inatallation	172000	0	0
10	Organic Farming System Promotion	0	0	0
11	Backyard Poultry Unit	0	0	0
12	Kitchen Garden	366950	0	0
13	Mushroom Cultivation	0	0	0
14	Pitcher Irrigation	0	0	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**1744450**	**0**	**0**
C	**Energy Efficinet Sysetm**			
1	Biogas	92400	0	0
2	Improved Chullha	0	0	0
3	Solar water Pump	0	0	0
	Sub Total – Energy Efficient System	**92400**	**0**	**0**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**2150650**	**772**	**39428**
III	**Risk Mitigation**			
1	Installation of Automatic Weather Station	0	0	0
2	RML subscription (3 years) on crop, weather & market info	150000	0	0
3	Instrumentation, e.g. Run-off measurement, etc.			
4	Geo- hydrological study and crop water budgeting	150000	0	0

Sl.No	Description of treatments	Chinnapoolampatti Watershed in Mad		
		Total cost	Beneficiaries contribution	Fund support by NABARD
	Sub Total Risk Mitigation	**300000**	**0**	**0**
IV	**Knowledge management**			
1	Posters and pamphlet on climate change adaptation	25000	0	0
2	Educational kit – Manual of Climate Change Adaptation		0	0
3	Awareness and Mobilization / Capacity Building Programs	50000	0	0
4	Audio Visual Tools – short films		0	0
5	Exposure visits, peer learning	100000	0	0
6	IEC Activities In the Project area	30000	0	0
7	Vetrinary camp / Silage Making /Para extention workers	0	0	0
8	Income Generation Skill Training		0	0
9	Information Board	20000	0	0
10	Village Knowledge centre			
	Sub Total Knowledge management	**225000**	**0**	**0**
V	**Other Component (NABARD Supported)**			
1	Productivity Enhancement measures under - watershed component	0	0	0
2	Livelihood support for Landless and women - watershed component	381700	0	381700
3	Training and demonstration – watershed component	159500	0	159500
4	Project management – watershed component	688100	0	688100
5	Maintenance fund for watershed treatment – business as usual Scenario	268500	0	268500

Sl.No	Description of treatments	Chinnapoolampatti Watershed in Mad		
		Total cost	Beneficiaries contribution	Fund support by NABARD
6	Supervision Cost	217613	0	217613
	Sub Total – Other Components (NABARD supported)	**1715413**	**0**	**1715413**
	Grand Total	**8052718**	**435227**	**4653916**

Sl.No	Description of treatments	urai District	Peil
		Fund support sought from AFB	Total cost
I	**Improvement in the soil water regime**		
A	**Area Treatment**		
1	Field Bund	0	868946
2	Farm Pond with outlet	0	294626
3	WAT	0	0
4	CCT	0	0
5	Stone Gully Plugs	0	105909
6	Field Bund Pipe outlet /Stone outlet	0	94392
7	Stone wall / Stone Bund	0	0
8	Silvipasture	0	46575
9	Agro-Forestry System	0	372484
10	Agro – Horticulture /Dry land Horticulture	0	125875
11	Summer Ploughing /Disc Ploughing	183750	156800
12	Catch Pit	0	0
13	Well Recharge Pit	126000	49770
14	Percolation tank		0
15	Sunken Pond with outlet		
16	Deep Tillage	18375	23450
	Sub Total Area Treatment	**328125**	**2138827**
B	**Drainage Line Treatment**		
1	Loose Rock Check Dam	0	0
2	Gabion Check Dam/Check dam	0	0
3	Loose boulder structure	0	0
4	Check weir/ Retaining Wall	0	131076

Sl.No	Description of treatments	urai District	Peil
		Fund support sought from AFB	Total cost
5	Gully Plugs	0	0
6	Bush Clearance	0	0
7	Renovation of WHS	0	1034110
8	Earthwork -Oorani	0	0
9	Channel Clearance	0	144690
10	Channel Formation	0	0
	Sub Total- Drainage Line Treatment	**0**	**1309876**
	Total – improvement in soil – water regime	**328125**	**3448703**
II	**Climate Resilient Farming System and improved livelihood**		
A	**Afforestation and Pasture Land Development**		
1	Fodder Development /Shaff Cutter	273600	310800
2	Grass Seeding (Ha)	0	0
3	Korangad Development		
4	Nursary for Forestry specis	0	0
5	Green coverage (Gliricidia sepium)/manure	0	0
6	Azolla Development	0	0
12	Agro Forestry in channel/Castor Seeding		15000
	Sub Total- Afforestation and Pasture Land Development	**273600**	**325800**
B	**Other Climate Resilient Farming/ Livelihood Support**		
1	Vermi compost /Pit	68000	158000
2	Drip Irrigation Demonstration	100000	80000
3	Micro Sprinkler Demonstration	200000	160000
4	Integrated Farming System	142500	142500
5	Tank Silt Application and Soil Test	420000	150000

Sl.No	Description of treatments	urai District	Peil
		Fund support sought from AFB	Total cost
6	Demo Plot /Preparation for minor millet cultivation	250000	0
7	Establishment of community Seed bank for mionor millet	0	0
8	Herbal Garden	25000	25000
9	Cattle Tank /Trevis Inatallation	172000	160000
10	Organic Farming System Promotion	0	25000
11	Backyard Poultry Unit	0	0
12	Kitchen Garden	366950	150800
13	Mushroom Cultivation	0	0
14	Pitcher Irrigation	0	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**1744450**	**1051300**
C	**Energy Efficinet Sysetm**		
1	Biogas	92400	154000
2	Improved Chullha	0	0
3	Solar water Pump	0	0
	Sub Total – Energy Efficient System	**92400**	**154000**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**2110450**	**1531100**
III	**Risk Mitigation**		
1	Installation of Automatic Weather Station	0	0
2	RML subscription (3 years) on crop, weather & market info	150000	150000
3	Instrumentation, e.g. Run-off measurement, etc.		
4	Geo- hydrological study and crop water budgeting	150000	150000

Sl.No	Description of treatments	urai District	Peil
		Fund support sought from AFB	Total cost
	Sub Total Risk Mitigation	**300000**	**300000**
IV	**Knowledge management**		
1	Posters and pamphlet on climate change adaptation	25000	25000
2	Educational kit – Manual of Climate Change Adaptation	0	0
3	Awareness and Mobilization / Capacity Building Programs	50000	50000
4	Audio Visual Tools – short films		70000
5	Exposure visits, peer learning	100000	100000
6	IEC Activities In the Project area	30000	30000
7	Vetrinary camp / Silage Making /Para extention workers	0	0
8	Income Generation Skill Training	0	0
9	Information Board	20000	20000
10	Village Knowledge centre		
	Sub Total Knowledge management	**225000**	**295000**
V	**Other Component (NABARD Supported)**		
1	Productivity Enhancement measures under - watershed component	0	0
2	Livelihood support for Landless and women - watershed component	0	363000
3	Training and demonstration – watershed component	0	159500
4	Project management – watershed component		690600
5	Maintenance fund for watershed treatment – business as usual Scenario	0	261793

Sl.No	Description of treatments	urai District	Peil
		Fund support sought from AFB	Total cost
6	Supervision Cost	0	130600
	Sub Total – Other Components (NABARD supported)	**0**	**1605493**
	Grand Total	**2963575**	**7180296**

Sl.No	Description of treatments	xulam Watershed in Madurai	
		Beneficiaries contribution	Fund support by NABARD
I	**Improvement in the soil water regime**		
A	**Area Treatment**		
1	Field Bund	139031	729915
2	Farm Pond with outlet	46637	247989
3	WAT	0	0
4	CCT	0	0
5	Stone Gully Plugs	3941	101968
6	Field Bund Pipe outlet /Stone outlet	3444	90948
7	Stone wall / Stone Bund	0	0
8	Silvipasture	828	45747
9	Agro-Forestry System	32163	340321
10	Agro – Horticulture /Dry land Horticulture	6572	119303
11	Summer Ploughing /Disc Ploughing		8050
12	Catch Pit	0	0
13	Well Recharge Pit	444	6726
14	Percolation tank	0	0
15	Sunken Pond with outlet	0	0
16	Deep Tillage	0	0
	Sub Total Area Treatment	**233060**	**1690967**
B	**Drainage Line Treatment**		
1	Loose Rock Check Dam	0	0
2	Gabion Check Dam/Check dam	0	0
3	Loose boulder structure	0	0
4	Check weir/ Retaining Wall	5129	125947

Sl.No	Description of treatments	xulam Watershed in Madurai	
		Beneficiaries contribution	Fund support by NABARD
5	Gully Plugs	0	0
6	Bush Clearance	0	0
7	Renovation of WHS	165458	868652
8	Earthwork -Oorani	0	0
9	Channel Clearance	23150	121540
10	Channel Formation	0	0
	Sub Total- Drainage Line Treatment	**193737**	**1116139**
	Total – improvement in soil – water regime	**426797**	**2807106**
II	**Climate Resilient Farming System and improved livelihood**		
A	**Afforestation and Pasture Land Development**		
1	Fodder Development /Shaff Cutter	0	0
2	Grass Seeding (Ha)	0	0
3	Korangad Development	0	0
4	Nursary for Forestry specis	0	0
5	Green coverage (Gliricidia sepium)/manure	0	0
6	Azolla Development	0	0
12	Agro Forestry in channel/Castor Seeding	0	0
	Sub Total- Afforestation and Pasture Land Development	**0**	**0**
B	**Other Climate Resilient Farming/ Livelihood Support**		
1	Vermi compost /Pit	0	0
2	Drip Irrigation Demonstration	0	0
3	Micro Sprinkler Demonstration	0	0
4	Integrated Farming System	0	0
5	Tank Silt Application and Soil Test	0	0

Sl.No	Description of treatments	xulam Watershed in Madurai	
		Beneficiaries contribution	Fund support by NABARD
6	Demo Plot /Preparation for minor millet cultivation	0	0
7	Establishment of community Seed bank for mionor millet	0	0
8	Herbal Garden	0	0
9	Cattle Tank /Trevis Inatallation	0	0
10	Organic Farming System Promotion	0	0
11	Backyard Poultry Unit	0	0
12	Kitchen Garden	0	0
13	Mushroom Cultivation	0	0
14	Pitcher Irrigation	0	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**0**	**0**
C	**Energy Efficinet Sysetm**		
1	Biogas	0	0
2	Improved Chullha	0	0
3	Solar water Pump	0	0
	Sub Total – Energy Efficient System	**0**	**0**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**0**	**0**
III	**Risk Mitigation**		
1	Installation of Automatic Weather Station	0	0
2	RML subscription (3 years) on crop, weather & market info	0	0
3	Instrumentation, e.g. Run-off measurement, etc.		
4	Geo- hydrological study and crop water budgeting	0	0

Sl.No	Description of treatments	kulam Watershed in Madurai	
		Beneficiaries contribution	Fund support by NABARD
	Sub Total Risk Mitigation	**0**	**0**
IV	**Knowledge management**		
1	Posters and pamphlet on climate change adaptation	0	0
2	Educational kit – Manual of Climate Change Adaptation	0	0
3	Awareness and Mobilization / Capacity Building Programs	0	0
4	Audio Visual Tools – short films	0	0
5	Exposure visits, peer learning	0	0
6	IEC Activities In the Project area	0	0
7	Vetrinary camp / Silage Making /Para extention workers	0	0
8	Income Generation Skill Training	0	0
9	Information Board	0	0
10	Village Knowledge centre		
	Sub Total Knowledge management	**0**	**0**
V	**Other Component (NABARD Supported)**		
1	Productivity Enhancement measures under - watershed component	0	0
2	Livelihood support for Landless and women - watershed component	0	363000
3	Training and demonstration – watershed component	0	159500
4	Project management – watershed component	0	690600
5	Maintenance fund for watershed treatment – business as usual Scenario	0	261793

Sl.No	Description of treatments	xulam Watershed in Madurai	
		Beneficiaries contribution	Fund support by NABARD
6	Supervision Cost	0	130600
	Sub Total – Other Components (NABARD supported)	**0**	**1605493**
	Grand Total	**426797**	**4412599**

Sl.No	Description of treatments	District	Chi
		Fund support sought from AFB	Total cost
I	**Improvement in the soil water regime**		
A	**Area Treatment**		
1	Field Bund		1703864
2	Farm Pond with outlet		569699
3	WAT		0
4	CCT		0
5	Stone Gully Plugs		0
6	Field Bund Pipe outlet /Stone outlet		13000
7	Stone wall / Stone Bund		0
8	Silvipasture		0
9	Agro-Forestry System		1051519
10	Agro – Horticulture /Dry land Horticulture		1339668
11	Summer Ploughing /Disc Ploughing	148750	328000
12	Catch Pit	0	0
13	Well Recharge Pit	42600	159000
14	Percolation tank		0
15	Sunken Pond with outlet		
16	Deep Tillage	23450	17500
	Sub Total Area Treatment	**214800**	**5182250**
B	**Drainage Line Treatment**		
1	Loose Rock Check Dam	0	0
2	Gabion Check Dam/Check dam	0	0
3	Loose boulder structure	0	0
4	Check weir/ Retaining Wall	0	0

Sl.No	Description of treatments	District	Chi
		Fund support sought from AFB	Total cost
5	Gully Plugs	0	0
6	Bush Clearance	0	194965
7	Renovation of WHS	0	0
8	Earthwork -Oorani	0	42687
9	Channel Clearance	0	0
10	Channel Formation	0	66290
	Sub Total- Drainage Line Treatment	**0**	**303942**
	Total – improvement in soil – water regime	**214800**	**5486192**
II	**Climate Resilient Farming System and improved livelihood**		
A	**Afforestation and Pasture Land Development**		
1	Fodder Development /Shaff Cutter	310800	513000
2	Grass Seeding (Ha)		
3	Korangad Development		
4	Nursary for Forestry specis		25000
5	Green coverage (Gliricidia sepium)/manure	0	0
6	Azolla Development	0	0
12	Agro Forestry in channel/Castor Seeding	15000	22900
	Sub Total- Afforestation and Pasture Land Development	**325800**	**560900**
B	**Other Climate Resilient Farming/ Livelihood Support**		
1	Vermi compost /Pit	158000	120000
2	Drip Irrigation Demonstration	80000	100000
3	Micro Sprinkler Demonstration	160000	120000
4	Integrated Farming System	142500	142500
5	Tank Silt Application and Soil Test	150000	225000

Sl.No	Description of treatments	District	Chi
		Fund support sought from AFB	Total cost
6	Demo Plot /Preparation for minor millet cultivation		500000
7	Establishment of community Seed bank for mionor millet		
8	Herbal Garden	25000	50000
9	Cattle Tank /Trevis Inatallation	160000	224000
10	Organic Farming System Promotion	25000	25000
11	Backyard Poultry Unit		
12	Kitchen Garden	150800	174000
13	Mushroom Cultivation	0	0
14	Pitcher Irrigation	0	40000
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**1051300**	**1720500**
C	**Energy Efficinet Sysetm**		
1	Biogas	154000	92400
2	Improved Chullha	0	0
3	Solar water Pump		
	Sub Total – Energy Efficient System	**154000**	**92400**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**1531100**	**2373800**
III	**Risk Mitigation**		
1	Installation of Automatic Weather Station	0	520000
2	RML subscription (3 years) on crop, weather & market info	150000	150000
3	Instrumentation, e.g. Run-off measurement, etc.		
4	Geo- hydrological study and crop water budgeting	150000	150000

Sl.No	Description of treatments	District	Chi
		Fund support sought from AFB	Total cost
	Sub Total Risk Mitigation	**300000**	**820000**
IV	**Knowledge management**		
1	Posters and pamphlet on climate change adaptation	25000	25000
2	Educational kit – Manual of Climate Change Adaptation	0	0
3	Awareness and Mobilization / Capacity Building Programs	50000	50000
4	Audio Visual Tools – short films	70000	70000
5	Exposure visits, peer learning	100000	100000
6	IEC Activities In the Project area	30000	30000
7	Vetrinary camp / Silage Making /Para extention workers	0	0
8	Income Generation Skill Training	0	0
9	Information Board	20000	20000
10	Village Knowledge centre		
	Sub Total Knowledge management	**295000**	**295000**
V	**Other Component (NABARD Supported)**		
1	Productivity Enhancement measures under - watershed component	0	350000
2	Livelihood support for Landless and women - watershed component	0	500000
3	Training and demonstration – watershed component	0	185000
4	Project management – watershed component		1269236
5	Maintenance fund for watershed treatment – business as usual Scenario	0	348810

Sl.No	Description of treatments	District	Chi
		Fund support sought from AFB	Total cost
6	Supervision Cost	0	267089
	Sub Total – Other Components (NABARD supported)	**0**	**2920135**
	Grand Total	**2340900**	**11895127**

Sl.No	Description of treatments	thalai Watershed in Madurai	
		Beneficiaries contribution	Fund support by NABARD
I	**Improvement in the soil water regime**		
A	**Area Treatment**		
1	Field Bund	511159	1192705
2	Farm Pond with outlet	86419	483280
3	WAT	0	0
4	CCT	0	0
5	Stone Gully Plugs	0	0
6	Field Bund Pipe outlet /Stone outlet	64	12936
7	Stone wall / Stone Bund	0	0
8	Silvipasture	0	0
9	Agro-Forestry System	75282	976237
10	Agro – Horticulture /Dry land Horticulture	70282	1269386
11	Summer Ploughing /Disc Ploughing		153000
12	Catch Pit	0	0
13	Well Recharge Pit	7040	61960
14	Percolation tank	0	0
15	Sunken Pond with outlet		
16	Deep Tillage		
	Sub Total Area Treatment	**750246**	**4149504**
B	**Drainage Line Treatment**		
1	Loose Rock Check Dam	0	0
2	Gabion Check Dam/Check dam	0	0
3	Loose boulder structure	0	0
4	Check weir/ Retaining Wall	0	0

Sl.No	Description of treatments	thalai Watershed in Madurai	
		Beneficiaries contribution	Fund support by NABARD
5	Gully Plugs	0	0
6	Bush Clearance	3915	191050
7	Renovation of WHS	0	0
8	Earthwork -Oorani	6830	35857
9	Channel Clearance	0	0
10	Channel Formation	10606	55684
	Sub Total- Drainage Line Treatment	**21351**	**282591**
	Total – improvement in soil – water regime	**771597**	**4432095**
II	**Climate Resilient Farming System and improved livelihood**		
A	**Afforestation and Pasture Land Development**		
1	Fodder Development /Shaff Cutter		
2	Grass Seeding (Ha)		
3	Korangad Development		
4	Nursary for Forestry specis		
5	Green coverage (Gliricidia sepium)/manure	0	0
6	Azolla Development	0	0
12	Agro Forestry in channel/Castor Seeding	1130	14270
	Sub Total- Afforestation and Pasture Land Development	**1130**	**14270**
B	**Other Climate Resilient Farming/ Livelihood Support**		
1	Vermi compost /Pit		
2	Drip Irrigation Demonstration		
3	Micro Sprinkler Demonstration		
4	Integrated Farming System		
5	Tank Silt Application and Soil Test		

Sl.No	Description of treatments	thalai Watershed in Madurai	
		Beneficiaries contribution	Fund support by NABARD
6	Demo Plot /Preparation for minor millet cultivation		
7	Establishment of community Seed bank for mionor millet		
8	Herbal Garden		
9	Cattle Tank /Trevis Inatallation		
10	Organic Farming System Promotion		
11	Backyard Poultry Unit		
12	Kitchen Garden		
13	Mushroom Cultivation	0	0
14	Pitcher Irrigation	0	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**0**	**0**
C	**Energy Efficinet Sysetm**		
1	Biogas		
2	Improved Chullha	0	0
3	Solar water Pump		
	Sub Total – Energy Efficient System	**0**	**0**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**1130**	**14270**
III	**Risk Mitigation**		
1	Installation of Automatic Weather Station	0	0
2	RML subscription (3 years) on crop, weather & market info	0	0
3	Instrumentation, e.g. Run-off measurement, etc.		
4	Geo- hydrological study and crop water budgeting	0	0

Sl.No	Description of treatments	thalai Watershed in Madurai	
		Beneficiaries contribution	Fund support by NABARD
	Sub Total Risk Mitigation	**0**	**0**
IV	**Knowledge management**		
1	Posters and pamphlet on climate change adaptation	0	0
2	Educational kit – Manual of Climate Change Adaptation	0	0
3	Awareness and Mobilization / Capacity Building Programs	0	0
4	Audio Visual Tools – short films	0	0
5	Exposure visits, peer learning	0	0
6	IEC Activities In the Project area	0	0
7	Vetrinary camp / Silage Making /Para extention workers	0	0
8	Income Generation Skill Training	0	0
9	Information Board	0	0
10	Village Knowledge centre	0	0
	Sub Total Knowledge management	**0**	**0**
V	**Other Component (NABARD Supported)**		
1	Productivity Enhancement measures under - watershed component	0	350000
2	Livelihood support for Landless and women - watershed component	0	500000
3	Training and demonstration – watershed component	0	185000
4	Project management – watershed component	0	1269236
5	Maintenance fund for watershed treatment – business as usual Scenario	0	348810

Sl.No	Description of treatments	thalai Watershed in Madurai	
		Beneficiaries contribution	Fund support by NABARD
6	Supervision Cost	0	267089
	Sub Total – Other Components (NABARD supported)	**0**	**2920135**
	Grand Total	**772727**	**7366499**

Sl.No	Description of treatments	District	Sriramap
		Fund support sought from AFB	Total cost
I	**Improvement in the soil water regime**		
A	**Area Treatment**		
1	Field Bund		4762112
2	Farm Pond with outlet		153604
3	WAT		0
4	CCT		0
5	Stone Gully Plugs		0
6	Field Bund Pipe outlet /Stone outlet		66200
7	Stone wall / Stone Bund		0
8	Silvipasture		0
9	Agro-Forestry System		1492725
10	Agro – Horticulture /Dry land Horticulture		2198126
11	Summer Ploughing /Disc Ploughing	175000	694750
12	Catch Pit	0	0
13	Well Recharge Pit	90000	468000
14	Percolation tank		0
15	Sunken Pond with outlet		70026
16	Deep Tillage	17500	20125
	Sub Total Area Treatment	**282500**	**9925668**
B	**Drainage Line Treatment**		
1	Loose Rock Check Dam	0	0
2	Gabion Check Dam/Check dam	0	0
3	Loose boulder structure	0	0
4	Check weir/ Retaining Wall	0	0

Sl.No	Description of treatments	District	Sriramap
		Fund support sought from AFB	Total cost
5	Gully Plugs	0	0
6	Bush Clearance	0	0
7	Renovation of WHS	0	0
8	Earthwork -Oorani	0	0
9	Channel Clearance	0	0
10	Channel Formation	0	8035
	Sub Total- Drainage Line Treatment	**0**	**8035**
	Total – improvement in soil – water regime	**282500**	**9933703**
II	**Climate Resilient Farming System and improved livelihood**		
A	**Afforestation and Pasture Land Development**		
1	Fodder Development /Shaff Cutter	513000	731400
2	Grass Seeding (Ha)		148300
3	Korangad Development		17500
4	Nursary for Forestry specis	25000	
5	Green coverage (Gliricidia sepium)/manure		
6	Azolla Development		30000
12	Agro Forestry in channel/Castor Seeding	7500	0
	Sub Total- Afforestation and Pasture Land Development	**545500**	**927200**
B	**Other Climate Resilient Farming/ Livelihood Support**		
1	Vermi compost /Pit	120000	60000
2	Drip Irrigation Demonstration	100000	90000
3	Micro Sprinkler Demonstration	120000	280000
4	Integrated Farming System	142500	199500
5	Tank Silt Application and Soil Test	225000	82500

Sl.No	Description of treatments	District	Sriramap
		Fund support sought from AFB	Total cost
6	Demo Plot /Preparation for minor millet cultivation	500000	55000
7	Establishment of community Seed bank for mionor millet		
8	Herbal Garden	50000	
9	Cattle Tank /Trevis Inatallation	224000	
10	Organic Farming System Promotion	25000	
11	Backyard Poultry Unit		
12	Kitchen Garden	174000	30000
13	Mushroom Cultivation		
14	Pitcher Irrigation	40000	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**1720500**	**797000**
C	**Energy Efficinet Sysetm**		
1	Biogas	92400	110000
2	Improved Chullha	0	0
3	Solar water Pump		
	Sub Total – Energy Efficient System	**92400**	**110000**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**2358400**	**1834200**
III	**Risk Mitigation**		
1	Installation of Automatic Weather Station	520000	0
2	RML subscription (3 years) on crop, weather & market info	150000	150000
3	Instrumentation, e.g. Run-off measurement, etc.		80000
4	Geo- hydrological study and crop water budgeting	150000	150000

Sl.No	Description of treatments	District	Sriramap
		Fund support sought from AFB	Total cost
	Sub Total Risk Mitigation	**820000**	**380000**
IV	**Knowledge management**		
1	Posters and pamphlet on climate change adaptation	25000	25000
2	Educational kit – Manual of Climate Change Adaptation	0	100000
3	Awareness and Mobilization / Capacity Building Programs	50000	50000
4	Audio Visual Tools – short films	70000	70000
5	Exposure visits, peer learning	100000	100000
6	IEC Activities In the Project area	30000	
7	Vetrinary camp / Silage Making /Para extention workers	0	0
8	Income Generation Skill Training	0	0
9	Information Board	20000	0
10	Village Knowledge centre	0	0
	Sub Total Knowledge management	**295000**	**345000**
V	**Other Component (NABARD Supported)**		
1	Productivity Enhancement measures under - watershed component	0	425000
2	Livelihood support for Landless and women - watershed component	0	1070000
3	Training and demonstration – watershed component	0	355000
4	Project management – watershed component		2209780
5	Maintenance fund for watershed treatment – business as usual Scenario	0	660820

Sl.No	Description of treatments	District	Sriramap
		Fund support sought from AFB	Total cost
6	Supervision Cost	0	519738
	Sub Total – Other Components (NABARD supported)	**0**	**5240338**
	Grand Total	**3755900**	**17733241**

Sl.No	Description of treatments	uram- Malvarpatty Watershed in	
		Beneficiaries contribution	Fund support by NABARD
I	**Improvement in the soil water regime**		
A	**Area Treatment**		
1	Field Bund	761938	4000174
2	Farm Pond with outlet	22705	130899
3	WAT	0	0
4	CCT	0	0
5	Stone Gully Plugs	0	0
6	Field Bund Pipe outlet /Stone outlet	3040	63160
7	Stone wall / Stone Bund	0	0
8	Silvipasture	0	0
9	Agro-Forestry System	113422	1379303
10	Agro – Horticulture /Dry land Horticulture	115319	2082807
11	Summer Ploughing /Disc Ploughing		
12	Catch Pit	0	0
13	Well Recharge Pit		
14	Percolation tank	0	0
15	Sunken Pond with outlet	10374	59652
16	Deep Tillage		
	Sub Total Area Treatment	**1026798**	**7715995**
B	**Drainage Line Treatment**		
1	Loose Rock Check Dam	0	0
2	Gabion Check Dam/Check dam	0	0
3	Loose boulder structure	0	0
4	Check weir/ Retaining Wall	0	0

Sl.No	Description of treatments	uram- Malvarpatty Watershed in	
		Beneficiaries contribution	Fund support by NABARD
5	Gully Plugs	0	0
6	Bush Clearance	0	0
7	Renovation of WHS	0	0
8	Earthwork -Oorani	0	0
9	Channel Clearance	0	0
10	Channel Formation	1286	6750
	Sub Total- Drainage Line Treatment	**1286**	**6750**
	Total – improvement in soil – water regime	**1028083**	**7722745**
II	**Climate Resilient Farming System and improved livelihood**		
A	**Afforestation and Pasture Land Development**		
1	Fodder Development /Shaff Cutter	7205	127795
2	Grass Seeding (Ha)	4198	144102
3	Korangad Development		
4	Nursary for Forestry specis		
5	Green coverage (Gliricidia sepium)/manure		
6	Azolla Development		
12	Agro Forestry in channel/Castor Seeding	0	0
	Sub Total- Afforestation and Pasture Land Development	**11403**	**271897**
B	**Other Climate Resilient Farming/ Livelihood Support**		
1	Vermi compost /Pit		
2	Drip Irrigation Demonstration		
3	Micro Sprinkler Demonstration		
4	Integrated Farming System		
5	Tank Silt Application and Soil Test		

Sl.No	Description of treatments	uram- Malvarpatty Watershed in	
		Beneficiaries contribution	Fund support by NABARD
6	Demo Plot /Preparation for minor millet cultivation		
7	Establishment of community Seed bank for mionor millet		
8	Herbal Garden		
9	Cattle Tank /Trevis Inatallation		
10	Organic Farming System Promotion		
11	Backyard Poultry Unit		
12	Kitchen Garden	0	0
13	Mushroom Cultivation		
14	Pitcher Irrigation	0	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**0**	**0**
C	**Energy Efficinet Sysetm**		
1	Biogas		
2	Improved Chullha	0	0
3	Solar water Pump		
	Sub Total – Energy Efficient System	**0**	**0**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**11403**	**271897**
III	**Risk Mitigation**		
1	Installation of Automatic Weather Station	0	0
2	RML subscription (3 years) on crop, weather & market info	0	0
3	Instrumentation, e.g. Run-off measurement, etc.		
4	Geo- hydrological study and crop water budgeting	0	0

Sl.No	Description of treatments	uram- Malvarpatty Watershed in	
		Beneficiaries contribution	Fund support by NABARD
	Sub Total Risk Mitigation	**0**	**0**
IV	**Knowledge management**		
1	Posters and pamphlet on climate change adaptation	0	0
2	Educational kit – Manual of Climate Change Adaptation	0	0
3	Awareness and Mobilization / Capacity Building Programs	0	0
4	Audio Visual Tools – short films	0	0
5	Exposure visits, peer learning	0	0
6	IEC Activities In the Project area	0	0
7	Vetrinary camp / Silage Making /Para extention workers	0	0
8	Income Generation Skill Training	0	0
9	Information Board	0	0
10	Village Knowledge centre	0	0
	Sub Total Knowledge management	**0**	**0**
V	**Other Component (NABARD Supported)**		
1	Productivity Enhancement measures under - watershed component	0	425000
2	Livelihood support for Landless and women - watershed component	0	1070000
3	Training and demonstration – watershed component	0	355000
4	Project management – watershed component	0	2209780
5	Maintenance fund for watershed treatment – business as usual Scenario	0	660820

Sl.No	Description of treatments	uram- Malvarpatty Watershed in	
		Beneficiaries contribution	Fund support by NABARD
6	Supervision Cost	0	519738
	Sub Total – Other Components (NABARD supported)	**0**	**5240338**
	Grand Total	**1039486**	**13234980**

Sl.No	Description of treatments	Dindigul District	Ay
		Fund support sought from AFB	Total cost
I	**Improvement in the soil water regime**		
A	**Area Treatment**		
1	Field Bund		4829005
2	Farm Pond with outlet		183893
3	WAT		937356
4	CCT		0
5	Stone Gully Plugs		0
6	Field Bund Pipe outlet /Stone outlet		98800
7	Stone wall / Stone Bund		0
8	Silvipasture		0
9	Agro-Forestry System		1045500
10	Agro – Horticulture /Dry land Horticulture		1592000
11	Summer Ploughing /Disc Ploughing	694750	236250
12	Catch Pit	0	0
13	Well Recharge Pit	468000	510000
14	Percolation tank		0
15	Sunken Pond with outlet		135150
16	Deep Tillage	20125	28350
	Sub Total Area Treatment	**1182875**	**9596304**
B	**Drainage Line Treatment**		
1	Loose Rock Check Dam		0
2	Gabion Check Dam/Check dam		500000
3	Loose boulder structure		40640
4	Check weir/ Retaining Wall		

Sl.No	Description of treatments	Dindigul District	Ay
		Fund support sought from AFB	Total cost
5	Gully Plugs		0
6	Bush Clearance		0
7	Renovation of WHS		0
8	Earthwork -Oorani		0
9	Channel Clearance		0
10	Channel Formation		
	Sub Total- Drainage Line Treatment	**0**	**540640**
	Total – improvement in soil – water regime	**1182875**	**10136944**
II	**Climate Resilient Farming System and improved livelihood**		
A	**Afforestation and Pasture Land Development**		
1	Fodder Development /Shaff Cutter	596400	600600
2	Grass Seeding (Ha)		
3	Korangad Development	17500	
4	Nursary for Forestry specis		
5	Green coverage (Gliricidia sepium)/manure		
6	Azolla Development	30000	67500
12	Agro Forestry in channel/Castor Seeding		0
	Sub Total- Afforestation and Pasture Land Development	**643900**	**668100**
B	**Other Climate Resilient Farming/ Livelihood Support**		
1	Vermi compost /Pit	60000	36000
2	Drip Irrigation Demonstration	90000	
3	Micro Sprinkler Demonstration	280000	200000
4	Integrated Farming System	199500	399000
5	Tank Silt Application and Soil Test	82500	375000

Sl.No	Description of treatments	Dindigul District	Ay
		Fund support sought from AFB	Total cost
6	Demo Plot /Preparation for minor millet cultivation	55000	
7	Establishment of community Seed bank for mionor millet		
8	Herbal Garden		
9	Cattle Tank /Trevis Inatallation		
10	Organic Farming System Promotion		
11	Backyard Poultry Unit		102000
12	Kitchen Garden	30000	375000
13	Mushroom Cultivation		
14	Pitcher Irrigation	0	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**797000**	**1487000**
C	**Energy Efficinet Sysetm**		
1	Biogas	110000	220000
2	Improved Chullha	0	0
3	Solar water Pump		
	Sub Total – Energy Efficient System	**110000**	**220000**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**1550900**	**2375100**
III	**Risk Mitigation**		
1	Installation of Automatic Weather Station	0	520000
2	RML subscription (3 years) on crop, weather & market info	150000	150000
3	Instrumentation, e.g. Run-off measurement, etc.	80000	80000
4	Geo- hydrological study and crop water budgeting	150000	150000

Sl.No	Description of treatments	Dindigul District	Ay
		Fund support sought from AFB	Total cost
	Sub Total Risk Mitigation	**380000**	**900000**
IV	**Knowledge management**		
1	Posters and pamphlet on climate change adaptation	25000	25000
2	Educational kit – Manual of Climate Change Adaptation	100000	
3	Awareness and Mobilization / Capacity Building Programs	50000	100000
4	Audio Visual Tools – short films	70000	70000
5	Exposure visits, peer learning	100000	100000
6	IEC Activities In the Project area		
7	Vetrinary camp / Silage Making /Para extention workers		
8	Income Generation Skill Training		
9	Information Board		
10	Village Knowledge centre		70000
	Sub Total Knowledge management	**345000**	**365000**
V	**Other Component (NABARD Supported)**		
1	Productivity Enhancement measures under - watershed component	0	767500
2	Livelihood support for Landless and women - watershed component	0	1156500
3	Training and demonstration – watershed component	0	385000
4	Project management – watershed component		2385380
5	Maintenance fund for watershed treatment – business as usual Scenario	0	723990

Sl.No	Description of treatments	Dindigul District	Ay
		Fund support sought from AFB	Total cost
6	Supervision Cost	0	571581
	Sub Total – Other Components (NABARD supported)	**0**	**5989951**
	Grand Total	**3458775**	**19766995**

Sl.No	Description of treatments	yampalayam Watershed in Dindig	
		Beneficiaries contribution	Fund support by NABARD
I	**Improvement in the soil water regime**		
A	**Area Treatment**		
1	Field Bund	772641	4056364
2	Farm Pond with outlet	28031	155862
3	WAT	149978	787378
4	CCT	0	0
5	Stone Gully Plugs	0	0
6	Field Bund Pipe outlet /Stone outlet	486	98314
7	Stone wall / Stone Bund	0	0
8	Silvipasture	0	0
9	Agro-Forestry System	79440	966060
10	Agro – Horticulture /Dry land Horticulture	83520	1508480
11	Summer Ploughing /Disc Ploughing		
12	Catch Pit	0	0
13	Well Recharge Pit	7040	61960
14	Percolation tank	0	0
15	Sunken Pond with outlet	20696	114454
16	Deep Tillage		
	Sub Total Area Treatment	**1141832**	**7748872**
B	**Drainage Line Treatment**		
1	Loose Rock Check Dam	0	0
2	Gabion Check Dam/Check dam	0	500000
3	Loose boulder structure	1332	39308
4	Check weir/ Retaining Wall		

Sl.No	Description of treatments	yampalayam Watershed in Dindig	
		Beneficiaries contribution	Fund support by NABARD
5	Gully Plugs	0	0
6	Bush Clearance	0	0
7	Renovation of WHS	0	0
8	Earthwork -Oorani	0	0
9	Channel Clearance	0	0
10	Channel Formation		
	Sub Total- Drainage Line Treatment	**1332**	**539308**
	Total – improvement in soil – water regime	**1143164**	**8288180**
II	**Climate Resilient Farming System and improved livelihood**		
A	**Afforestation and Pasture Land Development**		
1	Fodder Development /Shaff Cutter		
2	Grass Seeding (Ha)		
3	Korangad Development		
4	Nursary for Forestry specis		
5	Green coverage (Gliricidia sepium)/manure		
6	Azolla Development		
12	Agro Forestry in channel/Castor Seeding	0	0
	Sub Total- Afforestation and Pasture Land Development	**0**	**0**
B	**Other Climate Resilient Farming/ Livelihood Support**		
1	Vermi compost /Pit		
2	Drip Irrigation Demonstration		
3	Micro Sprinkler Demonstration		
4	Integrated Farming System		
5	Tank Silt Application and Soil Test		

Sl.No	Description of treatments	yampalayam Watershed in Dindig	
		Beneficiaries contribution	Fund support by NABARD
6	Demo Plot /Preparation for minor millet cultivation		
7	Establishment of community Seed bank for mionor millet		
8	Herbal Garden		
9	Cattle Tank /Trevis Inatallation		
10	Organic Farming System Promotion		
11	Backyard Poultry Unit		
12	Kitchen Garden	0	0
13	Mushroom Cultivation		
14	Pitcher Irrigation	0	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**0**	**0**
C	**Energy Efficinet Sysetm**		
1	Biogas		
2	Improved Chullha	0	0
3	Solar water Pump		
	Sub Total – Energy Efficient System	**0**	**0**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**0**	**0**
III	**Risk Mitigation**		
1	Installation of Automatic Weather Station	0	0
2	RML subscription (3 years) on crop, weather & market info	0	0
3	Instrumentation, e.g. Run-off measurement, etc.		
4	Geo- hydrological study and crop water budgeting	0	0

Sl.No	Description of treatments	yampalayam Watershed in Dindig	
		Beneficiaries contribution	Fund support by NABARD
	Sub Total Risk Mitigation	**0**	**0**
IV	**Knowledge management**		
1	Posters and pamphlet on climate change adaptation	0	0
2	Educational kit – Manual of Climate Change Adaptation	0	0
3	Awareness and Mobilization / Capacity Building Programs	0	0
4	Audio Visual Tools – short films	0	0
5	Exposure visits, peer learning	0	0
6	IEC Activities In the Project area	0	0
7	Vetrinary camp / Silage Making /Para extention workers	0	0
8	Income Generation Skill Training	0	0
9	Information Board	0	0
10	Village Knowledge centre	0	0
	Sub Total Knowledge management	**0**	**0**
V	**Other Component (NABARD Supported)**		
1	Productivity Enhancement measures under - watershed component	0	767500
2	Livelihood support for Landless and women - watershed component	0	1156500
3	Training and demonstration – watershed component	0	385000
4	Project management – watershed component	0	2385380
5	Maintenance fund for watershed treatment – business as usual Scenario	0	723990

Sl.No	Description of treatments	yampalayam Watershed in Dindig	
		Beneficiaries contribution	Fund support by NABARD
6	Supervision Cost	0	571581
	Sub Total – Other Components (NABARD supported)	**0**	**5989951**
	Grand Total	**1143164**	**14278131**

Sl.No	Description of treatments	ul District	
		Fund support sought from AFB	Total cost
I	**Improvement in the soil water regime**		
A	**Area Treatment**		
1	Field Bund	0	32360196
2	Farm Pond with outlet	0	4432854
3	WAT	0	2307608
4	CCT	0	3557384
5	Stone Gully Plugs	0	1174179
6	Field Bund Pipe outlet /Stone outlet	0	1356777
7	Stone wall / Stone Bund	0	2647010
8	Silvipasture	0	232825
9	Agro-Forestry System	0	10370441
10	Agro – Horticulture /Dry land Horticulture	0	12364863
11	Summer Ploughing /Disc Ploughing	236250	3168550
12	Catch Pit	0	305352
13	Well Recharge Pit	441000	3476201
14	Percolation tank		256122
15	Sunken Pond with outlet		559845
16	Deep Tillage	28350	169050
	Sub Total Area Treatment	**705600**	**78739256**
B	**Drainage Line Treatment**		
1	Loose Rock Check Dam		412041
2	Gabion Check Dam/Check dam		878186
3	Loose boulder structure		63440
4	Check weir/ Retaining Wall		1866784

Sl.No	Description of treatments	ul District	
		Fund support sought from AFB	Total cost
5	Gully Plugs		0
6	Bush Clearance		700965
7	Renovation of WHS		1221209
8	Earthwork -Oorani		42687
9	Channel Clearance		164880
10	Channel Formation		322718
	Sub Total- Drainage Line Treatment	**0**	**5672910**
	Total – improvement in soil – water regime	**705600**	**84412166**
II	**Climate Resilient Farming System and improved livelihood**		
A	**Afforestation and Pasture Land Development**		
1	Fodder Development /Shaff Cutter	600600	3220400
2	Grass Seeding (Ha)		386500
3	Korangad Development		17500
4	Nursary for Forestry specis		25000
5	Green coverage (Gliricidia sepium)/manure		688500
6	Azolla Development	67500	727600
12	Agro Forestry in channel/Castor Seeding		37900
	Sub Total- Afforestation and Pasture Land Development	**668100**	**5103400**
B	**Other Climate Resilient Farming/ Livelihood Support**		
1	Vermi compost /Pit	36000	4328328
2	Drip Irrigation Demonstration		440000
3	Micro Sprinkler Demonstration	200000	1250000
4	Integrated Farming System	399000	1482000
5	Tank Silt Application and Soil Test	375000	3187500

Sl.No	Description of treatments	ul District	
		Fund support sought from AFB	Total cost
6	Demo Plot /Preparation for minor millet cultivation		865000
7	Establishment of community Seed bank for mionor millet		15000
8	Herbal Garden		100000
9	Cattle Tank /Trevis Inatallation		556000
10	Organic Farming System Promotion		50000
11	Backyard Poultry Unit	102000	102000
12	Kitchen Garden	375000	1832750
13	Mushroom Cultivation		50000
14	Pitcher Irrigation	0	40000
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**1487000**	**14298578**
C	**Energy Efficinet Sysetm**		
1	Biogas	220000	1387800
2	Improved Chullha	0	0
3	Solar water Pump		125000
	Sub Total – Energy Efficient System	**220000**	**1512800**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**2375100**	**20914778**
III	**Risk Mitigation**		
1	Installation of Automatic Weather Station	520000	2600000
2	RML subscription (3 years) on crop, weather & market info	150000	1500000
3	Instrumentation, e.g. Run-off measurement, etc.	80000	240000
4	Geo- hydrological study and crop water budgeting	150000	1500000

Sl.No	Description of treatments	;ul District	
		Fund support sought from AFB	Total cost
	Sub Total Risk Mitigation	**900000**	**5840000**
IV	**Knowledge management**		
1	Posters and pamphlet on climate change adaptation	25000	205000
2	Educational kit – Manual of Climate Change Adaptation		200000
3	Awareness and Mobilization / Capacity Building Programs	100000	502000
4	Audio Visual Tools – short films	70000	450000
5	Exposure visits, peer learning	100000	750000
6	IEC Activities In the Project area		210000
7	Vetrinary camp / Silage Making /Para extention workers		60000
8	Income Generation Skill Training		50000
9	Information Board		60000
10	Village Knowledge centre	70000	170000
	Sub Total Knowledge management	**365000**	**2657000**
V	**Other Component (NABARD Supported)**		
1	Productivity Enhancement measures under - watershed component	0	4228250
2	Livelihood support for Landless and women - watershed component	0	8750830
3	Training and demonstration – watershed component	0	2524000
4	Project management – watershed component		18901842
5	Maintenance fund for watershed treatment – business as usual Scenario	0	5631753

Sl.No	Description of treatments	;ul District	
		Fund support sought from AFB	Total cost
6	Supervision Cost	0	4328651
	Sub Total – Other Components (NABARD supported)	**0**	**44365326**
	Grand Total	**4345700**	**158189270**

Sl.No	Description of treatments	Total cost	
		Beneficiaries contribution	Fund support by NABARD
I	**Improvement in the soil water regime**		
A	**Area Treatment**		
1	Field Bund	5652236	26707960
2	Farm Pond with outlet	991162	3441690
3	WAT	369218	1938390
4	CCT	569182	2988202
5	Stone Gully Plugs	41275	1132904
6	Field Bund Pipe outlet /Stone outlet	67869	1288908
7	Stone wall / Stone Bund	1165521	1481489
8	Silvipasture	7228	225597
9	Agro-Forestry System	705895	9664546
10	Agro – Horticulture /Dry land Horticulture	551153	11813710
11	Summer Ploughing /Disc Ploughing	0	505050
12	Catch Pit	3200	16800
13	Well Recharge Pit	14524	130646
14	Percolation tank	40980	215142
15	Sunken Pond with outlet	86993	472852
16	Deep Tillage	0	0
	Sub Total Area Treatment	**10266436**	**62023886**
B	**Drainage Line Treatment**		
1	Loose Rock Check Dam	21170	390871
2	Gabion Check Dam/Check dam	17716	860470
3	Loose boulder structure	3726	59714
4	Check weir/ Retaining Wall	75548	1791236

Sl.No	Description of treatments	Total cost	
		Beneficiaries contribution	Fund support by NABARD
5	Gully Plugs	0	0
6	Bush Clearance	3915	697050
7	Renovation of WHS	195393	1025816
8	Earthwork -Oorani	6830	35857
9	Channel Clearance	26380	138500
10	Channel Formation	51635	271084
	Sub Total- Drainage Line Treatment	**402312**	**5270598**
	Total – improvement in soil – water regime	**10668748**	**67294484**
II	**Climate Resilient Farming System and improved livelihood**		
A	**Afforestation and Pasture Land Development**		
1	Fodder Development /Shaff Cutter	9605	170395
2	Grass Seeding (Ha)	12746	373754
3	Korangad Development	0	0
4	Nursary for Forestry specis	0	0
5	Green coverage (Gliricidia sepium)/manure	0	128000
6	Azolla Development	0	0
12	Agro Forestry in channel/Castor Seeding	1130	14270
	Sub Total- Afforestation and Pasture Land Development	**23481**	**686419**
B	**Other Climate Resilient Farming/ Livelihood Support**		
1	Vermi compost /Pit	0	268000
2	Drip Irrigation Demonstration	0	0
3	Micro Sprinkler Demonstration	0	0
4	Integrated Farming System	0	0
5	Tank Silt Application and Soil Test	0	0

Sl.No	Description of treatments	Total cost	
		Beneficiaries contribution	Fund support by NABARD
6	Demo Plot /Preparation for minor millet cultivation	0	0
7	Establishment of community Seed bank for mionor millet	0	0
8	Herbal Garden	0	0
9	Cattle Tank /Trevis Inatallation	0	0
10	Organic Farming System Promotion	0	0
11	Backyard Poultry Unit	0	0
12	Kitchen Garden	0	300000
13	Mushroom Cultivation	0	0
14	Pitcher Irrigation	0	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**0**	**568000**
C	**Energy Efficinet Sysetm**		
1	Biogas	0	0
2	Improved Chullha	0	0
3	Solar water Pump	0	0
	Sub Total – Energy Efficient System	**0**	**0**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**23481**	**1254419**
III	**Risk Mitigation**		
1	Installation of Automatic Weather Station	0	0
2	RML subscription (3 years) on crop, weather & market info	0	0
3	Instrumentation, e.g. Run-off measurement, etc.	0	0
4	Geo- hydrological study and crop water budgeting	0	0

Sl.No	Description of treatments	Total cost	
		Beneficiaries contribution	Fund support by NABARD
	Sub Total Risk Mitigation	**0**	**0**
IV	**Knowledge management**		
1	Posters and pamphlet on climate change adaptation	0	0
2	Educational kit – Manual of Climate Change Adaptation	0	0
3	Awareness and Mobilization / Capacity Building Programs	0	0
4	Audio Visual Tools – short films	0	0
5	Exposure visits, peer learning	0	0
6	IEC Activities In the Project area	0	0
7	Vetrinary camp / Silage Making /Para extention workers	0	0
8	Income Generation Skill Training	0	0
9	Information Board	0	0
10	Village Knowledge centre	0	0
	Sub Total Knowledge management	**0**	**0**
V	**Other Component (NABARD Supported)**		
1	Productivity Enhancement measures under - watershed component	0	4228250
2	Livelihood support for Landless and women - watershed component	0	8750830
3	Training and demonstration – watershed component	0	2524000
4	Project management – watershed component	0	18901842
5	Maintenance fund for watershed treatment – business as usual Scenario	0	5631753

Sl.No	Description of treatments	Total cost	
		Beneficiaries contribution	Fund support by NABARD
6	Supervision Cost	0	4328651
	Sub Total – Other Components (NABARD supported)	**0**	**44365326**
	Grand Total	**10692230**	**112914228**

Sl.No	Description of treatments	Fund support sought from AFB
I	**Improvement in the soil water regime**	
A	**Area Treatment**	
1	Field Bund	0
2	Farm Pond with outlet	0
3	WAT	0
4	CCT	0
5	Stone Gully Plugs	0
6	Field Bund Pipe outlet /Stone outlet	0
7	Stone wall / Stone Bund	0
8	Silvipasture	0
9	Agro-Forestry System	0
10	Agro – Horticulture /Dry land Horticulture	0
11	Summer Ploughing /Disc Ploughing	2663500
12	Catch Pit	285352
13	Well Recharge Pit	3331031
14	Percolation tank	0
15	Sunken Pond with outlet	0
16	Deep Tillage	169050
	Sub Total Area Treatment	**6448933**
B	**Drainage Line Treatment**	
1	Loose Rock Check Dam	0
2	Gabion Check Dam/Check dam	0
3	Loose boulder structure	0
4	Check weir/ Retaining Wall	0

Sl.No	Description of treatments	Fund support sought from AFB
5	Gully Plugs	0
6	Bush Clearance	0
7	Renovation of WHS	0
8	Earthwork -Oorani	0
9	Channel Clearance	0
10	Channel Formation	0
	Sub Total- Drainage Line Treatment	**0**
	Total – improvement in soil – water regime	**6448933**
II	**Climate Resilient Farming System and improved livelihood**	
A	**Afforestation and Pasture Land Development**	
1	Fodder Development /Shaff Cutter	3040400
2	Grass Seeding (Ha)	0
3	Korangad Development	17500
4	Nursary for Forestry specis	25000
5	Green coverage (Gliricidia sepium)/manure	560500
6	Azolla Development	727600
12	Agro Forestry in channel/Castor Seeding	22500
	Sub Total- Afforestation and Pasture Land Development	**4393500**
B	**Other Climate Resilient Farming/ Livelihood Support**	
1	Vermi compost /Pit	4060328
2	Drip Irrigation Demonstration	440000
3	Micro Sprinkler Demonstration	1250000
4	Integrated Farming System	1482000
5	Tank Silt Application and Soil Test	3187500

Sl.No	Description of treatments	Fund support sought from AFB
6	Demo Plot /Preparation for minor millet cultivation	865000
7	Establishment of community Seed bank for mionor millet	15000
8	Herbal Garden	100000
9	Cattle Tank /Trevis Inatallation	556000
10	Organic Farming System Promotion	50000
11	Backyard Poultry Unit	102000
12	Kitchen Garden	1532750
13	Mushroom Cultivation	50000
14	Pitcher Irrigation	40000
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**13730578**
C	**Energy Efficinet Sysetm**	
1	Biogas	1387800
2	Improved Chullha	0
3	Solar water Pump	125000
	Sub Total – Energy Efficient System	**1512800**
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**19636878**
III	**Risk Mitigation**	
1	Installation of Automatic Weather Station	2600000
2	RML subscription (3 years) on crop, weather & market info	1500000
3	Instrumentation, e.g. Run-off measurement, etc.	240000
4	Geo- hydrological study and crop water budgeting	1500000

Sl.No	Description of treatments	Fund support sought from AFB
	Sub Total Risk Mitigation	**5840000**
IV	**Knowledge management**	
1	Posters and pamphlet on climate change adaptation	205000
2	Educational kit – Manual of Climate Change Adaptation	200000
3	Awareness and Mobilization / Capacity Building Programs	502000
4	Audio Visual Tools – short films	450000
5	Exposure visits, peer learning	750000
6	IEC Activities In the Project area	210000
7	Vetrinary camp / Silage Making /Para extention workers	60000
8	Income Generation Skill Training	50000
9	Information Board	60000
10	Village Knowledge centre	170000
	Sub Total Knowledge management	**2657000**
V	**Other Component (NABARD Supported)**	
1	Productivity Enhancement measures under - watershed component	0
2	Livelihood support for Landless and women - watershed component	0
3	Training and demonstration – watershed component	0
4	Project management – watershed component	0
5	Maintenance fund for watershed treatment – business as usual Scenario	0

Sl.No	Description of treatments	Fund support sought from AFB
6	Supervision Cost	0
	Sub Total – Other Components (NABARD supported)	**0**
	Grand Total	**34582811**

Annexure III (B)

Climate Proofing of Watershed Projects in Rajasthan and Tamil Nadu

Exchange rate 60 Rs/ USD

Component-wise Cost Details for Watereshed Projects in Tamil Nadu

Sl.No	Description of treatments	Anjukulipatty Watershed in Dindigul District				Vannikonendal -kurukkalpatti Wate Tirunelveli District		
		Total cost	Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB	Total cost	Beneficiaries contribution	Fund support by NABARD
I	**Improvement in the soil water regime**							
A	**Area Treatment**							
1	Field Bund	98566	15771	82795	0	54439	8710	45729
2	Farm Pond with outlet	2267	331	1935	0	10906	1613	9293
3	WAT	6015	962	5052	0	0	0	0
4	CCT	0	0	0	0	0	0	0
5	Stone Gully Plugs	0	0	0	0	428	20	408
6	Field Bund Pipe outlet /Stone outlet	2409	44	2365	0	66	3	63
7	Stone wall / Stone Bund	0	0	0	0	1083	113	970
8	Silvipasture	0	0	0	0	3104	107	2998
9	Agro-Forestry System	24570	1867	22703	0	7300	556	6744
10	Agro – Horticulture /Dry land Horticulture	14008	45	13963	0	75526	4009	71517
11	Summer Ploughing /Disc Ploughing	8750	0	0	8750	15867	0	4200
12	Catch Pit	3417	0	0	3417	1673	53	280
13	Well Recharge Pit	7608	0	0	7608	7500	0	0
14	Percolation tank	0	0	0	0	0	0	0
15	Sunken Pond with outlet	1492	225	1267	0	0	0	0

16	Deep Tillage	729	0	0	729	292	0	0
	Sub Total Area Treatment	**169830**	**19246**	**130080**	**20504**	**178184**	**15185**	**142202**
B	**Drainage Line Treatment**							
1	Loose Rock Check Dam	2331	119	2211	0	188	13	174
2	Gabion Check Dam/Check dam	5067	295	4772	0	1236	0	1236
3	Loose boulder structure	0	0	0	0	380	40	340
4	Check weir/ Retaining Wall	0	0	0	0	7655	0	7655
5	Gully Plugs	0	0	0	0	0	0	0
6	Bush Clearance	0	0	0	0	8433	0	8433
7	Renovation of WHS	0	0	0	0	0	0	0
8	Earthwork -Oorani	0	0	0	0	0	0	0
9	Channel Clearance	0	0	0	0	0	0	0
10	Channel Formation	0	0	0	0	0	0	0
	Sub Total- Drainage Line Treatment	**7398**	**414**	**6983**	**0**	**17892**	**53**	**17839**
	Total – improvement in soil – water regime	**177228**	**19660**	**137064**	**20504**	**196076**	**15238**	**160041**
II	**Climate Resilient Farming System and improved livelihood**							
A	**Afforestation and Pasture Land Development**							
1	Fodder Development /Shaff Cutter	2625	40	710	1875	4200	0	0
2	Grass Seeding (Ha)	0	0	0	0	300	10	290
3	Korangad Development	0	0	0	0	0	0	0
4	Nursary for Forestry specis	0	0	0	0	0	0	0
5	Green coverage (Gliricidia sepium)/manure	2133	0	2133	0	0	0	0
6	Azolla Development	667	0	0	667	750	0	0
12	Agro Forestry in channel/Castor Seeding	0	0	0	0	0	0	0
	Sub Total- Afforestation and Pasture Land Development	**5425**	**40**	**2843**	**2542**	**5250**	**10**	**290**
B	**Other Climate Resilient Farming/ Livelihood Support**							

1	Vermi compost /Pit	625	0	0	625	1500	0	0
2	Drip Irrigation Demonstration	0	0	0	0	1167	0	0
3	Micro Sprinkler Demonstration	4000	0	0	4000	833	0	0
4	Integrated Farming System	3800	0	0	3800	3800	0	0
5	Tank Silt Application /Soil Test	0	0	0	0	10000	0	0
6	Demo Plot /Preparation for minor millet cultivation	0	0	0	0	1000	0	0
7	Establishment of community Seed bank for mionor millet	0	0	0	0	250	0	0
8	Herbal Garden	0	0	0	0	0	0	0
9	Cattle Tank /Trevis Inatallation	0	0	0	0	0	0	0
10	Organic Farming System Promotion	0	0	0	0	0	0	0
11	Backyard Poultry Unit	0	0	0	0	0	0	0
12	Kitchen Garden	3150	0	0	3150	1250	0	0
13	Mushroom Cultivation	833	0	0	833	0	0	0
14	Pitcher Irrigation	0	0	0	0	0	0	0
	Sub Total – Other Climate Resilient Farming/ Livelihood Support	**12408**	**0**	**0**	**12408**	**19800**	**0**	**0**
C	**Energy Efficinet Sysetm**							
1	Biogas	0	0	0	0	733	0	0
2	Improved Chullha	0	0	0	0	0	0	0
3	Solar water Pump	0	0	0	0	2083	0	0
	Sub Total – Energy Efficient System	0	0	0	0	2817	0	0
	Total – Climate Resilient Farming System and improved livelihood (A+B+C)	**17833**	**40**	**2843**	**14950**	**27867**	**10**	**290**
III	**Risk Mitigation**							
1	Installation of Automatic Weather Station	8667	0	0	8667	8667	0	0
2	RML subscription (3 years) on crop, weather & market info	2500	0	0	2500	2500	0	0

3	Instrumentation, e.g. Run-off measurement, etc.	1333	0	0	1333	0	0	0
4	Geo- hydrological study and crop water budgeting	2500	0	0	2500	2500	0	0
	Sub Total Risk Mitigation	**15000**	**0**	**0**	**15000**	**13667**	**0**	**0**
IV	**Knowledge management**	0	0	0	0	0	0	0
1	Posters and pamphlet on climate change adaptation	417	0	0	417	417	0	0
2	Educational kit – Manual of Climate Change Adaptation	0	0	0	0	1667	0	0
3	Awareness and Mobilization / Capacity Building Programs	833	0	0	833	1333	0	0
4	Audio Visual Tools – short films	1417	0	0	1417	1167	0	0
5	Exposure visits, peer learning	2500	0	0	2500	1667	0	0
6	IEC Activities In the Project area	1667	0	0	1667	333	0	0
7	Vetrinary camp / Silage Making /Para extention workers	0	0	0	0	1000	0	0
8	Income Generation Skill Training	0	0	0	0	833	0	0
9	Information Board	0	0	0	0	0	0	0
10	Village Knowledge centre	0	0	0	0	1667	0	0
	Sub Total Knowledge management	**6833**	**0**	**0**	**6833**	**10083**	**0**	**0**
V	**Other Component (NABARD Supported)**							
1	Productivity Enhancement measures under - watershed component	11650	0	11650	0	13113	0	13113
2	Livelihood support for Landless and women - watershed component	17467	0	17467	0	19833	0	19833
3	Training and demonstration – watershed component	5833	0	5833	0	6583	0	6583
4	Project management – watershed component	39715	0	39715	0	39087	0	39087
5	Maintenance fund for watershed treatment – business as usual Scenario	12404	0	12404	0	10096	0	10096

6	Supervision Cost	9850	0	9850	0	7623	0	7623
	Sub Total – Other Components (NABARD supported)	**96919**	**0**	**96919**	**0**	**96336**	**0**	**96336**
	Grand Total	**313814**	**19700**	**236826**	**57288**	**344028**	**15247**	**256667**

ershed in	Salivaram Watershed in Krishnagiri District				Thally Kothanur Watershed in Krishnagiri District				Bettamugilalam Wate Dist	
Fund support sought from AFB	Total cost	Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB	Total cost	Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB	Total cost	Beneficiaries contribution
0	62750	10040	52710	0	68001	10880	57121	0	20707	7248
0	6374	948	5426	0	4037	600	3436	0	29108	9782
0	8231	1317	6914	0	4804	769	4036	0	3787	606
0	15493	2479	13014	0	9848	1576	8272	0	33949	5432
0	2033	114	1919	0	2689	151	2538	0	11917	302
0	5402	352	5050	0	3795	247	3548	0	4700	301
0	0	0	0	0	0	0	0	0	43034	19312
0	0	0	0	0	0	0	0	0	0	0
0	32600	1994	30606	0	28100	1719	26381	0	7433	226
0	4748	41	4707	0	3826	33	3793	0	16487	260
11667	0	0	0	0	0	0	0	0	0	0
1339	0	0	0	0	0	0	0	0	0	0
7500	6625	0	0	6625	7878	0	0	7878	6446	0
0	4269	683	3586	0	0	0	0	0	0	0
0	3139	502	2637	0	1281	205	1076	0	0	0

292	0	0	0	0	0	0	0	0	0	0
20798	**151663**	**18470**	**126568**	**6625**	**134258**	**16180**	**110200**	**7878**	**177569**	**43469**
0	1121	78	1044	0	1358	94	1264	0	1870	49
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	10585	584	10001	0	#REF!	590	10099	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	**11706**	**662**	**11044**	**0**	**12046**	**684**	**11363**	**0**	**1870**	**49**
20798	**163369**	**19132**	**137612**	**6625**	**146305**	**16864**	**121563**	**7878**	**179438**	**43517**
4200	1972	0	0	1972	2333	0	0	2333	2053	0
0	1667	67	1600	0	1000	40	960	0	333	13
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	2750	0	0	2750	3725	0	0	3725	2867	0
750	2817	0	0	2817	3335	0	0	3335	2933	0
0	0	0	0	0	0	0	0	0	0	0
4950	**9205**	**67**	**1600**	**7538**	**10393**	**40**	**960**	**9393**	**8187**	**13**

1500	22350	0	3350	19000	21136	0	1117	20019	19161	0
1167	0	0	0	0	0	0	0	0	0	0
833	0	0	0	0	0	0	0	0	0	0
3800	0	0	0	0	0	0	0	0	0	0
10000	8250	0	0	8250	10750	0	0	10750	3250	0
1000	0	0	0	0	0	0	0	0	0	0
250	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
1250	2500	0	2500	0	2500	0	2500	0	2867	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
19800	**33100**	**0**	**5850**	**27250**	**34386**	**0**	**3617**	**30769**	**25278**	**0**
733	3750	0	0	3750	5000	0	0	5000	2500	0
0	0	0	0	0	0	0	0	0	0	0
2083	0	0	0	0	0	0	0	0	0	0
2817	3750	0	0	3750	5000	0	0	5000	2500	0
27567	**46055**	**67**	**7450**	**38538**	**49779**	**40**	**4577**	**45163**	**35964**	**13**
8667	8667	0	0	8667	0	0	0	0	0	0
2500	2500	0	0	2500	2500	0	0	2500	2500	0

0	0	0	0	0	0	0	0	0	0	0
2500	2500	0	0	2500	2500	0	0	2500	2500	0
13667	**13667**	**0**	**0**	**13667**	**5000**	**0**	**0**	**5000**	**5000**	**0**
0	0	0	0	0	0	0	0	0	0	0
417	167	0	0	167	167	0	0	167	167	0
1667	0	0	0	0	0	0	0	0	0	0
1333	300	0	0	300	400	0	0	400	500	0
1167	83	0	0	83	83	0	0	83	83	0
1667	0	0	0	0	0	0	0	0	0	0
333	0	0	0	0	0	0	0	0	0	0
1000	0	0	0	0	0	0	0	0	0	0
833	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
1667	0	0	0	0	0	0	0	0	0	0
10083	**550**	**0**	**0**	**550**	**650**	**0**	**0**	**650**	**750**	**0**
0	11667	0	11667	0	8333	0	8333	0	0	0
0	18202	0	18202	0	15417	0	15417	0	17075	0
0	3667	0	3667	0	2500	0	2500	0	2750	0
0	40746	0	40746	0	35099	0	35099	0	39665	0
0	12217	0	12217	0	10959	0	10959	0	10455	0

0	9599	0	9599	0	8703	0	8703	0	7925	0
0	**96098**	**0**	**96098**	**0**	**81011**	**0**	**81011**	**0**	**77870**	**0**
72114	**319739**	**19199**	**241160**	**59380**	**282745**	**16904**	**207150**	**58691**	**299022**	**43531**

ershed in Krishnagiri rict		Chinnapoolampatti Watershed in Madurai District				Peikulam Watershed in Madurai District				Chithalai
Fund support by NABARD	Fund support sought from AFB	Total cost	Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB	Total cost	Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB	Total cost
13460	0	32141	5143	26998	0	14482	2317	12165	0	28398
19326	0	1160	182	978	0	4910	777	4133	0	9495
3181	0	0	0	0	0	0	0	0	0	0
28517	0	0	0	0	0	0	0	0	0	0
11615	0	738	36	702	0	1765	66	1699	0	0
4399	0	1701	66	1635	0	1573	57	1516	0	217
23721	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	776	14	762	0	0
7207	0	6800	397	6403	0	6208	536	5672	0	17525
16227	0	3891	203	3688	0	2098	110	1988	0	22328
0	0	4596	0	1533	3063	2613	0	134	2479	5467
0	0	0	0	0	0	0	0	0	0	0
0	6446	2100	0	0	2100	830	7	112	710	2650
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0

0	0	306	0	0	306	391	0	0	391	292
127654	**6446**	**53433**	**6026**	**41938**	**5469**	**35647**	**3884**	**28183**	**3580**	**86371**
1821	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	2185	85	2099	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	3249
0	0	3118	499	2619	0	17235	2758	14478	0	0
0	0	0	0	0	0	0	0	0	0	711
0	0	337	54	283	0	2412	386	2026	0	0
0	0	4140	662	3478	0	0	0	0	0	1105
1821	**0**	**7595**	**1215**	**6380**	**0**	**21831**	**3229**	**18602**	**0**	**5066**
129475	**6446**	**61028**	**7241**	**48318**	**5469**	**57478**	**7113**	**46785**	**3580**	**91437**
0	2053	4560	0	0	4560	5180	0	0	5180	8550
320	0	670	13	657	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	417
0	2867	0	0	0	0	0	0	0	0	0
0	2933	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	250	0	0	250	382
320	**7853**	**5230**	**13**	**657**	**4560**	**5430**	**0**	**0**	**5430**	**9348**

0	19161	1133	0	0	1133	2633	0	0	2633	2000
0	0	1667	0	0	1667	1333	0	0	1333	1667
0	0	3333	0	0	3333	2667	0	0	2667	2000
0	0	2375	0	0	2375	2375	0	0	2375	2375
0	3250	7000	0	0	7000	2500	0	0	2500	3750
0	0	4167	0	0	4167	0	0	0	0	8333
0	0	0	0	0	0	0	0	0	0	0
0	0	417	0	0	417	417	0	0	417	833
0	0	2867	0	0	2867	2667	0	0	2667	3733
0	0	0	0	0	0	417	0	0	417	417
0	0	0	0	0	0	0	0	0	0	0
0	2867	6116	0	0	6116	2513	0	0	2513	2900
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	667
0	**25278**	**29074**	**0**	**0**	**29074**	**17522**	**0**	**0**	**17522**	**28675**
0	2500	1540	0	0	1540	2567	0	0	2567	1540
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	2500	1540	0	0	1540	2567	0	0	2567	1540
320	**35631**	**35844**	**13**	**657**	**35174**	**25518**	**0**	**0**	**25518**	**39563**
0	0	0	0	0	0	0	0	0	0	8667
0	2500	2500	0	0	2500	2500	0	0	2500	2500

0	0	0	0	0	0	0	0	0	0	0
0	2500	2500	0	0	2500	2500	0	0	2500	2500
0	**5000**	**5000**	**0**	**0**	**5000**	**5000**	**0**	**0**	**5000**	**13667**
0	0	0	0	0	0	0	0	0	0	0
0	167	417	0	0	417	417	0	0	417	417
0	0	0	0	0	0	0	0	0	0	0
0	500	833	0	0	833	833	0	0	833	833
0	83	0	0	0	0	1167	0	0	1167	1167
0	0	1667	0	0	1667	1667	0	0	1667	1667
0	0	500	0	0	500	500	0	0	500	500
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	333	0	0	333	333	0	0	333	333
0	0	0	0	0	0	0	0	0	0	0
0	**750**	**3750**	**0**	**0**	**3750**	**4917**	**0**	**0**	**4917**	**4917**
0	0	0	0	0	0	0	0	0	0	5833
17075	0	6362	0	6362	0	6050	0	6050	0	8333
2750	0	2658	0	2658	0	2658	0	2658	0	3083
39665	0	11468	0	11468	0	11510	0	11510	0	21154
10455	0	4475	0	4475	0	4363	0	4363	0	5814

7925	0	3627	0	3627	0	2177	0	2177	0	4451
77870	**0**	**28590**	**0**	**28590**	**0**	**26758**	**0**	**26758**	**0**	**48669**
207665	**47827**	**134212**	**7254**	**77565**	**49393**	**119672**	**7113**	**73543**	**39015**	**198252**

Watershed in Madurai District			Sriramapuram- Malvarpatty Watershed in Dindigul District				Ayyampalayam Watersl	
Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB	Total cost	Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB	Total cost	Beneficiaries contribution
8519	19878	0	79369	12699	66670	0	80483	12877
1440	8055	0	2560	378	2182	0	3065	467
0	0	0	0	0	0	0	15623	2500
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
1	216	0	1103	51	1053	0	1647	8
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
1255	16271	0	24879	1890	22988	0	17425	1324
1171	21156	0	36635	1922	34713	0	26533	1392
0	2550	2917	11579	0	0	11579	3938	0
0	0	0	0	0	0	0	0	0
117	1033	1500	7800	0	0	7800	8500	117
0	0	0	0	0	0	0	0	0
0	0	0	1167	173	994	0	2253	345

0	0	292	335	0	0	335	473	0
12504	**69158**	**4708**	**165428**	**17113**	**128600**	**19715**	**159938**	**19031**
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	8333	0
0	0	0	0	0	0	0	677	22
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
65	3184	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
114	598	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
177	928	0	134	21	112	0	0	0
356	**4710**	**0**	**134**	**21**	**112**	**0**	**9011**	**22**
12860	**73868**	**4708**	**165562**	**17135**	**128712**	**19715**	**168949**	**19053**
0	0	8550	12190	120	2130	9940	10010	0
0	0	0	2472	70	2402	0	0	0
0	0	0	292	0	0	292	0	0
0	0	417	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	500	0	0	500	1125	0
19	238	125	0	0	0	0	0	0
19	**238**	**9092**	**15453**	**190**	**4532**	**10732**	**11135**	**0**

0	0	2000	1000	0	0	1000	600	0
0	0	1667	1500	0	0	1500	0	0
0	0	2000	4667	0	0	4667	3333	0
0	0	2375	3325	0	0	3325	6650	0
0	0	3750	1375	0	0	1375	6250	0
0	0	8333	917	0	0	917	0	0
0	0	0	0	0	0	0	0	0
0	0	833	0	0	0	0	0	0
0	0	3733	0	0	0	0	0	0
0	0	417	0	0	0	0	0	0
0	0	0	0	0	0	0	1700	0
0	0	2900	500	0	0	500	6250	0
0	0	0	0	0	0	0	0	0
0	0	667	0	0	0	0	0	0
0	**0**	**28675**	**13283**	**0**	**0**	**13283**	**24783**	**0**
0	0	1540	1833	0	0	1833	3667	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	1540	1833	0	0	1833	3667	0
19	**238**	**39307**	**30570**	**190**	**4532**	**25848**	**39585**	**0**
0	0	8667	0	0	0	0	8667	0
0	0	2500	2500	0	0	2500	2500	0

0	0	0	1333	0	0	1333	1333	0
0	0	2500	2500	0	0	2500	2500	0
0	**0**	**13667**	**6333**	**0**	**0**	**6333**	**15000**	**0**
0	0	0	0	0				
0	0	417	417	0	0	417	417	0
0	0	0	1667	0	0	1667	0	0
0	0	833	833	0	0	833	1667	0
0	0	1167	1167	0	0	1167	1167	0
0	0	1667	1667	0	0	1667	1667	0
0	0	500	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	333	0	0	0	0	0	0
0	0	0	0	0	0	0	1167	0
0	**0**	**4917**	**5750**	**0**	**0**	**5750**	**6083**	**0**
0	5833	0	7083	0	7083	0	12792	0
0	8333	0	17833	0	17833	0	19275	0
0	3083	0	5917	0	5917	0	6417	0
0	21154	0	36830	0	36830	0	39756	0
0	5814	0	11014	0	11014	0	12067	0

0	4451	0	8662	0	8662	0	9526	0
0	**48669**	**0**	**87339**	**0**	**87339**	**0**	**99833**	**0**
12879	**122775**	**62598**	**295554**	**17325**	**220583**	**57646**	**329450**	**19053**

hed in Dindigul District		Total cost			
Fund support by NABARD	Fund support sought from AFB	Total cost	Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB
67606	0	539337	94204	445133	0
2598	0	73881	16519	57362	0
13123	0	38460	6154	32307	0
0	0	59290	9486	49803	0
0	0	19570	688	18882	0
1639	0	22613	1131	21482	0
0	0	44117	19425	24691	0
0	0	3880	120	3760	0
16101	0	172841	11765	161076	0
25141	0	206081	9186	196895	0
0	3938	52809	0	8418	44392
0	0	5089	53	280	4756
1033	7350	57937	242	2177	55517
0	0	4269	683	3586	0
1908	0	9331	1450	7881	0

0	473	2818	0	0	2818
129148	**11760**	**1312321**	**171107**	**1033731**	**107482**
0	0	6867	353	6515	0
8333	0	14636	295	14341	0
655	0	1057	62	995	0
0	0	31113	1259	29854	0
0	0	0	0	0	0
0	0	11683	65	11618	0
0	0	20353	3257	17097	0
0	0	711	114	598	0
0	0	2748	440	2308	0
0	0	5379	861	4518	0
8988	**0**	**94549**	**6705**	**87843**	**0**
138136	**11760**	**1406869**	**177812**	**1121575**	**107482**
0	10010	53673	160	2840	50673
0	0	6442	212	6229	0
0	0	292	0	0	292
0	0	417	0	0	417
0	0	11475	0	2133	9342
0	1125	12127	0	0	12127
0	0	632	19	238	375
0	**11135**	**85057**	**391**	**11440**	**73225**

0	600	72139	0	4467	67672
0	0	7333	0	0	7333
0	3333	20833	0	0	20833
0	6650	24700	0	0	24700
0	6250	53125	0	0	53125
0	0	14417	0	0	14417
0	0	250	0	0	250
0	0	1667	0	0	1667
0	0	9267	0	0	9267
0	0	833	0	0	833
0	1700	1700	0	0	1700
0	6250	30546	0	5000	25546
0	0	833	0	0	833
0	0	667	0	0	667
0	**24783**	**238310**	**0**	**9467**	**228843**
0	3667	23130	0	0	23130
0	0	0	0	0	0
0	0	2083	0	0	2083
0	3667	25213	0	0	25213
0	**39585**	**348580**	**391**	**20907**	**327281**
0	8667	43333	0	0	43333
0	2500	25000	0	0	25000

0	1333	4000	0	0	4000
0	2500	25000	0	0	25000
0	**15000**	**97333**	**0**	**0**	**97333**
0	417	3417	0	0	3417
0	0	3333	0	0	3333
0	1667	8367	0	0	8367
0	1167	7500	0	0	7500
0	1667	12500	0	0	12500
0	0	3500	0	0	3500
0	0	1000	0	0	1000
0	0	833	0	0	833
0	0	1000	0	0	1000
0	1167	2833	0	0	2833
0	**6083**	**44283**	**0**	**0**	**44283**
12792	0	70471	0	70471	0
19275	0	145847	0	145847	0
6417	0	42067	0	42067	0
39756	0	315031	0	315031	0
12067	0	93863	0	93863	0

9526	0	72144	0	72144	0
99833	**0**	**739422**	**0**	**739422**	**0**
237969	**72428**	**2636488**	**178204**	**1881904**	**576380**

Combined Activity Cost Table for AF Components

Sl.No	Description of treatments	Rajasthan	Tamil Nadu	Total
I	**Improvement in soil water regime**			
A	**Area Treatment-Crop Cultivated Area**			
1	Farm Pond	7500		7500
2	Drainage system in crop cultivated area			0
3	Catch pit		4756	4756
4	Well recharge pit		55517	55517
5	Summer ploughing		44392	44392
6	Deep tillage		2818	2818
	Sub Total – Crop cultivation	**7500**	**107483**	**114983**
B	**Drainage line treatment**			
1	Earthen Embankment with spillway	11985		11985
2	Masonry Gabion	2091		2091
3	L.D.P.E Sheet lining for seepage control in existing structures	7174		7174
4	Masonry Check Dam/ Water Harvesting structure	18376		18376
5	Recharge pit on upslope side of gully plugs	11108		11108
6	Open Recharge Pit in drainage line	4868		4868
	Sub Total Drainage line treatment	**55602**	**0**	**55602**
	Total – improvement in soil water regime	**63102**	**107483**	**170585**
II	**Climate Resilient Farming System and improved livelihood**			
A	**Afforestation & Pasture land development**			
1	Gradonis (bench terracing) - demo	5028		5028
2	Refilling of alternate CCTs and tree seeding	2196		2196
3	(Stone pitched) Thawala/ Crescent Bund for regeneration of plants	4333		4333
4	Tree seeding	1149		1149
5	Plantation of fuel/fodder trees in SP site/ stone bund	11788		11788
6	Grass seeding in pasture + silvi pasture land	1613		1613
7	Avenue plantation	1202		1202
8	1 cft (0.3x0.3x0.3 m) pitting and tree seeding	7214		7214
9	Plantation of fodder trees for gully stabilization	9411		9411
10	Use of Water absorption Material during plantation	250		250

11	Pitcher irrigation (gheda)	667		667
12	Thoor bio-fencing/ barrier	3767		3767
13	Stone Fencing bund	6248		6248
14	Creation of Pasture group and fodder bank	8333		8333
15	Bund planting/ Tree seeding	1956		1956
17	Fodder development/chaff cutter		50673	50673
18	Korangad development		292	292
19	Nursery for forestry species		417	417
20	Green coverage (Glyceridia)		9342	9342
21	Azolla development		12127	12127
22	Agro-forestsry in channel/castor seeding		375	375
	Sub Total – Afforestation & Pasture land development	**65155**	**73226**	**138381**
B	**Other Climate resilient farming/ Livelihood Support**			
1	Wadi/ Horti-Plantation	22432		22432
2	Vegetable cultivation with Trellis	31109		31109
3	Kitchen Garden	2000	25546	27546
4	RWHS for Backyard plantation	18664		18664
5	Well recharge	8268		8268
6	Enhancing water use efficiency by use of micro irrigation/ UG pipes & outlets	30000	28166	58166
7	Seed bank	5667		5667
8	Short duration and low water required variety of maize and wheat promotion of mixed cropping	1850		1850
9	Improved Farm Implements and equipments (BBF implement, Zero Tiller; Weeder; Fertigation; Reaper, Thresher etc.)	8333		8333
10	Best package of practices incl. seed treatment, INM, IPM, organic farming, etc.	12375		12375
11	Crop insurance awareness programme	8333		8333
12	Silage making demo	617		617
13	Azolla Cultivation	9458		9458
14	Improved animal husbandry practices including feed management, mineral bricks, silage, AI services of improved desi breed, etc.,	27808		27808
15	Community based livestock insurance	9667		9667
16	Backyard Poultry units	4333	1700	6033
17	Vermicompost		67672	67672
18	Integrated Farming System		24700	24700
19	Tank silt application		53125	53125

20	Demo plot on minor millet		14417	14417
21	Seed bank		250	250
22	Herbal garden		1667	1667
23	Cattle tank/trevis		9267	9267
24	Organic farming		833	833
25	Mushroom		833	833
	Pitcher irrigation		667	667
	Sub Total – Other livelihood	**200914**	**228843**	**429757**
C	**Energy Efficient System**			
1	Improved cook stove	2750		2750
2	Biogas unit	6069	23130	29199
3	Solar Light (home lighting)	14000		14000
4	Solar Pump	57500	2083	59583
	Sub Total – Energy Efficient System	**80319**	**25213**	105532
	Sub Total – Climate Resilient Farming System and improved livelihood	**346388**	**327282**	**673670**
III	**Risk Mitigation**			
1	AWS and agro-advisory	43333	43333	86666
2	RML subscription (3 years) on crop, weather & market info	25000	25000	50000
3	Sediment Observation Unit and Data Analysis	5250	4000	9250
4	Geo- hydrological study and crop water budgeting	25000	25000	50000
	Sub Total Risk Mitigation	**98583**	**97333**	**195916**
IV	**Knowledge management**			
1	Grassland ecology study	6000		6000
2	Educational kit – Manual of Climate Change Adaptation	15000	3333	18333
3	Posters and pamphlet on climate change adaptation	4167	3417	7584
4	Community sensitisation Programs	9833		9833
5	Audio Visual Tools – short films	11833	7500	19333
6	Exposure visits, peer learning	15333	12500	27833
7	Training on NRM/Climate Change	2833		2833
8	Awareness and mobilisation/capacity building		8367	8367
9	IEC activity in the proect area		3500	3500
10	Veterinary camp/silage making/para extension worker		1000	1000
11	Skill training		833	833
12	Information board		1000	1000
13	Village Knowledge Centre		2833	2833

	Sub Total Knowledge management	**64999**	**44283**	**109282**
	Grand Total	**573072**	**576381**	**1149453**
	Project/Programme Execution cost			120600
	Total Project/ Programme Cost			**1270055**
	Project/programme Cycle Management Fee charged by the Implementing Entity			107955
	Amount of Financing Requested			**1378010**

Climate Change Adaptation Project on Watershed Basis

Rajasthan

(amout USD)

Component	Total cost	Beneficiaries / ITC-RDT contribution	Fund support by NABARD	Fund support sought from AFB
Improvement in Soil Moisture Regime	634366	124140	447124	63103
Climate Resilient Farming System	1110925	137583	626953	346389
Risk mitigation	98583	0	0	98583
Knowledge Management	91274	12007	14267	65000
Others (NABARD Supported)	1071771	198981	872789	0
Total	**3006919**	**472711**	**1961132**	**573075**
check	***0***	***0***	***0***	***0***

million USD

Component	Total cost	Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB
Improvement in Soil Moisture Regime	0.63	0.12	0.45	0.06
Climate Resilient Farming System	1.11	0.14	0.63	0.35
Risk mitigation	0.10	0.00	0.00	0.10
Knowledge Management	0.09	0.01	0.01	0.07
Others (NABARD Supported)	1.07	0.20	0.87	0.00
Total	**3.01**	**0.47**	**1.96**	**0.57**

Tamil Nadu

(amout USD)

Component	Total cost	Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB
Improvement in Soil Moisture Regime	1406869	177812	1121575	107482
Climate Resilient Farming System	348580	391	20907	327281
Risk mitigation	97333	0	0	97333
Knowledge Management	44283	0	0	44283
Others (NABARD Supported)	739422	0	739422	0
TOTAL	**2636488**	**178204**	**1881904**	**576380**

million USD

Component	Total cost	Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB
Improvement in Soil Moisture Regime	1.41	0.18	1.12	0.11
Climate Resilient Farming System	0.35	0.00	0.02	0.33
Risk mitigation	0.10	0.00	0.00	0.10
Knowledge Management	0.04	0.00	0.00	0.04
Others (NABARD Supported)	0.74	0.00	0.74	0.00

TOTAL	**2.64**	**0.18**	**1.88**	**0.58**

TOTAL Costing (USD) (Tamil Nadu and Rajasthan)

Component	Total cost	Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB	Upon Agreement	1st Year	2nd Year	3rd Year
Improvement in Soil Moisture Regime	2041236	301952	1568698	170585	34117	51176	59705	25588
Climate Resilient Farming System	1459505	137975	647860	673670	134734	202101	235785	101051
Risk mitigation	195917	0	0	195917	39183	58775	68571	29388
Knowledge Management	135557	12007	14267	109283	21857	32785	38249	16393
Others (NABARD Supported)	1811193	198981	1612211	0	0	0	0	0
TOTAL	**5643407**	**650915**	**3843036**	**1149455**	**229891**	**344837**	**402309**	**172418**
Project/Programme Execution cost				**120600**	24120	36180	42210	18090
Total Project/ Programme Cost				**1270055**	**254011**	**381017**	**444519**	**190508**
Project/programme Cycle Management Fee charged by the				107955	21591	32386	37784	16193
Amount of Financing Requested				**1378010**	**275602**	**413403**	**482304**	**206702**

TOTAL Costing (USD Million) (Tamil Nadu and Rajasthan)

Sl No.	Component	Total cost	Beneficiaries contribution	Fund support by NABARD	Fund support sought from AFB	Upon Agreement	1st Year	2nd Year	3rd Year
1	Improvement in Soil Moisture Regime	2.041	0.302	1.569	0.171	0.034	0.051	0.060	0.026
2	Climate Resilient Farming System	1.460	0.138	0.648	0.674	0.135	0.202	0.236	0.101
3	Risk mitigation	0.196	0.000	0.000	0.196	0.039	0.059	0.069	0.029
4	Knowledge Management	0.136	0.012	0.014	0.109	0.022	0.033	0.038	0.016
5	Others (NABARD Supported)	1.811	0.199	1.612	0.000	0.000	0.000	0.000	0.000
	Subtotal	**5.643**	**0.651**	**3.843**	**1.149**	0.230	0.345	0.402	0.172
6	Project/Programme Execution cost				**0.121**	0.024	0.036	0.042	0.018
	Total Project/ Programme Cost				**1.270**	0.254	0.381	0.445	0.191
	Project/programme Cycle Management Fee charged by the				0.108	0.022	0.032	0.038	0.016
	Amount of Financing Requested				**1.378**	0.276	0.413	0.482	0.207

Sl No.	Budget Head	Rate (Rs.)	No.	Total	Amount USD
1	Field coordinator: 20 nos. @ $167/month for 3years	10000	20	6000000	100000
2	Travel (local and for facilitation) @ $400/ month (for 20 field coordinators) for 3years	1200	20	864000	14400
3	Reporting and Data @ $ 400 per year (for 20 watersheds) for 3 years	1200	20	72000	1200
4	Watershed Level Meetings (half yearly) @ $ 83.33 per meeting per watershed	5000	20	300000	5000
Total				**7236000**	**120600**

NIE Cycle Management Fee

Sl No.	Budget Head	Rate	No.	Total	Amount USD
	PMU Costs				
1	PMU Staff	29250	4	3510000	58500
2	Review meetings	2500	20	150000	2500
3	Travel (local and for facilitation)	5000	4	720000	12000
4	Report preparation	5000	6	90000	1500
5	M&E Cost			396000	6600
6	Online monitoring system			1000000	
	NABARD Cost				
6	Financial Management			300000	5000
7	Performance Management - Progress Monitoring- Field Monitoring			300000	5000
6	Miscleneous			11300	188
Total				**6477300**	**107955**

Monitoring and Evaluation Plan				
Type of M&E Activity	**Responsible Parties**	**Budget (US$)does not include staff time**	**Time Frame**	**Remarks**
Project Inception Workshop	EE/NIE	800	Within first three months	To be conducted by lead NGOs in association with other EEs
Half-yearly report	EE/NIE	200	End of every six months	Cost for Lead NGO for consolidating Half yearly report
Annual report	EE/NIE	200	End of each year	-do-
Project review & monitoring Meeting	Dept. of Govt /EE/NABARD	0	Monthly	Part of EE cost
Mid-term evaluation	External Evaluator/ Representatives of MOE/ Dept. of Govt / Technical Consultants/ Project Director	2,000	At mid-point of project execution (2nd year)	
End term evaluation	External Evaluator/Representatives of MOE/ Dept. of Govt / Technical Consultants/ Project Director	3,000	At end of Project cycle	
Final Audit	EE/NIE	400	3 months after end of the Project	
Total Amount		**6,600**		

Annexure IV A

Summary of proposed interventions towards climate proofing with Adaptation Fund **Dhuvala watershed**

Sr.No	Particulars	Unit (m3 / m/ No./ ha etc)	Length in m/ No.s./ ha)	Size/ Cross Section (sq	Total units (ha/ cu m/m/ No..)	Avg Rate (Rs/ Unit)			Rate reference	Unskilled Labour Cost (Rs)
						Labour	Material	Total		
A	**Crop Area Treatment**									
1	Contour Bund	cu m	10856	1	5862			57.00		334160
2	Farm Bund	cu m	88517	1	47778			57.00		2723357
3	Earthen Gully Plug	cu m	69	2	110			60.00		6585
	Supervision (given under WDF sanction)									
	Sub Total (A)									
B	**Pasture Land Development & Afforestation**									
1	Continuous Contour Trench	cu m	5037	0	1007			75.00		75555
2	Plantation	No.	10000		10000			56.73	Dhuvala 1	
3	Grass seeding	ha	150		150	265.60	332.00	597.60	Rajasthan 3	39840
4	Stone Fencing renovation (to be made as part of CPT where there is depression)	cu m	840	0.41	340	499.20		499.20	GKN item#111 Udr a,b & d???	169826

6	Tree seeding	Rmt.	9000		9000	0.73	1.00	1.73	GKN item#153	6570
7	Creation of Pasture group and fodder bank	No.	1		1			50000		
	Sub Total (B)									
C	**Drainage Area Treatment**									
1	Gabion	No.	1		1					27842
2	Masonry Check Dam	No.	1		1					59250
3	LSCD	No.	1		1					10811
4	Earthen bund with spillway	No..	2		2			249173	Dhuvala 2	
5	Supervision (given under WDF sanction)				0					
	Sub Total (C)									
D	**Agricultural Development**									
1	Kitchen garden	No.	100		100			200		
2	Seed Bank	No.	1		1			180000		
3	RWHS for Backyard plantation	No.	2		2			69990	RWHS_Raj	
4	Crop insurance awareness programme	No.	5		5			10000		
	Sub Total (D)									
E	**Livestock Development**									
1	Cattle Camp	No.	6		6					
2	Building Livestock Jankaars	No.	6		6					
3	Goatery	No.	24		24					
4	Azolla Unit	No.	10		10			1500		
5	Training & resource support on Azolla cultivation	No.	1		1			20000		
6	Backyard Poultry units	No.	30		30		2000	2000		
7	Livestock Insurance - corpus	No.	1		1			50000		
	Sub Total (E)									

F	**Women Development**									
1	Organisation of SHGs	No.	1		1					
2	Set of Records for SHG	No.	1		1					
3	Capacity Building of SHGs	No.	0		0					
	a. Trainings (4 SHGs formed)	No.	18		18					
	b. Exposure visit within District	No.	6		6					
4	Deepening of well (drinking water)	No.	1		1					
	Sub Total (F)									
G	**Energy Efficient System**									
1	Biogas	No.	3		3					
2	Solar Lamps	No.	20		20			7000		
3	Solar Pump set	No.	3		3			125000		
	Sub Total (G)									
H	**Knowledge Management**									
1	RML subscription (3 years) on crop, weather & market info	No.	100		100			1500		
2	Geo- hydrological study and crop water budgeting	No.	1		1			150000		
3	Financial Inclusion and Banking Plan							100000		
4	Grassland ecology study	No.	2		2			30000		
5	Posters and pamphlet on climate change adaptation							25000		
6	Educational kit – Manual of Climate Change Adaptation							100000		
7	Awareness and Mobilization Programs							100000		
8	Audio Visual Tools – short films							70000		
9	Exposure visits, peer learning							100000		

10	VWC Training	No.	5		5					
11	Technical Training	No.	3		3					
12	Accounts Training	No.	4		4					
13	Awareness Camp in village	No.	5		5					
14	Nursery Training	No.	1		1					
15	Building Agriculture Jankaars	No.	3		3					
16	Exposure visit to a successful watershed/ FIP area	No.	3		3					
17	Awareness Camp at Bhilwara	No.	1		1					
	Sub Total (H)									
I	**Other Interventions**									
1	Strengthening Village Institutions	No.	9		9					
	Sub Total (I)									
J	**Total cost of all project measures**									
K	**Maintenance fund (NABARD)**									
L	**Project Management Cost (NABARD)**									
M	**Total project cost / grant**									

	Total Cost (Rs)	Community Contribution & Convergence	Grant (existing WDF sanction)	Grant Amount from AFB
Dhulva	9150882.92	2200927.64	3754292.80	#########
Nayagaon I	11132489.41	3963671.59	3584603.82	#########

Nayagaon II	11825074.66	4510574.64	4223463.00	#########
Khad	24485006.04	2869034.84	17908800.20	#########
Balua	22534987.14	2690889.02	16147300.11	#########
Mandali	20033166.17	2385965.59	13607799.98	#########
Vagda	16671141.38	1804218.92	11712800.00	#########
Jhabla	28746237.34	3345020.89	21714800	3686416
Malvi	18171263.00	2083383.00	12821900.00	#########
Chiapurai	17664891.11	2508997.27	12192179.84	#########

Conversion Rate	1 US$=	60	INR

Material Cost (Rs)	Total Cost (Rs)	Contribution from community (Rs)	Grant (existing WDF sanction)	FES Contribn	Grant Amount from AFB	Total Cost	Contribution from community	Grant (existing WDF sanction)	FES Contribn	Grant Amount from AFB
	Amount in INR					Amount in US$				
	334160	53466	280694	0	0	5569	891	4678	0	0
	2723357	435737	2287619	0	0	45389	7262	38127	0	0
	6585	1054	5532	0	0	110	18	92	0	0
	251173		251173	0	0	4186	0	4186	0	0
	3315274	**490256**	**2825018**	**0**	**0**	**55255**	**8171**	**47084**	**0**	**0**
						0	0	0	0	0
	75555	12089	63466	0	0	1259	201	1058	0	0
	567300			0	567300	9455	0	0	0	9455
49800	89640			0	89640	1494	0	0	0	1494
	169826			0	169826	2830	0	0	0	2830

9000	15570			0	15570	260	0	0	0	260
50000	50000			0	50000	833	0	0	0	833
	967892	12089	63466	0	892336	16132	201	1058	0	14872
						0	0	0	0	0
112046	139888	4455	135433	0	0	2331	74	2257	0	0
368269	427519	9480	418039	0	0	7125	158	6967	0	0
36745	47234	1730	45504	0	0	787	29	758	0	0
	498346			0	498346	8306	0	0	0	8306
	7832		7832	0	0	131	0	131	0	0
	1120819	**15665**	**606808**	**0**	**498346**	**18680**	**261**	**10113**	**0**	**8306**
						0	0	0	0	0
	20000			0	20000	333	0	0	0	333
	180000			0	180000	3000	0	0	0	3000
	139980			0	139980	2333	0	0	0	2333
	50000			0	50000	833	0	0	0	833
	389980	**0**	**0**	**0**	**389980**	**6500**	**0**	**0**	**0**	**6500**
						0	0	0	0	0
	57317		0	57317	0	955	0	0	955	0
	18000		0	18000	0	300	0	0	300	0
	105920		0	105920	0	1765	0	0	1765	0
	15000		0	0	15000	250	0	0	0	250
	20000		0	0	20000	333	0	0	0	333
	60000		0	0	60000	1000	0	0	0	1000
	50000		0	0	50000	833	0	0	0	833
	326237	**0**	**0**	**181237**	**145000**	**5437**	**0**	**0**	**3021**	**2417**

						0	0	0	0	0
	1400		0	1400	0	23	0	0	23	0
	1000		0	1000	0	17	0	0	17	0
	0		0	0	0	0	0	0	0	0
	72000		0	72000	0	1200	0	0	1200	0
	46728		0	46728	0	779	0	0	779	0
	41000		0	41000	0	683	0	0	683	0
0	**162128**	**0**	**0**	**162128**	**0**	**2702**	**0**	**0**	**2702**	**0**
						0	0	0	0	0
	45000		0	45000	0	750	0	0	750	0
140000	140000			0	140000	2333	0	0	0	2333
375000	375000			0	375000	6250	0	0	0	6250
	560000	**0**	**0**	**45000**	**515000**	**9333**	**0**	**0**	**750**	**8583**
				0		0	0	0	0	0
	150000		0	0	150000	2500	0	0	0	2500
	150000		0	0	150000	2500	0	0	0	2500
	0		0	0	0	0	0	0	0	0
	60000		0	0	60000	1000	0	0	0	1000
	25000		0	0	25000	417	0	0	0	417
	100000		0	0	100000	1667	0	0	0	1667
	100000		0	0	100000	1667	0	0	0	1667
	70000		0	0	70000	1167	0	0	0	1167
	100000		0	0	100000	1667	0	0	0	1667

	30000		0	30000	0	500	0	0	500	0
	21000		0	21000	0	350	0	0	350	0
	14000		0	14000	0	233	0	0	233	0
	65000		0	65000	0	1083	0	0	1083	0
	3000		0	3000	0	50	0	0	50	0
	9000		0	9000	0	150	0	0	150	0
	30000		0	30000	0	500	0	0	500	0
	68911		0	68911	0	1149	0	0	1149	0
	995911	**0**	**0**	**240911**	**755000**	**16599**	**0**	**0**	**4015**	**12583**
				0		0	0	0	0	0
	18000		0	18000	0	300	0	0	300	0
	18000	**0**	**0**	**18000**	**0**	**300**	**0**	**0**	**300**	**0**
	7856241	**518010**	**3495293**	**647276**	**3195662**	**130937**	**8633**	**58255**	**10788**	**53261**
	259000		**259000**	**0**	**0**	**4317**	**0**	**4317**	**0**	**0**
	1035642		**0**	**1035642**	**0**	**17261**	**0**	**0**	**17261**	**0**
	9150883	**518010**	**3754293**	**1682918**	**3195662**	**152515**	**8633**	**62572**	**28049**	**53261**

	9150883	0
	11132489	0

	11825075	0
	24485005	-1
	22534987	0
	20033166	-1
	16671142	1
	28746237	0
	18171263	0
	17664891	0

Annexure IV A

Summary of proposed interventions towards climate proofing with Adap					Nayagaon-I watershed										
Sr. no.	**Particulars**	**Units of measure (ha../n**	**Total units (ha./ cu m/m/ No.)**	**Total Avg. Rate (Rs/ Unit)**	**Rate reference**	**Total Cost (Rs)**	**Community Contribution (`)**	**Grant Amount from WDF (Rs)**	**Grant Amount from ITC-RDT (Rs)**	**Grant Amount from AFB (Rs.)**	**Total Cost**	**Community Contribution**	**Grant Amount from WDF**	**Grant Amount from ITC-RDT**	**Grant Amount from AFB**
						Amount in INR					**Amount in US$**				
A	**Crop Area Treatment**														
A1	Earthen Farm Bund (EFB)	cu m	26,688	92		2455291	491058	1453532	510701	0	40922	8184	24226	8512	0
A2	Stone Outlet (SO)	cu m	641	970		621722	32022	589700	0	0	10362	534	9828	0	0
A3	Grass Seeding on EFB (GS)	ha.	684	462		315755	146495	169260	0	0	5263	2442	2821	0	0
A4	Vegetative Measures on Field Bunding	Rmt.	1,000	68	NayagaonI-1	68250	0	0	0	68250	1138	0	0	0	1138
A5	Farm Pond	No.	4	75000	NayagaonI-2	300000	0	0	0	300000	5000	0	0	0	5000
A6	Well Recharge Pit/ Well Deepening	No.	6	11949	NayagaonI-3	71694	0	0	0	71694	1195	0	0	0	1195
	Sub Total - A					**3832712**	**669575**	**2212492**	**510701**	**439944**	**63879**	**11160**	**36875**	**8512**	**7332**
B	**Pasture land development**										0	0	0	0	0
B1	Water Absorption Trench (WAT)	cu m	360	134		48288	9658	38631	0	0	805	161	644	0	0
B2	Biofencing / Vegetative Hedge using thoor and seeding of MFPTS	Rmt.	600	40	NayagaonI-4	24000	0	0	0	24000	400	0	0	0	400
B3	Seeding of Grass and leguminous species	ha..	5	597	Rajasthan 3	2985	0	0	0	2985	50	0	0	0	50
	Sub Total - B					**75273**	**9658**	**38631**	**0**	**26985**	**1255**	**161**	**644**	**0**	**450**
C	**Drainage line treatment**							0	0		0	0	0	0	0
C1	Boulder Gully Plug (BGP)	cu m	204	970		197604	8142	189461	0	0	3293	136	3158	0	0
C2	Riparian Buffer Plantation of MPTS for Bank stabilisation	No.	500	68	NayagaonI-5	34125	0	0	0	34125	569	0	0	0	569
C3	Low cost Masonry Check Wall/ Sub-surface dyke	No.	2	79490	NayagaonI-7	158980	0	0	0	158980	2650	0	0	0	2650
	Sub Total - C					**390709**	**8142**	**189461**	**0**	**193105**	**6512**	**136**	**3158**	**0**	**3218**
D	**Agriculture Development**										0	0	0	0	0
D1	Horticulture Plantation	No.	6,060	98		591941	349541	242400	0	0	9866	5826	4040	0	0
D2	Agroforestry Plantation	No.	2000	35	NayagaonII-	70000	0	0	0	70000	1167	0	0	0	1167
D3	Composting - vermi ; NADEP; FYM Pit Compost; Bio compost; Green Manure etc.	No.	30	3500		105000	0	0	0	105000	1750	0	0	0	1750

D4	Seed Multiplication; vertical; crop intensification; crop rotation; cover crop demos	ha.	10	8000		80000	0	0	0	80000	1333	0	0	0	1333
D5	Efficient irrigation system (Drip/ Sprinkler) - 1 acre unit	No.	10	16000	Rajasthan 5	160000	0	0	0	160000	2667	0	0	0	2667
D6	Improved Farm Implements and equipments (BBF implement, Zero Tiller; Weeder; Fertigation; Reaper, Shade Net, Thresher etc.)	Set	1	250000		250000	0	0	0	250000	4167	0	0	0	4167
D7	RWHS for Backyard plantation	No.	1	69990	RWHS_Raj	69990	0	0	0	69990	1167	0	0	0	1167
D8	Farmer Field School	No.	1	306139		306139	0	0	306139	0	5102	0	0	5102	0
D9	Vegetable demonstration in Kitchen garden	No.	100	700		70000	28000	0	42000	0	1167	467	0	700	0
D10	Grain Bank Development	No.	4	10000		40000	10000	0	30000	0	667	167	0	500	0
D11	Market Linkage for crop sale through e choupal	No.	1	250000		250000	0	0	250000	0	4167	0	0	4167	0
D12	Crop insurance awareness programme	No.	5	10000		50000	0	0	0	50000	833	0	0	0	833
	Sub Total - D					**2043070**	**387541**	**242400**	**628139**	**784990**	**34051**	**6459**	**4040**	**10469**	**13083**
E	**Livestock Development**										0	0	0	0	0
E1	Animal Health Camp- Vaccination & Treatment	No.	8	10000		80000	24000	0	56000	0	1333	400	0	933	0
E2	Infertility Camp	No.	4	10000		40000	12000	0	28000	0	667	200	0	467	0
E3	Travis Installation	No.	2	9000		18000	0	0	18000	0	300	0	0	300	0
E4	Artificial Insemination of Natives and Crossbred Cattle and Buffaloes	No.	250	100		25000	0	0	0	25000	417	0	0	0	417
E5	Azolla Unit	No.	50	1500		75000	0	0	0	75000	1250	0	0	0	1250
E6	Training & resource support on Azolla cultivation	No.	1	20000		20000	0	0	0	20000	333	0	0	0	333
E7	Feed Management Chaff Cutter; Manger; stall feeding for large and small ruminants	No.	12	6000		72000	0	0	0	72000	1200	0	0	0	1200
E8	Livestock Field School	No.	1	120000		120000	0	0	0	120000	2000	0	0	0	2000
E9	Livestock Insurance corpus	No.	1	50000		50000	0	0	0	50000	833	0	0	0	833
	Sub Total - E					**500000**	**36000**	**0**	**102000**	**362000**	**8333**	**600**	**0**	**1700**	**6033**
F	**Women Development**										0	0	0	0	0
F1	Organisation of SHGs	No.	15	1000		15000	0	0	15000	0	250	0	0	250	0
F2	Capacity Building of SHGs	No.	8	3500		28000	0	0	28000	0	467	0	0	467	0
F3	Stationary / Material Cost	No.	15	1000		15000	0	0	15000	0	250	0	0	250	0
F4	Account training of SHGs	No.	2	3500		7000	0	0	7000	0	117	0	0	117	0

F5	Exposure visit of women in developed watershed / good institution	No.	2	10000		20000	0	0	20000	0	333	0	0	333	0
F6	Women Development (for women Federation)	No.	1	100000		100000	0	0	100000	0	1667	0	0	1667	0
	Sub Total - F					**185000**	**0**	**0**	**185000**	**0**	**3083**	**0**	**0**	**3083**	**0**
G	**Energy Efficient System**										0	0	0	0	0
G1	Improved cook stove	No.	10	1500		15000	0	0	0	15000	250	0	0	0	250
G2	Solar Pumps	No.	5	125000		625000	0	0	0	625000	10417	0	0	0	10417
G3	Biogas plant	No.	1	32190	NayagaonI-8	32190	0	0	0	32190	537	0	0	0	537
	Sub Total - G					**672190**	**0**	**0**	**0**	**672190**	**11203**	**0**	**0**	**0**	**11203**
H	**Knowledge management**										0	0	0	0	0
H1	Sediment Observation Unit and Data Analysis	No.	1			0	0	0		0	0	0	0	0	0
H2	AWS and agro-advisory	No.	1	520000	Annex – AgroMetStation	520000	0	0		520000	8667	0	0	0	8667
H3	RML subscription (3 years) on crop.	No.	100	1500		150000	0	0		150000	2500	0	0	0	2500
H4	Geo- hydrological study and crop water budgeting	No.	1	150000		150000	0	0		150000	2500	0	0	0	2500
H5	Grassland ecology study	No.	2	30000		60000	0	0		60000	1000	0	0	0	1000
H6	Financial Inclusion drive and Credit facilitation through Banking Plan	No.	-	0		0	0	0		0	0	0	0	0	0
H7	Posters and pamphlet on climate cha.nge adaptation	LS	1	25000		25000	0	0		25000	417	0	0	0	417
H8	Educational kit – Manual of Climate Cha.nge Adaptation	LS	1	50000		50000	0	0		50000	833	0	0	0	833
H9	Audio Visual Tools – short films	No.				70000	0	0		70000	1167	0	0	0	1167
H10	Watershed Impact study	No.	2	25000		50000	0	0	50000	0	833	0	0	833	0
H11	Awareness and Mobilization Programs	No.	6	5000		30000	0	0		30000	500	0	0	0	500
H12	Exposure visits, peer learning	No.	1	50000		50000	0	0		50000	833	0	0	0	833
H13	Project Management Training for VWC	No.	2	5000		10000	0	0	10000	0	167	0	0	167	0
H14	Institutional development training	No.	4	4000		16000	0	0	16000	0	267	0	0	267	0
H15	Watershed Orientation Training cu m awareness camp	No.	4	6000		24000	0	0	24000	0	400	0	0	400	0
H16	Accounts Training to VWC	No.	4	5000		20000	0	0	20000	0	333	0	0	333	0
H17	Exposure visit to successful watershed Project	No.	4	26000		104000	0	0	104000	0	1733	0	0	1733	0
H18	Capacity Building on IGA for Landless	No.	2	10000		20000	0	0	20000	0	333	0	0	333	0

	Sub Total - H					**1349000**	**0**	**0**	**244000**	**1105000**	**22483**	**0**	**0**	**4067**	**18417**
I	**Other Interventions**										0	0	0	0	0
I1	Sign boards, slogans, wall painting	No.	1	40000		40000	0	0	40000	0	667	0	0	667	0
I2	Celebration of Women's Day (8th March)	No.	4	10000		40000	0	0	40000	0	667	0	0	667	0
I3	Watershed Day (7th Dec)	No.	2	10000		20000	0	0	20000	0	333	0	0	333	0
I4	Other equipments, tape, stationary, pipe etc.	No.	1	10000		10000	0	0	10000	0	167	0	0	167	0
	Sub Total - I					**110000**	**0**	**0**	**110000**	**0**	**1833**	**0**	**0**	**1833**	**0**
J	**Total Project Measure Cost (A-J)**					**9157953**	**1110916**	**2682984**	**1779840**	**3584214**	**152633**	**18515**	**44716**	**29664**	**59737**
K	**Contingency (NABARD)**					**156250**	**0**	**156250**	**0**	**0**	**2604**	**0**	**2604**	**0**	**0**
L	**Total Project Cost**					**9314203**	**1110916**	**2839234**	**1779840**	**3584214**	**155237**	**18515**	**47321**	**29664**	**59737**
M	**Project Management Cost (ITC)**					**1072916**	**0**	**0**	**1072916**	**0**	**17882**	**0**	**0**	**17882**	**0**
N	***Supervision Cost (NABARD)***					**247616**	**0**	**247616**	**0**	**0**	**4127**	**0**	**4127**	**0**	**0**
O	**Maintenance fund (50% of Shramdan of FIP & CBP)**					**497754**	**0**	**497754**	**0**	**0**	**8296**	**0**	**8296**	**0**	**0**
P	**Total Project Cost**					**11132489**	**1110916**	**3584604**	**2852756**	**3584214**	**185541**	**18515**	**59743**	**47546**	**59737**

Annexure IV A

Summary of proposed interventions towards climate proofing with Adaptation Func Nayagaon-II watershed

Sr. no.	Particulars	Units of measure (ha../	Total units (ha../ cu m/m/	Total Avg. Rate (Rs/ Unit)	Rate reference	Total Cost (Rs)	Community Contribution (`)	Grant Amount from WDF(Rs)	Grant Amount from ITC-RDT(Rs)	Grant Amount from AFB (Rs.)	Total Cost	Community Contribution	Grant Amount from WDF	Grant Amount from ITC-RDT	Grant Amount from AFB
						Amount in INR					Amount in US$				
A	**Crop Area Treatment**														
A1	Earthen Farm Bund (EFB)	cu m	28968	92		2665056	533026	1407140	724890	0	44418	8884	23452	12082	0
A2	Stone Outlet (SO)	cu m	533	970		517010	26675	490335			8617	445	8172	0	0
A3	Grass Seeding on EFB (GS)	ha.	432	462		199424	31096	168328		0	3324	518	2805	0	0
A4	Fodder/ forestry planting on Field Bunds	Rmt.	500	68	NayagaonII-1	34125	0			34125	569	0	0	0	569
A5	Farm Pond	No.	2	75000	NayagaonII-2	150000	0			150000	2500	0	0	0	2500
A6	Well Recharge Pit/ Well Deepening	No.	2	11949	NayagaonII-3	23898	0			23898	398	0	0	0	398
	Sub Total - A					**3589513**	**590797**	**2065803**	**724890**	**208023**	**59825**	**9847**	**34430**	**12082**	**3467**
B	**Pasture land development**										0	0	0	0	0
B1	Water Absorption Trench (WAT)	cu m	1776	134		237984	47581	190403		0	3966	793	3173	0	0
B2	CCT / SCT	cu m	1709	134		229006	45802	183204		0	3817	763	3053	0	0
B3	Biofencing / Vegetative Hedge using thoor and seeding of MFPTS	Rmt.	600	40	NayagaonII-4	24000	0			24000	400	0	0	0	400
B4	Seeding of Grass and Leguminous species	ha..	7	597	Rajastha.n 3	4179	0			4179	70	0	0	0	70
	Sub Total - B					**495169**	**93383**	**373607**	**0**	**28179**	**8253**	**1556**	**6227**	**0**	**470**
C	**Drainage line treatment**										0	0	0	0	0
C1	Boulder Gully Plug (BGP)	cu m	392	970		380240	15249	364991		0	6337	254	6083	0	0
C2	Riparian Buffer Plantation of MPTS for Bank stabilisation	No.	500	68	NayagaonII-5	34125	0			34125	569	0	0	0	569
C3	Low cost Masonry Check Wall/ Sub-surface dyke	No.	3	79490	NayagaonII-7	238470	0			238470	3975	0	0	0	3975
	Sub Total - C					**652835**	**15249**	**364991**	**0**	**272595**	**10881**	**254**	**6083**	**0**	**4543**
D	**Agriculture Development**										0	0	0	0	0
D1	Horticulture Plantation	No.	7786	98		760536	449096	311440		0	12676	7485	5191	0	0
D2	Agroforestry Plantation	No.	2000	35	NayagaonII-9	70000	0			70000	1167	0	0	0	1167
D3	Composting - vermi ; NADEP; FYM Pit Compost; Bio compost; Green Manure etc.	No.	25	3500		87500	0			87500	1458	0	0	0	1458

D4	Seed Multiplication; vertical; crop intensification; crop rotation; cover crop demos	ha..	10	8000		80000	0			80000	1333	0	0	0	1333
D5	RWHS for Backyard plantation	No.	1	69990	RWHS_Raj	69990	0			69990	1167	0	0	0	1167
D6	Efficient irrigation system (Drip/ Sprinkler) - 1 acre unit	No.	5	16000	Rajastha.n 5	80000	0			80000	1333	0	0	0	1333
D7	Improved Farm Implements and equipments (BBF implement, Zero Tiller; Weeder; Fertigation; Reaper, Thresher etc.)	Set	1	250000		250000	0			250000	4167	0	0	0	4167
D8	Farmer Field School	No.	1	306139		306139	0		306139		5102	0	0	5102	0
D9	Vegetable demonstration in Kitchen garden	No.	120	700		84000	33600		50400		1400	560	0	840	0
D10	Grain Bank Development	No.	6	10000		60000	15000		45000		1000	250	0	750	0
D11	Market Linkage for crop sale through e-choupal	No.	1	250000		250000	0		250000		4167	0	0	4167	0
D12	Crop insurance awareness programme	No.	5	10000		50000	0			50000	833	0	0	0	833
	Sub Total - D					**2148165**	**497696**	**311440**	**651539**	**687490**	**35803**	**8295**	**5191**	**10859**	**11458**
E	**Livestock Development**										0	0	0	0	0
E1	Animal Health Camp- Vaccination & Treatment	No.	8	10000		80000	24000		56000		1333	400	0	933	0
E2	Infertility Camp	No.	4	10000		40000	12000		28000		667	200	0	467	0
E3	Travis Installation	No.	2	9000		18000	0		18000		300	0	0	300	0
E4	Artificial Insemination of Natives and Crossbred Cattle and Buffalows	No.	250	100		25000	0			25000	417	0	0	0	417
E5	Azolla Unit	No.	50	1500		75000	0			75000	1250	0	0	0	1250
E6	Training & resource support on Azolla cultivation	No.	1	20000		20000	0			20000	333	0	0	0	333
E7	Feed Management Cha.ff Cutter; Manger; stall feeding for large and small ruminants	No.	12	2400		28800	0			28800	480	0	0	0	480
E8	Livestock Field School	No.	1	120000		120000	0			120000	2000	0	0	0	2000
E9	Livestock Insurance corpus	No.	1	50000		50000	0			50000	833	0	0	0	833
	Sub Total - E					**456800**	**36000**	**0**	**102000**	**318800**	**7613**	**600**	**0**	**1700**	**5313**
F	**Women Development**										0	0	0	0	0
F1	Organisation of SHGs	No.	15	1000		15000	0		15000		250	0	0	250	0
F2	Capacity Building of SHGs	No.	8	3500		28000	0		28000		467	0	0	467	0
F3	Stationary / Material Cost	No.	15	1000		15000	0		15000		250	0	0	250	0
F4	Account training of SHGs	No.	2	3500		7000	0		7000		117	0	0	117	0
F5	Exposure visit of women in developed watershed / good institution	No.	2	10000		20000	0		20000		333	0	0	333	0

F6	Women Development (for women Federation)	No.	1	100000		100000	0		100000		1667	0	0	1667	0
	Sub Total - F					**185000**	**0**	**0**	**185000**	**0**	**3083**	**0**	**0**	**3083**	**0**
G	**Energy Efficient System**										0	0	0	0	0
G1	Improved cook stove	No.	50	1500		75000	0			75000	1250	0	0	0	1250
G2	Solar Pumps	No.	5	125000		625000	0			625000	10417	0	0	0	10417
G3	Biogas plant	No.	5	32190	NayagaonI-8	160950	0			160950	2683	0	0	0	2683
	Sub Total - G					**860950**	**0**	**0**	**0**	**860950**	**14349**	**0**	**0**	**0**	**14349**
H	**Knowledge management**										0	0	0	0	0
H1	RML subscription (3 years) on crop, weather & market info	No.	100	1500		150000	0			150000	2500	0	0	0	2500
H2	Geo- hydrological study and crop water budgeting	No.	1	150000		150000	0			150000	2500	0	0	0	2500
H3	Grassland ecology study	No.	2	30000		60000	0			60000	1000	0	0	0	1000
H4	Financial Inclusion drive and Credit facilitation through Banking Plan	No.	-	0		0	0			0	0	0	0	0	0
H5	Posters and pamphlet on climate change adaptation	No.	1	25000		25000	0			25000	417	0	0	0	417
H6	Educational kit – Manual of Climate Change Adaptation	No.				100000	0			100000	1667	0	0	0	1667
H7	Audio Visual Tools – short films	LS				70000	0			70000	1167	0	0	0	1167
H8	Awareness and Mobilization Programs	No.	12	5000		60000	0			60000	1000	0	0	0	1000
H9	Exposure visits, peer learning	No.	2	50000		100000	0			100000	1667	0	0	0	1667
H10	Project Management Training for VWC	No.	2	5000		10000	0		10000		167	0	0	167	0
H11	Institutional development training	No.	4	4000		16000	0		16000		267	0	0	267	0
H12	Watershed Orientation Training cu m awareness camp	No.	4	6000		24000	0		24000		400	0	0	400	0
H13	Accounts Training to VWC	No.	4	5000		20000	0		20000		333	0	0	333	0
H14	Exposure visit to successful watershed Project	No.	4	26000		104000	0		104000		1733	0	0	1733	0
H15	Capacity Building on IGA for Landless	No.	2	10000		20000	0		20000		333	0	0	333	0
H16	Watershed Impact study	No.	2	25000		50000	0		50000		833	0	0	833	0
	Sub Total - H					**959000**	**0**	**0**	**244000**	**715000**	**15983**	**0**	**0**	**4067**	**11917**
I	**Institutional and Capacity Building**										0	0	0	0	0
I1	Sign boards, slogans, wall painting	No.	1	40000		40000	0		40000		667	0	0	667	0
I2	Celebration of Women's Day (8th March)	No.	4	10000		40000	0		40000		667	0	0	667	0
I3	Watershed Day (7th Dec)	No.	2	10000		20000	0		20000		333	0	0	333	0
I4	Other equipments, tape, stationary, pipe etc.	No.	1	10000		10000	0		10000		167	0	0	167	0
	Sub Total - I					**110000**	**0**	**0**	**110000**	**0**	**1833**	**0**	**0**	**1833**	**0**

J	**Total Project Measure Cost (A-J)**					**9457433**	**1233126**	**3115841**	**2017429**	**3091037**	**157624**	**20552**	**51931**	**33624**	**51517**
K	**Contingency (NABARD)**					**183498**	**0**	**183498**	**0**		**3058**	**0**	**3058**	**0**	**0**
L	**Total Project Cost**					**9640931**	**1233126**	**3299339**	**2017429**	**3091037**	**160682**	**20552**	**54989**	**33624**	**51517**
M	**Project Management Cost (ITC)**					**1260020**	**0**		**1260020**		**21000**	**0**	**0**	**21000**	**0**
N	***Supervision Cost (NABARD)***					**307458**	**0**	**307458**			**5124**	**0**	**5124**	**0**	**0**
O	**Maintenance fund (50% of Shramdan of FIP & CBP)**					**616666**	**0**	**616666**			**10278**	**0**	**10278**	**0**	**0**
P	**Total Project Cost**					**11825075**	**1233126**	**4223463**	**3277449**	**3091037**	**197085**	**20552**	**70391**	**54624**	**51517**

Annexure IV A

Summary of proposed interventions towards climate proofing with Adaptation Fund

Sl. No.	Activity	Unit of Measurement	Length in m/ Nos./ ha)
A	***Crop Area treatment-(C1R=179.22ha,C2R=66.86 ha,C1I=63.99 ha***		
A-1	Field bund of c/s 0.60 m2	cu m	303.00
A-2	Waste weir (COF/ 1.5 m avg. crest length)	Nos.	15.00
A-3	Contour stone bund c/s 0.15 m2	cu m	1,732.80
A-4	Stone Bund c/s 0.30 m2	cu m	1,693.50
A-5	Foundation of stone bund	cu m	395.15
A-6	Stone Bund c/s 0.30 m2 with Excavated Stone	cu m	372.90
A-7	Foundation of stone bund	cu m	87.01
A-8	Gully Plug c/s 0.54 m2	cu m	1,339.00
A-9	Strengthening of existing Gully Plugs with excavated stone	cu m	41.76
	Total-A		
B	***Afforestation & pasture land development(P=379.65ha,W=378.58 ha,SP=131.19ha***		
B-1	Contour stone bund c/s 0.15 m2	cu m	23,116.80
B-2	Continuous/ Staggered contour trench (CCT/SCT) c/s 0.18 m2	cu m	13,139.46
B-3	Box trench of c/s 0.20 m2 for regeneration of existing plants	cu m	622.80
B-4	Gully Plug c/s 0.70 m2	cu m	9,108.40
B-5	Foundation of Gully plug	cu m	2,081.92
B-6	Stone Bund c/s 0.30 m2	cu m	3,136.20
B-7	Foundation of stone bund	cu m	731.78
B-8	Strengthening of existing stone bund	cu m	2,736.72
B-9	Strengthening of existing Gully Plugs with available stone	cu m	2,286.00
B-10	Contour stone bund with excavated stone c/s 0.10 m2	cu m	311

B-11	Gully Plug c/s 0.70 m2 with Excavated Stone	cu m	67
B-12	Foundation of Gully plug	cu m	15
B-13	Stone Bund c/s 0.30 m2 with Excavated Stone	cu m	220
B-14	Foundation of stone bund	cu m	51
B-15	Strengthening of existing stone bund with excavated stone	cu m	20
B-16	Strengthening of existing Gully Plugs with excavated stone	cu m	50
B-17	Crescent bund for existing plants	No.	3000
B-19	Refilling of alternate CCTs and tree seeding	m-length	5000
B-20	Gradonis (bench terracing) - demo	Ha	1
B-21	Plugging stone wall fence for protection of pasture land	m-length	1000
B-22	Grass seeding in pasture +silvipasture land	ha	498.86
B-23	Sitaful,churel,karanj,palas seeding (400 notches/ha)	ha	106.49
B-24	Aloevera Plantation	m-length	43,410.00
B-25	Plantation of fodder trees in (106.49 ha) of Silvipasture land+Plantation in CBP Area	Nos.	19,168.20
B-26	Plantation of fodder trees in (30.14 ha) of Silvipasture land	Nos.	3,616.80
B-27	Plantation of fodder trees on upstream side of stone bund in nearby cultivated land particular on C1I	Nos.	2,895.60
B-28	Avenue plantation	Nos.	495.60
B-29	Thor fencing in 54.31 ha of open land for Silvipasture development	m-length	8,146.50
B-30	Plantation of fodder trees for gully stabilization	Nos.	1000
B-31	1 cft (0.3x0.3x0.3 m) pitting and tree seeding	Nos.	15000
B-32	Creation of Pasture group and fodder bank	Nos.	2
	Total- B		**-**

C	**Drainage line treatment**		
C-1	EGP-2 (four in number) khad (409,401) bawdi (43,666/1)	m-length	74
C-2	Earthen bund with masonry spillway (Khad 497)	Nos.	1
C-3	Earthen bund with masonry spillway	Nos.	1
C-4	L.D.P.E Sheet lining for seepage control in existing structures	Nos.	2
C-5	Recharge pit on upstream side of gully plugs	cu m	1200
	Total-C		-
D	**Agriculture Development**		
D-1	Horticulture plantation (Mango / lemon / Guava)	Nos.	1,200
D-2	Compost pit	Nos.	10
D-3	Crop demonstration (Maize + Urad+soyabean)	ha	17
D-4	Vegetable cultivation demonstration (Okra) Plot	ha	1
D-5	Vegetable cultivation demonstration (Chili) Plot	ha	1
D-6	Promoting best package of practices - seed treatment,INM,IPM, etc.	Nos.	25
D-7	Promoting Trellis for vegetable cultivation	Nos.	10
D-8	Short duration and low water required variety of Kharif and Rabi crop with promotion mixed cropping	Nos.	25
D-9	RWHS for Backyard plantation	No.	2
D-10	Enhance water use efficiency by use of micro irrigation-sprinkler (1 acre unit)	Nos.	10
D-11	Enhance water use efficiency by use of micro irrigation-Drip (1 acre unit)	Nos.	5
D-12	Crop insurance awareness programme	Nos.	5
	Total-D		

E	**Livestock Development**		
E-1	Commercial goat farming (10 goats+ one breeding buck of sirohi goat) with cattle shed	Nos.	3
E-2	Dairy development	Nos.	10
E-3	Provision of breeding Buck Up -gradation program: Under Breed Improvement (Sirohi Breed Buck- Age- 1.5 - 2 years).	Nos.	43
E-4	Formation of GUG (Goat User Group):Facilitation, monthly meeting No of GUG=10	Nos.	10
E-5	Deworming & vaccination (package) for total 1700 goats will be dewormed & Vaccinated for four year	litre	272
E-6	Health & Treatment Camp (2 camps per year for three years) for the animals.	Nos.	8
E-7	Castrator for castration of unproductive small ruminants	Nos.	3
E-8	Demonstration of Manger (Feed Install)	Nos.	10
E-9	Support for Concentrate & feed supplement for buck: The feed concentrate will be provided @ 500 gms per Buck per day i.e.43*15*12=7740 Kg per year.	kg	7,740
E-10	IGWDP Veterinary Day	Nos.	4
E-11	Training to GUG members: Related to goat rearing and management for 3 goat clusters and one training per year	No.	9
E-12	Exposure visit: Exposure visit Bawaal goat village plus Bhilwara pastureland (minimum 2 person selected form each GUG+ Samiti members)	No.	1
E-13	Goat Rally for 3 clusters	No.	3
E-14	Backyard poultry	No.	500
E-15	Promoting Improved Animal husbandry practices - breed improvement through AI services with feed management, mineral bricks, silage, etc.	No.	1
E-16	Azolla cultivation	No.	20
E-17	Training & resource support on Azolla cultivation	No.	1
E-18	Community based livestock insurance	No.	300
	Total-E		

F	**Women Development**		
F-1	Women Day Celebration	Nos.	4
F-2	Women empowerment	Nos.	1
F-3	Hygiene Kitchen	Nos.	20
	Total-F		
G	**Energy Efficient System**		
G-1	Improved Chula/Cook stove	Nos.	50
G-2	Solar light with mobile charger	Nos.	60
G-3	Biogas plant	Nos.	2
G-4	Solar pump	Nos.	1
	Sub Total – G		
H	**Knowledge management**		
H-1	Posters and pamphlet on climate change adaptation		
H-2	Educational kit – Manual of Climate Change Adaptation		
H-3	Awareness and Mobilization Programs		
H-4	Audio Visual Tools – short films		
H-5	Exposure visits, peer learning		
H-6	Financial Inclusion drive and Credit facilitation through Banking Plan		
H-7	Installation of AWS and Issue of Agro advisory	Nos.	1
H-8	RML subscription (3 years) on crop, weather & market info	Nos.	100
H-9	Geo-Hydrological study and crop-water budgeting	Nos.	1
H-10	Grassland ecology study	Nos.	2
	Sub-Total -H		
	Other Component (NABARD Supported)		
I	**Training & Capacity Building**		
I-1	Exposure visit to KVK Udaipur & developed pasture land	Nos.	2
I-2	Watershed orientation for All FIP Farmer	Nos.	-
I-3	Training on different Soil & Water Conservation measures, rainwater harvesting techniques etc	Nos.	4

I-4	Watershed Day Celebration	Nos.	4
I-5	Human Health Camp (1 camp per year for seasonal disease)	Nos.	4
I-6	Training for skill up gradation like mobile repairing, motor binding	Nos.	5
	Total-I		
J	**Other support / instruments / implements / interventions etc.**		
J-1	Community Drinking water scheme	Nos.	2
J-2	Other activities-Sign board, slogan writing, wall painting, A-frame, bund frame, stationary for VWC, Iron box for VWC record keeping, Dari for VWC meeting etc.		1
	Total -J		
K	**Total of project measures**		
L	**Maintenance Fund**		
M	**Unallocated fund (NABARD)**		
N	**Supervision charges (NABARD)**		
O	**Total to VWC**		
P	**Project Management Cost (NABARD)**		
Q	**Total project cost / grant**		

Khad watershed

Avg Rate (Rs/ Unit)			Reference of rate	Labour Cost (`)	Material cost (`)	Total Cost
Labour (`)	Skilled Labour & Material (`)	Total (`)				
75.00	0.00	75.00		22,725	-	22,725
735.00	0.00	735.00		11,025	-	11,025
154.20	0.00	154.20		267,198	-	267,198
154.20	0.00	154.20		261,138	-	261,138
92.00	0.00	92.00		36,354	-	36,354
140.80	183.80	324.60		52,504	68,539	121,043
92.00	0.00	92.00		8,005	-	8,005
164.00	0.00	164.00		219,596	-	219,596
140.80	183.80	324.60		5,880	7,675	13,555
				884,424	**76,215**	**960,639**
154.20	0.00	154.20		3,564,611	-	3,564,611
92.00	0.00	92.00		1,208,830	-	1,208,830
92.00	0.00	92.00		57,298	-	57,298
154.20	0.00	154.20		1,404,515	-	1,404,515
92.00	0.00	92.00		191,537	-	191,537
154.20	0.00	154.20		483,602	-	483,602
92.00	0.00	92.00		67,324	-	67,324
154.20	0.00	154.20		422,002	-	422,002
154.20	0.00	154.20		352,501	-	352,501
154.20	183.80	338.00		47,879	57,070	104,949

154.20	183.80	338.00		10,362	12,351	22,714
92.00	0.00	92.00		1,413	-	1,413
154.20	183.80	338.00		33,862	40,362	74,225
92.00	0.00	92.00		4,714	-	4,714
154.20	183.80	338.00		3,109	3,705	6,814
154.20	183.80	338.00		7,698	9,175	16,873
14.64	0.00	14.64	Design & estimate in Khad_1	43920	0	43920
6.75	1.00	7.75	G.K.N 2013-item no-4	33750	5000	38750
36,400.00	5,900.00	42,300.00	Design & estimate in Khad_2	36400	5900	42300
205.08	0.00	205.08		205080	0	205080
270.00	265.60	535.60		134,692	132,497	267,189
442.80	150.00	592.80		47,154	15,974	63,127
3.24	5.00	8.24		140,648	217,050	357,698
22.46	18.13	40.59		430,518	347,519	778,037
22.46	18.13	40.59		81,233	65,573	146,806
22.46	18.13	40.59		65,035	52,497	117,532
22.46	98.13	120.59		11,131	48,633	59,764
13.30	**0.00**	13.30		108,348	-	108,348
27.37	23.75	51.12	Estimate in Khad_3	27370	23750	51120
4.27	1.00	5.27	G.K.N 2013-item no-4,2(b)	64050	15000	79050
	50,000.00	50,000.00		0	100000	100000
0.00				**9,290,587**	**1,152,058**	**10,442,645**

1,615.00	1,940.00	3,555.00		119,510	143,560	263,070
78,917.93	262,943.14	341,861.07		78,918	262,943	341,861
186,132.00	34,620.00	220,752.00	Design & Estimate in Khad_4a to 4d	186,132	34,620	220,752
89,880.00	17,729.00	107,609.00	Design & Estimate in Khad_5	179,760	35,458	215,218
113.00	0.00	113.00	G.K.N 2013-item no-2(b)	135,600	0	135,600
0.00	0.00	0.00		699,920	476,581	1,176,501
0.00	45.00	45.00		-	54,000	54,000
2,390.00	5,110.00	7,500.00		23,900	51,100	75,000
9,000.00	10,660.00	19,660.00		153,810	182,179	335,989
12,000.00	8,063.00	20,063.00		12,000	8,063	20,063
16,000.00	10,000.00	26,000.00		16,000	10,000	26,000
0.00	2,000.00	2,000.00		0.00	50000.00	50000.00
1300.00	10900.00	12200.00	Balua 5 a, b & c	13000	109000	122000
0.00	1,000.00	1,000.00		0.00	25000.00	25000.00
		69990	RWHS_Raj			139980.00
	16,000.00	16,000.00		0	160000	160,000
	20,000.00	20,000.00		0	100000	100,000
		10,000.00				50,000
				218,710	**749,342**	**1,158,032**

8,361.00	88,556.00	96,917.00		25,083	265,668	290,751
0.00	34,250.00	34,250.00		-	342,500	342,500
0.00	6,000.00	6,000.00		-	258,000	258,000
	21,500.00	21,500.00		-	215,000	215,000
	80.00	80.00		-	21,760	21,760
	7,000.00	7,000.00		-	56,000	56,000
0.00	4,500.00	4,500.00		-	13,500	13,500
443.00	2,219.00	2,662.00		4,430	22,190	26,620
0.00	32.00	32.00		-	247,680	247,680
0.00	8,000.00	8,000.00		-	32,000	32,000
0.00	3,750.00	3,750.00		-	33,750	33,750
0.00	40,500.00	40,500.00		-	40,500	40,500
	5,000.00	5,000.00		-	15,000	15,000
		80.00			-	40,000
		420,400	Estimate in Khad_6			420,400
		1,500.00		-	-	30,000
		20,000.00				20,000
		300.00				90,000
				29,513	**1,563,548**	**2,193,461**

0.00	10,000.00	10,000.00		-	40,000	40,000
0.00	125,000.00	125,000.00		-	125,000	125,000
0.00	1,200.00	1,200.00		-	24,000	24,000
0.00	**0.00**			**-**	**189,000**	**189,000**
115.00	535.00	650.00		5750	26750	32500
0.00	4,000.00	4,000.00		0	240000	240000
		19,000.00				38000
0.00	125,000.00	125,000.00		0	125,000	125,000
				5750	**391750**	**435500**
						25,000
						100,000
						50,000
						70,000
						100,000
		0.00				-
	520,000.00	520,000.00	Annex – AgroMetStation		520,000	520,000
		1,500.00				150000
		150,000.00				150,000
	23,000.00	23,000.00		-	46,000	46,000
				0	**566,000**	**1,211,000**
	8,000.00	8,000.00		-	16,000	16,000
	0.00	0.00		-	-	-
	3,000.00	3,000.00		-	12,000	12,000

	15,000.00	15,000.00		-	60,000	60,000
	4,000.00	4,000.00		-	16,000	16,000
	7,000.00	7,000.00		-	35,000	35,000
				-	**139,000**	**139,000**
27,563.00	163,365.00	190,928.00		55,126	326,730	381,856
0.00	20,000.00	20,000.00		-	20,000	20,000
				55,126	**346,730**	**401,856**
				11,184,030	**5,650,224**	**18,307,634**
						978,373
						437,953
				1,460,046		**1,460,046**
				12,644,076	**5,650,224**	**21,184,006**
						3,301,000
				12,644,076	**5,650,224**	**24,485,006**

Community Contribution	Grant Amount from IGWDP	Grant Amount from AFB	Total Cost	Community Contribution	Grant Amount from IGWDP	Grant Amount from AFB
Amount in INR			Amount in US$			
4,545	18,180	0	379	76	303	0
2,205	8,820	0	184	37	147	0
53,440	213,758	0	4453	891	3563	0
52,228	208,910	0	4352	870	3482	0
7,271	29,083	0	606	121	485	0
10,501	110,542	0	2017	175	1842	0
1,601	6,404	0	133	27	107	0
43,919	175,677	0	3660	732	2928	0
1,176	12,379	0	226	20	206	0
176,885	**783,754**	**0**	**16011**	**2948**	**13063**	**0**
			0	0	0	0
656,195	2,908,416	0	59410	10937	48474	0
205,989	1,002,841	0	20147	3433	16714	0
9,219	48,079	0	955	154	801	0
257,415	1,147,100	0	23409	4290	19118	0
35,104	156,433	0	3192	585	2607	0
91,769	391,833	0	8060	1529	6531	0
12,775	54,549	0	1122	213	909	0
81,465	340,537	0	7033	1358	5676	0
65,395	287,106	0	5875	1090	4785	0
9,576	95,373	0	1749	160	1590	0

2,072	20,641	0	379	35	344	0
283	1,130	0	24	5	19	0
6,772	67,452	0	1237	113	1124	0
943	3,771	0	79	16	63	0
622	6,192	0	114	10	103	0
1,540	15,333	0	281	26	256	0
-		43920	732	0	0	732
-		38750	646	0	0	646
-		42300	705	0	0	705
-		205080	3418	0	0	3418
26,938	240,251	0	4453	449	4004	0
9,431	53,697	0	1052	157	895	0
28,130	329,569	0	5962	469	5493	0
86,104	691,934	0	12967	1435	11532	0
16,247	130,559	0	2447	271	2176	0
13,007	104,525	0	1959	217	1742	0
2,226	57,538	0	996	37	959	0
21,670	86,679	0	1806	361	1445	0
-		51120	852	0	0	852
-		79050	1318	0	0	1318
-		100000	1667	0	0	1667
1,640,885	**8,241,539**	**560220**	**174044**	**27348**	**137359**	**9337**

			0	0	0	0
23,902	239,168	0	4385	398	3986	0
15,784	326,077	0	5698	263	5435	0
-		220752	3679	0	0	3679
-		215218	3587	0	0	3587
-		135600	2260	0	0	2260
39,686	565,245	571570	19608	661	9421	9526
			0	0	0	0
10,800	43,200	0	900	180	720	0
30,000	45,000	0	1250	500	750	0
190,246	145,744	0	5600	3171	2429	0
13,613	6,450	0	334	227	108	0
18,000	8,000	0	433	300	133	0
-		50000	833	0	0	833
-		122000	2033	0	0	2033
-		25000	417	0	0	417
		139980	2333	0	0	2333
-		160000	2667	0	0	2667
-		100000	1667	0	0	1667
-	0	50000	833	0	0	833
262,658	**248,394**	**646980**	**19301**	**4378**	**4140**	**10783**

			0	0	0	0
219,020	71,731	0	4846	3650	1196	0
171,250	171,250	0	5708	2854	2854	0
103,200	154,800	0	4300	1720	2580	0
-	215,000	0	3583	0	3583	0
10,880	10,880	0	363	181	181	0
14,000	42,000	0	933	233	700	0
13,500	-	0	225	225	0	0
9,978	16,643	0	444	166	277	0
123,840	123,840	0	4128	2064	2064	0
-	32,000	0	533	0	533	0
-	33,750	0	563	0	563	0
10,125	30,375	0	675	169	506	0
3,750	11,250	0	250	63	188	0
-	-	40000	667	0	0	667
-		420400	7007	0	0	7007
		30000	500	0	0	500
-	0	20000	333	0	0	333
-	0	90000	1500	0	0	1500
679,543	**913,519**	**600400**	**36558**	**11326**	**15225**	**10007**

			0	0	0	0
-	40,000	0	667	0	667	0
-	125,000	0	2083	0	2083	0
-	24,000	0	400	0	400	0
-	**189,000**	**0**	**3150**	**0**	**3150**	**0**
			0	0	0	0
6500	26000		542	108	433	0
48000	192000		4000	800	3200	0
-	-	38000	633	0	0	633
-	0	125000	2083	0	0	2083
54500	**218000**	**163000**	**7258**	**908**	**3633**	**2717**
			0	0	0	0
-	-	25000	417	0	0	417
-	-	100000	1667	0	0	1667
-	-	50000	833	0	0	833
-	-	70000	1167	0	0	1167
-	-	100000	1667	0	0	1667
		0	0	0	0	0
-	0	520000	8667	0	0	8667
-	-	150000	2500	0	0	2500
		150000	2500	0	0	2500
-	46,000	0	767	0	767	0
0	**46,000**	**1165000**	**20183**	**0**	**767**	**19417**
			0	0	0	0
			0	0	0	0
-	16,000	0	267	0	267	0
-	-	0	0	0	0	0
-	12,000	0	200	0	200	0

-	60,000	0	1000	0	1000	0
-	16,000	0	267	0	267	0
7,000	28,000	0	583	117	467	0
7,000	**132,000**	**0**	**2317**	**117**	**2200**	**0**
			0	0	0	0
7,878	373,978	0	6364	131	6233	0
-	20,000	0	333	0	333	0
7,878	**393,978**	**0**	**6698**	**131**	**6566**	**0**
2,869,035	**11,731,429**	**3,707,170**	**305127**	**47817**	**195524**	**61786**
	978,373	**0**	**16306**	**0**	**16306**	**0**
	437,953	**0**	**7299**	**0**	**7299**	**0**
	1,460,046	**0**	**24334**	**0**	**24334**	**0**
2,869,035	**14,607,800**	**3707170**	**353067**	**47817**	**243463**	**61786**
	3,301,000	**0**	**55017**	**0**	**55017**	**0**
2,869,035	**17,908,800**	**3707170**	**408083**	**47817**	**298480**	**61786**

Annexure IV A

Summary of proposed interventions towards climate proofing with Adaptation Fund **Balua watershed**

S.No.	Activity	Unit of Measurement	Total units (ha/ cu m/m/ No.)	Avg Rate (Rs/ Unit)			Rate reference	Labour Cost (`)	Material Cost (`)	Total Cost (`)	Community Contribution (`)	Grant Amount under IGWDP (`)	Fund support sought from AFB	Total Cost	Community Contribution	Grant Amount under IGWDP	Fund support sought from AFB
				Labour	Material	Total											
								Amount in INR						Amount in US$			
A	**Crop area treatment**																
A-1	Field bund	cu m	823	75.00	0.00	75.00		61740	0	61740	12348	49392	**0**	1029	206	823	0
A-2	Waste weir (COF/ 1.5 m avg. crest length)	No.	52	737.00	0.00	737.00		38324	0	38324	7665	30659	**0**	639	128	511	0
A-3	Stone field Bund	cu m	1370	154.20	0.00	154.20		211316	0	211316	42263	169053	**0**	3522	704	2818	0
A-4	Foundation of stone field bund	cu m	320	75.00	0.00	75.00		23982	0	23982	4796	19186	**0**	400	80	320	0
A-5	Strengthening of Stone field bund	cu m	2054	154.20	0.00	154.20		316714	0	316714	63343	253372	**0**	5279	1056	4223	0
A-6	Gully Plug	cu m	900	154.20	0.00	154.20		138703	0	138703	27741	110962	**0**	2312	462	1849	0
A-7	Foundation of Gully plug	cu m	206	92.00	0.00	92.00		18915	0	18915	3783	15132	**0**	315	63	252	0
A-8	Gully plug with excavated stone	cu m	21	324.60	0.00	324.60		6771	0	6771	1354	5417	**0**	113	23	90	0
A-9	Foundation of Gully plug with excavated stone	cu m	5	92.00	0.00	92.00		447	0	447	89	358	**0**	7	1	6	0
A-10	Repair Gully Plugs with available stone	cu m	551	154.20	0.00	154.20		84896	0	84896	16979	67917	**0**	1415	283	1132	0
A-11	Repair Gully Plugs with excavated stone	cu m	42	324.60	0.00	324.60		13477	0	13477	2695	10782	**0**	225	45	180	0
	Total-A							**915287**	**0**	**915287**	**183057**	**732229**	**0**	**15255**	**3051**	**12204**	**0**
B	**Afforestation & Pasture land development**													0	0	0	0
B-1	Contour stone bund	Rmt.	3530	154.20	0.00	154.20		544249	0	544249	96143	448106	**0**	9071	1602	7468	0
B-2	Contour stone bund with excavated stone	Rmt.	2374	324.60	0.00	324.60		770617	0	770617	125605	645012	**0**	12844	2093	10750	0
B-3	Continuous/ Staggered contour trench	Rmt.	27362	92.00	0.00	92.00		2517286	0	2517286	428094	2089192	**0**	41955	7135	34820	0
B-4	Water absorption trench	Rmt.	4290	92.00	0.00	92.00		394680	0	394680	63149	331531	**0**	6578	1052	5526	0
B-5	Box trench for regeneration of existing plants	Rmt.	80	92.00	0.00	92.00		7360	0	7360	1214	6146	**0**	123	20	102	0
B-6	Gully Plug c/s 0.70 m2	Rmt.	3640	154.20	0.00	154.20		561288	0	561288	98247	463041	**0**	9355	1637	7717	0
B-7	Foundation of Gully plug	Rmt.	832	92.00	0.00	92.00		76544	0	76544	13398	63146	**0**	1276	223	1052	0
B-8	Gully Plug c/s 0.70 m2 with Excavated Stone	Rmt.	111	324.60	0.00	324.60		36128	0	36128	5780	30348	**0**	602	96	506	0
B-9	Foundation of Gully plug	Rmt.	25	92.00	0.00	92.00		2340	0	2340	374	1966	**0**	39	6	33	0
B-10	Stone Bund c/s 0.30 m2	Rmt.	1574	154.20	0.00	154.20		242680	0	242680	44652	198028	**0**	4045	744	3300	0
B-11	Foundation of stone bund	Rmt.	367	92.00	0.00	92.00		33784	0	33784	6216	27568	**0**	563	104	459	0
B-12	Stone Bund c/s 0.30 m2 with Excavated Stone	Rmt.	68	324.60	0.00	324.60		22008	0	22008	4148	17860	**0**	367	69	298	0
B-13	Foundation of stone bund	Rmt.	16	92.00	0.00	92.00		1455	0	1455	274	1181	**0**	24	5	20	0
B-14	Repair stone bund	Rmt.	1105	154.20	0.00	154.20		170422	0	170422	31495	138927	**0**	2840	525	2315	0
B-15	Repair stone bund with excavated stone	Rmt.	221	324.60	0.00	324.60		71827	0	71827	13328	58499	**0**	1197	222	975	0
B-16	Repair Gully Plugs with available stone	Rmt.	905	154.20	0.00	154.20		139557	0	139557	24471	115086	**0**	2326	408	1918	0
B-17	Repair Gully Plugs with excavated stone	Rmt.	2	324.60	0.00	324.60		779	0	779	125	654	**0**	13	2	11	0
B-18	Field bund of c/s 0.60 m2	Rmt.	224	75.00	0.00	75.00		16785	0	16785	3357	13428	**0**	280	56	224	0
B-19	Waste weir (COF/ 1.5 m avg. crest length)	No.	5	737.00	0.00	737.00		3685	0	3685	737	2948	**0**	61	12	49	0
B-20	Foundation of stone outlet	Rmt.	0	75.00	0.00	75.00		0	0	0	0	0	**0**	0	0	0	0
B-21	Stone pitched thawala for regeneration of plants	No.	1500	25.42	0.00	25.42	Rajasthan 1	38130	0	38130	0		**38130**	636	0	0	636
B-22	Refilling of alternate CCTs and tree seeding	Rmt.	7000	6.75	1.00	7.75	G.K.N 2013-item no-4	47250	7000	54250	0		**54250**	904	0	0	904
B-23	Gradonis (bench terracing) - demo	ha	1	36400.00	5900.00	42300.00	Balua 1	36400	5900	42300	0		**42300**	705	0	0	705
B-24	Grass seeding in pasture +silvi pasture land	ha	507	270.00	265.60	535.60		136914	134683	271596	27383	244214	**0**	4527	456	4070	0
B-25	Neem, sitafal, karanj, palas seeding	ha	60	442.80	150.00	592.80		26457	8963	35420	5291	30128	**0**	590	88	502	0

B-26	Aloe vera Plantation	Rmt.	39357	3.24	5.00	8.24		127517	196785	324302	25503	298798	**0**	5405	425	4980	0
B-27	Plantation of fodder trees in (59.75 ha) of Silvi pasture land	No.	8963	22.46	18.13	40.59		201309	162499	363808	40262	323546	**0**	6063	671	5392	0
B-28	Teak plantation near household/well for timber support	No.	2000	22.46	18.13	40.59		44920	36260	81180	8984	72196	**0**	1353	150	1203	0
B-29	Avenue plantation	No.	1000	22.46	98.13	120.59		22460	98130	120590	4492	116098	**0**	2010	75	1935	0
B-30	Thor vegetative barrier	TVB	140	13.30	**0.00**	13.30		1862	0	1862	372	1490	**0**	31	6	25	0
B-31	Plantation of fodder trees on upslope side of stone bund in nearby cultivated land	No.	773	22.46	98.13	120.59		17362	75854	93216	3472	89744	**0**	1554	58	1496	0
B-32	Plantation of fodder trees for gully stabilization	No.	1000	27.37	23.75	51.12	Balua 2	27370	23750	51120	0		**51120**	852	0	0	852
B-33	1 cft (0.3x0.3x0.3 m) pitting and tree seeding	No.	20000	4.27	1.00	5.27	G.K.N 2013-item no-4,2(b)	85400	20000	105400	0		**105400**	1757	0	0	1757
B-34	Creation of Pasture group and fodder bank	No.	1		50000.00	50000.00		0	50000	50000	0		**50000**	833	0	0	833
	Total-B							**6426825**	**819824**	**7246649**	**1076568**	**5828881**	**341200**	**120777**	**17943**	**97148**	**5687**
C	**Drainage line treatment**													0	0	0	0
C-1	EGP (2 No..)	Rmt.	64	1711.00	1017.00	2728.00		109504	65088	174592	21901	152691	**0**	2910	365	2545	0
C-2	Sub-surface polyurethane check for recharging	No.	7	60000.00	40000.00	########		420000	280000	700000	67200	632800	**0**	11667	1120	10547	0
C-3	Check structure- Sy# 530	No.	1	########	61746.70	########		125421	61747	187168	25084	162083	**0**	3119	418	2701	0
C-4	Check structure- Sy# 686	No.	1	########	80607.24	########		163881	80607	244489	32776	211712	**0**	4075	546	3529	0
C-5	Check structure- Sy# 852	No.	1	89563.41	50961.76	########		89563	50962	140525	17913	122612	**0**	2342	299	2044	0
C-6	Check structure- Sy# 991	No.	1	52691.57	52926.94	########		52692	52927	105619	10538	95080	**0**	1760	176	1585	0
C-7	Check structure- Sy# 1094	No.	1	########	85428.50	########		190635	85429	276064	38127	237937	**0**	4601	635	3966	0
C-8	Check structure- Sy# 1293	No.	1	98031.39	44549.19	########		98031	44549	142581	19606	122974	**0**	2376	327	2050	0
C-9	Check structure- Sy# 1344	No.	0	97818.53	45781.75	########		0	0	0	0	0	**0**	0	0	0	0
C-10	Check structure- Sy# 1675	No.	1	########	64256.82	########		145283	64257	209540	29057	180483	**0**	3492	484	3008	0
C-11	Percolation tank - Hamelwala (Sy #1615)	No.	0	########	########	########		0	0	0	0	0	**0**	0	0	0	0
C-12	Percolation tank - Labadwala (Sy#-6780/1655)	No.	1	########	########	########		211979	116465	328444	42396	286048	**0**	5474	707	4767	0
C-13	Masonry Gabion @ Hamelwala(Sy #1615)	No.	1	40240.00	26010.00	66250.00		40240	26010	66250	8048	58202	**0**	1104	134	970	0
C-14	L.D.P.E Sheet lining for seepage control in existing structures	No.	2	89880.00	17729.00	########	Balua 4 a & b	179760	35458	215218	0		**215218**	3587	0	0	3587
C-15	Recharge pit on up slope side of gully plugs	cu m	1500	104.00	0.00	104.00	G.K.N 2013-item no-2(b)	156000	0	156000	0	0	**156000**	2600	0	0	2600
	Total-C							**1982990**	**898410**	**2946488**	**312646**	**2262624**	**371218**	**49108**	**5211**	**37710**	**6187**
D	**Agriculture Development**													0	0	0	0
D-1	Horticulture orchard (wadi of Mango / lemon / Guava) - 0.5 acre unit size	No.	35	5931.48	13113.00	19044.48		207602	458955	666557	266623	399934	**0**	11109	4444	6666	0
D-2	Horti-plantation (Mango)	No.	400	75.00	140.00	215.00		30000	56000	86000	34400	51600	**0**	1433	573	860	0
D-3	Floriculture	No.	10000	0.00	12.00	12.00		0	120000	120000	48000	72000	**0**	2000	800	1200	0
D-4	Drip irrigation in horticulture plots (75% subsidy from Govt. schemes, 25% contribution	No.	10	0.00	35000.00	35000.00		0	350000	350000	350000	0	**0**	5833	5833	0	0
D-5	Sprinkler irrigation (1 acre unit)	No.	5		10000.00	20000.00		0	50000	100000	0		**100000**	1667	0	0	1667
D-6	RWHS for Backyard plantation	No.	2			69990	RWHS_Raj			139980			139980	2333	0	0	2333
D-7	Compost Pit	No.	15	2390.00	5110.00	7500.00		35850	76650	112500	45000	67500		1875	750	1125	0
D-8	Crop demonstration (Maize + Urad)	ha	22	9000.00	10660.00	19660.00		196592	232852	429443	171777	257666	**0**	7157	2863	4294	0
D-9	Vegetable cultivation demonstration (Okra) Plot	ha	1	12000.00	8063.00	20063.00		12000	8063	20063	8025	12038	**0**	334	134	201	0

D-10	Vegetable cultivation demonstration (Chilli) Plot	ha	1	16000.00	10000.00	26000.00		16000	10000	26000	10400	15600	**0**	433	173	260	0
D-11	Best package of practices included seed treatment, INM, IPM and use of organic fertilizer etc.	No.	25	0.00	4000.00	4000.00		0	100000	100000	0		**100000**	1667	0	0	1667
D-12	Vegetable cultivation with Trellis	No.	25	1300.00	10900.00	12200.00	Balua 5 a, b & c	32500	272500	305000	0		**305000**	5083	0	0	5083
D-13	Short duration and low water required variety of maize and wheat promotion of mixed cropping	No.	30	0.00	1200.00	1200.00		0	36000	36000	0		**36000**	600	0	0	600
D-14	Crop insurance awareness programme	No.	5			10000				50000			**50000**	833	0	0	833
D-15	Kitchen Garden	No.	200			200.00				40000			**40000**	667	0	0	667
	Total-D							**530543**	**1771020**	**2581543**	**934225**	**876338**	**770980**	**43026**	**15570**	**14606**	**12850**
E	**Livestock Development**													0	0	0	0
E-1	Breeding Buck Up -gradation program (Sirohi Breed Buck- Age- 1.5 - 2 years).	No.	30	0.00	6000.00	6000.00		0	180000	180000	72000	108000	**0**	3000	1200	1800	0
E-2	Formation of GUG (Goat User Group):Facilitation, monthly meeting	No.	10	0.00	3000.00	3000.00		0	30000	30000	3000	27000	**0**	500	50	450	0
E-3	Deworming & vaccination (package) for total 2000 goats for 4 years	litre	400	0.00	80.00	80.00		0	32000	32000	3200	28800	**0**	533	53	480	0
E-4	Health & Treatment Camp (2 per year for 4 years) for animals	No.	8	0.00	7000.00	7000.00		0	56000	56000	5600	50400	**0**	933	93	840	0
E-5	Castrator for castration of unproductive small ruminants	No.	0	0.00	4500.00	4500.00		0	0	0	0	0	**0**	0	0	0	0
E-6	Demonstration of Manger (Feed Install)	No.	10	0.00	2662.00	2662.00		0	26620	26620	10648	15972	**0**	444	177	266	0
E-7	Support for Concentrate & feed supplement for buck: The feed concentrate will be provided @ 500 gms per Buck per day	kg	5400	0.00	32.00	32.00		0	172800	172800	69120	103680	**0**	2880	1152	1728	0
E-8	IGWDP Veterinary Day	No.	4	0.00	10000.00	10000.00		0	40000	40000	0	40000	**0**	667	0	667	0
E-9	Training to GUG members: Related to goat rearing and management for 10 GUG and one training per year for 100 members	No.	12	0.00	3750.00	3750.00		0	45000	45000	0	45000	**0**	750	0	750	0
E-10	Exposure visit (2 persons from each GUG+ Samiti members)	No.	1	0.00	40500.00	40500.00		0	40500	40500	0	40500	**0**	675	0	675	0
E-11	Goat Rally	No.	4	0.00	8000.00	8000.00		0	32000	32000	3200	28800	**0**	533	53	480	0
E-12	Backyard poultry	No	500		80.00	80.00			40000	40000	0	0	**40000**	667	0	0	667
E-13	Azolla Unit	No.	30	200.00	1300.00	1500.00				45000			**45000**	750	0	0	750
E-14	Training & resource support on Azolla cultivation	No.	1			20000.00				20000			**20000**	333	0	0	333
E-15	Community based livestock insurance	No.	300		300.00	300.00		0	90000	90000	0	0	**90000**	1500	0	0	1500
E-16	Improved animal husbandry practices including feed management, mineral bricks, silage, AI services of improved desi breed, etc.,	No.	1			########	Estimate in annexure-8			420400	0		**420400**	7007	0	0	7007
	Total-E							**0**	**784920**	**1270320**	**166768**	**488152**	**615400**	**21172**	**2779**	**8136**	**10257**
F	**Women Development**													0	0	0	0
F-1	Women Day Celebration	No.	4	0.00	10000.00	10000.00		0	40000	40000	0	40000	**0**	667	0	667	0
F-2	Women Federation - seed money	No.	1	0.00	########	########		0	125000	125000	0	125000	**0**	2083	0	2083	0
F-3	Clean Kitchen	No.	20	0.00	1200.00	1200.00		0	24000	24000	6000	18000	**0**	400	100	300	0
	Total-F							**0**	**189000**	**189000**	**6000**	**183000**	**0**	**3150**	**100**	**3050**	**0**
G	**Energy Efficient System**													0	0	0	0
G-1	Improved chullah/cook stove	No.	50	115.00	535.00	650.00		5750	26750	32500	8125	24375	**0**	542	135	406	0
G-2	Solar Light (home lighting)	No.	30	0.00		7000.00		0	0	210000	0		**210000**	3500	0	0	3500
G-3	Biogas plant	No.	2			19000.00		0	0	38000	0	0	**38000**	633	0	0	633
G-4	Solar pump	No.	1	0.00	########	########		0	125000	125000	0	0	**125000**	2083	0	0	2083

	Total – G							**5750**	**151750**	**405500**	**8125**	**24375**	**373000**	**6758**	**135**	**406**	**6217**
H	**Knowledge management**													0	0	0	0
H-1	AWS and agro-advisory	No.	1			########	Annex – AgroMetStation	0	0	520000	0	0	**520000**	8667	0	0	8667
H-2	RML subscription (3 years) on crop, weather & market info	No.	100			1500.00		0	150000	150000	0	0	**150000**	2500	0	0	2500
H-3	Geo- hydrological study and crop water budgeting	No.	1			########				150000			**150000**	2500	0	0	2500
H-4	Grassland ecology study	No.	2		30000.00	30000.00		0	60000	60000	0	0	**60000**	1000	0	0	1000
H-5	Posters and pamphlet on climate change adaptation		1							25000	0	0	**25000**	417	0	0	417
H-6	Financial Inclusion drive and Credit facilitation through Banking Plan		1			0.00				0			**0**	0	0	0	0
H-7	Educational kit – Manual of Climate Change Adaptation		1							100000	0	0	**100000**	1667	0	0	1667
H-8	Awareness and Mobilization Programs		1							50000	0	0	**50000**	833	0	0	833
H-9	Audio Visual Tools – short films		1							70000	0	0	**70000**	1167	0	0	1167
H-10	Exposure visits, peer learning									100000	0	0	**100000**	1667	0	0	1667
H-11	Exposure visit to KVK Udaipur & developed pastureland at Devpura 2	No.	1	0.00	15000.00	15000.00		0	15000	15000	0	15000	**0**	250	0	250	0
H-12	Watershed orientation for all FIP farmers	No.	4	0.00	4000.00	4000.00		0	16000	16000	0	16000	**0**	267	0	267	0
H-13	Training on different Soil & Water Conservation measures, rainwater harvesting techniques etc.	No.	8	0.00	3000.00	3000.00		0	24000	24000	0	24000	**0**	400	0	400	0
H-14	Training for skill upgradation like mobile repairing, motor binding	No.	5	0.00	7000.00	7000.00		0	35000	35000	3500	31500	**0**	583	58	525	0
	Total-H							**0**	**300000**	**1315000**	**3500**	**86500**	**1225000**	**21917**	**58**	**1442**	**20417**
I	**Other interventions**												**0**	0	0	0	0
I-1	Watershed Day Celebration	No.	4	0.00	10000.00	10000.00		0	40000	40000	0	40000	**0**	667	0	667	0
I-2	Human Health Camp (1 camp per year for seasonal disease)	No.	4	0.00	5000.00	5000.00		0	20000	20000	0	20000	**0**	333	0	333	0
I-3	Other activities-Sign board, slogan writing, wall painting, A-frame, bund frame, stationary for VWC, Iron box for VWC record keeping, Dari for VWC meeting etc.		1	0.00	20000.00	20000.00		0	20000	20000	0	20000	**0**	333	0	333	0
	Total -I							**0**	**80000**	**80000**	**0**	**80000**	**0**	**1333**	**0**	**1333**	**0**
J	**Total of project measures**									**16949786**	**2690889**	**10562099**	**3696798**	**282496**	**44848**	**176035**	**61613**
K	**Maintenance Fund**									**841000**		**841000**		**14017**	**0**	**14017**	**0**
L	**Unallocated fund (NABARD)**									**397501**		**397501**		**6625**	**0**	**6625**	**0**
M	**Supervision charges (NABARD)**									**1325300**		**1325300**		**22088**	**0**	**22088**	**0**
N	**Total to VWC**									**19513587**	**2690889**	**13125900**	**3696798**	**325226**	**44848**	**218765**	**61613**
O	**Project Management Cost (NABARD)**									**3021400**		**3021400**		**50357**	**0**	**50357**	**0**
P	**Total project cost / grant**									**22534987**	**2690889**	**16147300**	**3696798**	**375583**	**44848**	**269122**	**61613**

Annexure IV A

Summary of proposed interventions towards climate proofing with Adaptation Fu **Mandali watershed**

Sr.no.	Particulars	Unit of Measurement	Length in m/ Nos./ ha)	Size/ Cross Section (sq m)	Total units (ha/ cu m/m/ No.)	Avg Rate (Rs/ Unit)			Rate reference	Labour Cost (Rs)	Material Cost (Rs)	Total Cost (Rs)	Convergence	Contribution from community (Rs)	Grant Amount from IGWDP(Rs)	Grant Amount from AFB	Total Cost	Convergence	Contribution from community	Grant Amount from IGWDP	Grant Amount from AFB
						Total	Labour	Skilled Labour & Material													
												Amount in INR					Amount in US$				
1	**Crop area treatment (488.75 ha)**																				
A	Earthen Farm Bunding	cu m	30067	0.6	18040.2	75	75	0		1353015	0	1353015		270603	1082412	**0**	22550	0	4510	18040	0
B	Stone Bunding	cu m	555.56	0.18	100.0008	324.6	324.6	0		32460	0	32460		6492	25968	**0**	541	0	108	433	0
C	Waste weir (COF/ 1.5 m avg. crest length)	No.	150	1	150	737	737	0		110550	0	110550		22110	88440	**0**	1843	0	369	1474	0
D	Bund planting/seeding (Forestry/Fodder plantation)	No.	26611	1	26611	12	0	12		0	319332	319332		0	319332	**0**	5322	0	0	5322	0
E	Grass Seeding/Turfing	ha	188	1	188	570	300	270		56400	50760	107160		11280	95880	**0**	1786	0	188	1598	0
F	Grass Seeding	ha	153.11	1	153.11	735.9	337.5	398.4		51676	61000	112676		10335	102341	**0**	1878	0	172	1706	0
	Sub Total-1									**1604101**	**431092**	**2035193**		**320820**	**1714373**	**0**	**33920**	**0**	**5347**	**28573**	**0**
2	**Afforestation and Pasture land Development**																0	0	0	0	0
2.1	**Afforestation and Pasture land Development (Common Land)**														0		0	0	0	0	0
A	Construction of Continuous Trench/ Staggered trench	cu m	53208	0.18	9577.44	92	92	0		881124	0	**881124**		140980	740145	**0**	14685	0	2350	12336	0
B	Construction of Contour stone bund	cu m	17736	0.15	2660.4	324.6	324.6	0		863566	0	**863566**		138171	725395	**0**	14393	0	2303	12090	0
C	Box Trench for existing vegetative root stocks	cu m	8868	0.2	1773.6	92	92	0		163171	0	**163171**		26107	137064	**0**	2720	0	435	2284	0
D	Stone-pitched thawla for existing small plants	No.	4434	1	4434	38.16	38.16	0		169208	0	**169208**		27073	142135	**0**	2820	0	451	2369	0
E	Grass Seeding/Turfing	ha	147	1	147	535.6	270	265.6		39690	39043	**78733**		6350	72383	**0**	1312	0	106	1206	0
F	Tree seeding in thor and natural notches	ha	50	1	50	592.8	442.8	150		22140	7500	**29640**		3542	26098	**0**	494	0	59	435	0
G	Plantation of Fodder trees	No.	4950	1	4950	40.59	22.46	18.13		111177	89744	**200921**		17788	183132	**0**	3349	0	296	3052	0
	Sub Total 2.1									**2250077**	**136287**	**2386363**		**360012**	**2026351**	**0**	**39773**	**0**	**6000**	**33773**	**0**
2.2	**Afforestation and Pasture land Development (Private Land)**																0	0	0	0	0
A	Construction of Continuous Trench/ Staggered trench	cu m	69311	0.18	12475.98	92	92	0		1147790	0	**1147790**		229558	918232	**0**	19130	0	3826	15304	0
B	Construction of Contour stone bund	cu m	23104	0.15	3465.6	324.6	324.6	0		1124934	0	**1124934**		224987	899947	**0**	18749	0	3750	14999	0
C	Box Trench for existing vegetative root stocks	cu m	11552	0.2	2310.4	92	92	0		212557	0	**212557**		42511	170045	**0**	3543	0	709	2834	0
D	Stone-pitched thawla for existing small plants	No.	5776	1	5776	38.16	38.16	0		220421	0	**220421**		44084	176337	**0**	3674	0	735	2939	0
E	Grass Seeding	ha	100	1	100	535.6	270	265.6		27000	26560	**53560**		5400	48160	**0**	893	0	90	803	0
F	Plantation of Fodder trees	No.	6000	1	6000	40.59	22.46	18.13		134760	108780	**243540**		26952	216588	**0**	4059	0	449	3610	0
G	Avenue Plantation	No.	1000	1	1000	72.14	32.14	40	Mandali 1	32140	40000	**72140**		0	0	**72140**	1202	0	0	0	1202
H	Use of Water absorption Material during plantation	No.	5000	1	5000	3	1	2	10 g material per plant @ Rs200/- per kg	5000	10000	**15000**		0	0	**15000**	250	0	0	0	250
I	Pitcher irrigation *(gheda)*	No.	2000	1	2000	20	0	20	as per market rate	0	40000	**40000**		0	0	**40000**	667	0	0	0	667
J	Thor fencing for protection of new plantation	m	10000	0		17.8	17.8	0	As GKN Forest C Page no 10 item No 10 (I)	178000	0	**178000**		0	0	**178000**	2967	0	0	0	2967
K	Creation of Pasture group and fodder bank	No.	2		2	50000	0	50000		0	100000	**100000**		0	0	**100000**	1667	0	0	0	1667

L	Plantation of fodder trees for gully stabilisation	No.	750	34.9	20	54.9	34.9	20	Mandali 2	26175	15000	**41175**		0	0	**41175**	686	0	0	0	686
Sub. Total 2.2										**3108777**	**340340**	**3449117**		**573492**	**2429309**	**446315**	**57485**	**0**	**9558**	**40488**	**7439**
	G.Total (2.1+2.2)									**5358853**	**476627**	**5835480**		**933505**	**4455660**	**446315**	**97258**	**0**	**15558**	**74261**	**7439**
3	**Drainage line treatment**																0	0	0	0	0
3.1	**Drainage line treatment (Common Land)**														0		0	0	0	0	0
A	Construction of Gully plug - 0.6m height	Rmt.	1502.9	0.45	676.3	294.48	294.48	0		442574	0	**442574**		70812	371762	**0**	7376	0	1180	6196	0
B	Repair of existing defunct anicuts for ground water recharge	No.	2.0			250000	250000			500000	0	**500000**		0	0	**500000**	8333	0	0	0	8333
C	Desilting of submergence area of anicuts	cu m	1500.0		1500.0	136.75	136.75		As GKN 2013 Page No 1 Item 2 B , 4	205125	0	**205125**		0	0	**205125**	3419	0	0	0	3419
D	Open Recharge Pit in drainage line (~ 4 x 1 x 0.45 m)	cu m	1080.0		1080.0	100	100		As GKN 2013 Page No 1 Item 2 B	108000	0	**108000**		0	0	**108000**	1800	0	0	0	1800
sub Total-3.1										**1255699**	**0**	**1255699**		**70812**	**371762**	**813125**	**20928**	**0**	**1180**	**6196**	**13552**
3.2	**Drainage line treatment (Private Land)**														0		0	0	0	0	0
A	Construction of Gully plug - 0.6m height	Rmt.	1886.5	0.45	848.9	294.48	294.48	0		555537	0	**555537**	**0**	111107	444429	**0**	9259	0	1852	7407	0
B	EWHS 45 m length, 2 m height	No.	1.0	1	1.0	148288	148288	0		148288	0	**148288**	**0**	29658	118630	**0**	2471	0	494	1977	0
C	*Nadi* (Earthen bund with spillway)	m	20.0	1	20.0	7458.3	1953.7	5504.5		39074	110090	**149164**	**149164**	0	0	**0**	2486	2486	0	0	0
sub Total- 3.2										**742899**	**110090**	**852989**	**149164**	**140765**	**563060**	**0**	**14216**	**2486**	**2346**	**9384**	**0**
	G.Total (3.1+3.2)									**1998598**	**110090**	**2108688**	**149164**	**211577**	**934822**	**813125**	**35145**	**2486**	**3526**	**15580**	**13552**
4	**Agriculture Development**														0		0	0	0	0	0
4.1	Training on Improved Agriculture Practices	No.	5		5	4500	0	4500		0	22500	**22500**	22500	0	0	**0**	375	375	0	0	0
4.2	Farmers Field School	No.	1		1	135000	0	135000		0	135000	**135000**	0	0	135000	**0**	2250	0	0	2250	0
4.3	Demonstration Based Seed Production Program														0		0	0	0	0	0
4.3.1	Wheat	No.	90		90	3000	600	2400		54000	216000	**270000**	0	108000	162000	**0**	4500	0	1800	2700	0
4.3.2	Bengal Gram	No.	45		45	3000	600	2400		27000	108000	**135000**	0	54000	81000	**0**	2250	0	900	1350	0
4.3.3	Green gram(Moong)	No.	45		45	3000	600	2400		27000	108000	**135000**	0	54000	81000	**0**	2250	0	900	1350	0
4.4	Training on seed production and storage	No.	10		10	5000	0	5000		0	50000	**50000**		0	50000	**0**	833	0	0	833	0
4.5	RWHS for Backyard plantation	No.	1		1	69990			RWHS_Raj			**69990**				**69990**	1167	0	0	0	1167
4.6	Vegetable Cultivation	No.	100		100	2000	500	1500		50000	150000	**200000**	150000	0	50000	**0**	3333	2500	0	833	0
4.7	Horti plantation	No.	1000		1000	215	75	140		75000	140000	**215000**		86000	129000	**0**	3583	0	1433	2150	0
4.8	Vermi compost unit	No.	2		2	15000	6000	9000		12000	18000	**30000**	30000	0	0	**0**	500	500	0	0	0
4.9	Institutional Training for Lead Farmers (2 Day)	No.	4		4	20000	0	20000		0	80000	**80000**	0	0	80000	**0**	1333	0	0	1333	0
4.10	Drip Irrigation (1 acre unit)	No.	5		5	16000						**80000**			0	**80000**	1333	0	0	0	1333
4.11	sprinkler irrigation (1 acre unit)	No.	4		4	20000						**80000**				**80000**	1333	0	0	0	1333
4.12	Well Development (recharge pit, parapet, pulley)	No.	3.0			53500						**160500**			0	**160500**	2675	0	0	0	2675
4.13	Plantation of fruit trees (Meadow Techniques)	No.	2000			200	150	50		300000	100000	**400000**		0	0	**400000**	6667	0	0	0	6667
4.14	Nadep Compost (demo)	No.	5			4000	1000	3000		5000	15000	**20000**	0	0	0	**20000**	333	0	0	0	333
4.15	Trellis with vegetable cultivation (0.2 acre	No.	2		2	35110						**70220**				**70220**	1170	0	0	0	1170
4.16		No.	5		5	10000						**50000**				**50000**	833	0	0	0	833
	sub Total 4									**550000**	**1142500**	**2203210**	**202500**	**302000**	**768000**	**930710**	**36720**	**3375**	**5033**	**12800**	**15512**
5	**Livestock Development**														0		0	0	0	0	0
5.1	Formation of GUG (Goat User Group)	No.	3		3	2000	0	2000		0	6000	**6000**		0	6000	**0**	100	0	0	100	0

5.2	Goatry program: Under Breed Adoption (Sirohi Breed) One Unit = 3+1 with Kid (Incl vaccination & transportation & Insurance cost) for progressive farmer	No.	6		6	24000	0	24000		0	144000	**144000**		57600	86400	**0**	2400	0	960	1440	0
5.3	Goatry program: Under Breed Adoption (Sirohi Breed) One Unit = 3+1 with kid (incl. vaccination, transportation & insurance cost) for poor/widow headed poor family	No.	4		4	24000	0	24000		0	96000	**96000**		24000	72000	**0**	1600	0	400	1200	0
5.4	Breeding Buck - Breed Improvement for goats (Sirohi Breed - 1.5 - 2 years).	No.	38		38	6500	0	6500		0	247000	**247000**		98800	148200	**0**	4117	0	1647	2470	0
5.5	Deworming & vaccination (package) for total 1500 goats - for three years	litre			225	80	0	80		0	18000	**18000**		1800	16200	**0**	300	0	30	270	0
5.6	Training to GUG	No.	3		3	5000	0	5000		0	15000	**15000**		0	15000	**0**	250	0	0	250	0
5.7	Animal Heath Camp (2 camps per year)	No.	6		6	7000	0	7000		0	42000	**42000**		4200	37800	**0**	700	0	70	630	0
5.8	Travis installation	No.	3		3	7000	0	7000		0	21000	**21000**			21000	**0**	350	0	0	350	0
5.9	Poultry unit (10+1)	No.	10		10	10000	0	10000		0	100000	**100000**		40000	60000	**0**	1667	0	667	1000	0
5.10	Animal Shelter management (floor, manger, etc.)	No.	3		3	29750						**89250**			0	**89250**	1488	0	0	0	1488
5.11	Azolla Unit	No.	10		10	1500	200	1300		2000	13000	**15000**				**15000**	250	0	0	0	250
5.12	Training & resource support on Azolla cultivation	No.	1		1	20000						**20000**				**20000**	333	0	0	0	333
5.13	Livestock Insurance - corpus	No.	1		1	50000						**50000**				**50000**	833	0	0	0	833
	sub Total 5									**2000**	**702000**	**863250**	**0**	**226400**	**462600**	**174250**	**14388**	**0**	**3773**	**7710**	**2904**
6	**Women Development**														0		0	0	0	0	0
6.1	Formation and Training to SHGs (10) - Saving Book keeping , credit,etc	No.	10		10	2000	0	2000		0	20000	**20000**		0	20000	**0**	333	0	0	333	0
6.2	Exposure visit to SHG members	No.	2		2	15000	0	15000		0	30000	**30000**		0	30000	**0**	500	0	0	500	0
6.3	Women Federation support	No.	1		1	125000	0	125000		0	125000	**125000**			125000	**0**	2083	0	0	2083	0
6.4	Skill Development Training to SHGs	No.	5		5	5000	0	5000		0	25000	**25000**		0	25000	**0**	417	0	0	417	0
	sub Total 6									**0**	**200000**	**200000**	**0**	**0**	**200000**	**0**	**3333**	**0**	**0**	**3333**	**0**
7	**Energy Efficient System**														0		0	0	0	0	0
7.1	Improved cook stove	No.	10		10	1500						**15000**			0	**15000**	250	0	0	0	250
7.2	Solar Light (home lighting)	No.	10		10	7000						**70000**			0	**70000**	1167	0	0	0	1167
	Sub Total Energy Efficient System- 7									**0**	**0**	**85000**	**0**	**0**	**0**	**85000**	**1417**	**0**	**0**	**0**	**1417**
8	**Knowledge management**														0		0	0	0	0	0
8.1	AWS and agro-advisory services	No.	1		1	520000						**520000**			0	**520000**	8667	0	0	0	8667
8.2	RML subscription (3 years) on crop, weather & market info	No.	100		100	1500					150000	**150000**				**150000**	2500	0	0	0	2500
8.3	Sediment Observation Unit and Data Analysis	No.	1		1	315000						**315000**				**315000**	5250	0	0	0	5250
8.4	Geo- hydrological study and crop water	No.	1		1	150000						**150000**				**150000**	2500	0	0	0	2500
8.5	Grassland ecology study	No.	2		2	30000						**60000**		0	0	**60000**	1000	0	0	0	1000
8.6	Posters and pamphlet on climate change adaptation					25000						**25000**			0	**25000**	417	0	0	0	417
8.7	Financial Inclusion drive and Credit facilitation through Banking Plan	No.			0	0						**0**				**0**	0	0	0	0	0
8.8	Information Sharing Camp	No.	6		6	5000	0	5000		0	30000	**30000**		0	30000	**0**	500	0	0	500	0
8.9	Educational kit – Manual of Climate Change Adaptation					100000						**100000**			0	**100000**	1667	0	0	0	1667
8.10	Awareness and Mobilization Programs					100000						**100000**			0	**100000**	1667	0	0	0	1667
8.11	Audio Visual Tools – short films					70000						**70000**			0	**70000**	1167	0	0	0	1167
8.12	Exposure visits, peer learning					100000						**100000**			0	**100000**	1667	0	0	0	1667
8.13	Training to VWC & PRI members on planning for watershed activities implementation	No.	3		3	10000	0	10000		0	30000	**30000**		0	30000	**0**	500	0	0	500	0
8.14	O&M Training to VWC and field workers	No.	6		6	5000	0	5000		0	30000	**30000**		0	30000	**0**	500	0	0	500	0
8.15	Community mobilisation campaign on child labour	No.	2		2	10000	0	10000		0	20000	**20000**	20000	0	0	**0**	333	333	0	0	0
8.16	Campaign on Integrated Watershed Management Benefit/exposure	No.	2		2	15000	0	15000		0	30000	**30000**	0	0	30000	**0**	500	0	0	500	0

8.17	Training and Capacity Building on Bio-diversity	No.	2		2	23000	0	23000		0	46000	**46000**	0	0	46000	**0**	767	0	0	767	0
	Total 8									**0**	**336000**	**1776000**	**20000**	**0**	**166000**	**1590000**	**29600**	**333**	**0**	**2767**	**26500**
9	**Other Interventions**																0	0	0	0	0
9.1	Camp on Social Security Scheme (for landless/ poor/ widow/ orphan children	No.	2		2	10000	0	10000		0	20000	**20000**	20000	0	0	**0**	333	333	0	0	0
9.2	Community Fair/Rally	No.	2		2	50000	0	50000		0	100000	**100000**		0	100000	**0**	1667	0	0	1667	0
9.3	Other activities-Sign board, slogan writing, wall painting, A-frame, bund frame, stationary for VWC, Iron box for VWC record keeping, Dari for VWC meeting etc.					20000	0	20000		0	20000	**20000**	**0**	0	20000	**0**	333	0	0	333	0
	Total 9											**140000**	**20000**	**0**	**120000**	**0**	**2333**	**333**	**0**	**2000**	**0**
10	**Total cost of all project measures**											**15246821**	**391664**	**1994302**	**8821455**	**4039400**	**254114**	**6528**	**33238**	**147024**	**67323**
11	**Supervision charges (NABARD)**											**1120700**			**1120700**		**18678**	**0**	**0**	**18678**	**0**
12	**Maintenance fund (50% of Shramdan in FIP & CBP)**											**818000**			**818000**		**13633**	**0**	**0**	**13633**	**0**
13	**Unallocated fund (NABARD)**											**336146**			**336145**		**5602**	**0**	**0**	**5602**	**0**
14	**Total to VWC (1 ~ 13)**											**17521666**			**11096300**	**4039400**	**292028**	**0**	**0**	**184938**	**67323**
15	**Project Management Cost (NABARD)**											**2511500**			**2511500**		**41858**	**0**	**0**	**41858**	**0**
16	**Total project cost / grant ('14'+'15')**											**20033166**	**391664**	**1994302**	**13607800**	**4039400**	**333886**	**6528**	**33238**	**226797**	**67323**

Annexure IV A

Summary of proposed interventions towards climate proofing with Adaptation Fund **Vagda watershed**

S. No.	Particulars	Unit of Measurement	Total units (ha/ cu m/m/ No.)	Avg Rate (Rs/ Unit)			Rate reference	Labour Cost (Rs)	Material Cost (Rs)	Total Cost (Rs)	Community Contribution (`)	IGWDP Grant (`)	Fund support sought from AFB (`)	Total Cost	Community Contribution	IGWDP Grant	Fund support sought from AFB
				Labour	Material	Total											
										Amount in INR				Amount in US$			
A	**Crop area treatment**																
A-1	Stone Farm Bund1	Rmt.	6844	325	0	325		2221464	0	2221464	444293	1777171	0	37024	7405	29620	0
A-2	Stone Farm Bund2	Rmt.	1217	325	0	325		394876	0	394876	78975	315901	0	6581	1316	5265	0
	Sub total -A-1							**2616340**	**0**	**2616340**	**523268**	**2093072**	**0**	**43606**	**8721**	**34885**	**0**
B	**Afforestation and Pasture Land Development (72.15 ha)**													0	0	0	0
B-1	Continuous/ Staggered Contour Trench	Rmt.	11253	92	0	92		1035282	0	1035282	165645	869636	0	17255	2761	14494	0
B-2	Plantation of Fodder trees (50 ha)	No.	7500	22	18	41		168450	135975	304425	51342	253083	0	5074	856	4218	0
B-3	Contour Stone Bund	Rmt.	5211	325	0	325		1691625	0	1691625	270660	1420965	0	28194	4511	23683	0
B-4	Vegetative barrier	Rmt.	7100	2	0	2		14200	0	14200	2272	11928	0	237	38	199	0
B-5	Grass seeding	ha	50	270	266	536		13500	13280	26780	2160	24620	0	446	36	410	0
B-6	Box Trench for existing vegetative root stocks	Rmt.	2448	92	0	92		225216	0	225216	36035	189181	0	3754	601	3153	0
B-7	Stone-pitched thawla for existing small plants	No.	4850	38	0	38		185083	0	185083	29613	155470	0	3085	494	2591	0
B-8	Stone fencing - plugging the breached areas	Rmt.	560	265	0	265		148418	0	148418	23747	124671	0	2474	396	2078	0
B-9	Refilling of alternate CCTs and tree seeding	Rmt.	5000	6.75	1.00	7.75	G.K.N 2013-item no-4	33750	5000	38750	0		38750	646	0	0	646
B-10	Gradonis (bench terracing) - Demo	ha	2	36400	5900	42300	Vagda 1	72800	11800	84600	0		84600	1410	0	0	1410
B-11	Plantation of fodder trees for gully stabilisation	No.	4000	27.37	23.75	51.12	Vagda2	109480	95000	204480	0		204480	3408	0	0	3408
B-11	1 cft (0.3x0.3x0.3 m) pitting and tree seeding	No.	20000	4	1	5	G.K.N 2013-item no-4,2(b)	85400	20000	105400	0		105400	1757	0	0	1757
B-12	Creation of Pasture group and fodder bank	No.	1		50000	50000		0	50000	50000	0		50000	833	0	0	833
	Total of-B							**3783204**	**331055**	**4114259**	**581474**	**3049555**	**483230**	**68571**	**9691**	**50826**	**8054**
C	**Drainage Line Treatment**													0	0	0	0
C-1	Gully Plug (big)	Rmt.	1265	325	0	325		410457	0	410457	82091	328365	0	6841	1368	5473	0
C-2	Gully Plug (mid)	Rmt.	1047	325	0	325		339700	0	339700	67940	271760	0	5662	1132	4529	0
C-3	Gully Plug (small)	Rmt.	1210	325	0	325		392811	0	392811	78562	314249	0	6547	1309	5237	0
C-4	Loose Stone Check Dams (big)	Rmt.	471	325	0	325		152859	0	152859	30572	122287	0	2548	510	2038	0
C-5	Loose Stone Check Dams (mid)	Rmt.	138	325	0	325		44655	0	44655	8931	35724	0	744	149	595	0
C-6	Loose Stone Check Dams (small)	Rmt.	1092	325	0	325		354578	0	354578	70916	283662	0	5910	1182	4728	0
C-8	Masonry Gabion	No.	1	64022	61461	125483	Vagda 3 a & b	64022	61461	125483	0		125483	2091	0	0	2091

C-7	Recharge pit on upslope side of gully plugs (0.6 sq m c/s)	cu m	2400	104	0	104	G.K.N 2013-item no-2(b)	250080	0	250080	0	0	250080	4168	0	0	4168
	Total-C							**2009162**	**61461**	**2070623**	**339012**	**1356048**	**375563**	**34510**	**5650**	**22601**	**6259**
D	**Agriculture Development**													0	0	0	0
D-1	Agriculture and other Demonstration Unit	No	20	2000	3000	5000		40000	60000	100000	40000	60000	0	1667	667	1000	0
D-2	Transparent Fibre Sheet (2.5 ft X 1.5 ft) @ Rs.60.0 Per Sqft	No	5	0	225	225		0	1125	1125	450	675	0	19	8	11	0
D-3	Liquid Manure Tank, Feed Manger and Animal Shelter	No	5	0	29750	29750		0	148750	148750	59500	89250	0	2479	992	1488	0
D-4	RWHS for Backyard plantation	No	2			69990	RWHS_Raj			139980	0	0	139980	2333	0	0	2333
D-5	Vermi Compost Unit	No	5	1000	3000	4000		5000	15000	20000	8000	12000	0	333	133	200	0
D-6	Promoting best package of practices - seed treatment,INM,IPM, etc.	No.	20	0	2000	2000		0	40000	40000	0		40000	667	0	0	667
D-7	Trellis with Vegetable cultivation (0.2 acre unit)	No.	5	2660	32450	35110	Rajasthan 2	13300	162250	175550	0		175550	2926	0	0	2926
D-8	Short duration and low water required variety of Kharif and Rabi crop with promotion mixed cropping	No.	50	0	1000	1000		0	50000	50000	0		50000	833	0	0	833
D-9	Drip Irrigation (1 acre unit)	No.	5		16000	16000		0	80000	80000	0		80000	1333	0	0	1333
D-10	Sprinkler Irrigation (1 acre unit)	No.	10		20000	20000		0	200000	200000	0		200000	3333	0	0	3333
D-11	Kitchen garden	No.	200			200		0		40000			40000	667	0	0	667
D-12	Crop insurance awareness programme	No.	5			10000				50000	0	0	50000	833	0	0	833
	TOTAL-D							**58300**	**757125**	**1045405**	**107950**	**161925**	**775530**	**17423**	**1799**	**2699**	**12926**
E	**Livestock Development**													0	0	0	0
E-1	Breeding Buck - Breed Improvement for goats (Sirohi Breed - 1.5 - 2 years).	No.	28	**0**	6500	6500		0	182000	182000	72800	109200	0	3033	1213	1820	0
E-2	Deworming & vaccination (package) for total 850 goats will be dewormed & Vaccinated for four years	No	850	**0**	45	45		0	38250	38250	15300	22950	0	638	255	383	0
E-3	Support for Concentrate & feed supplement for buck: The feed concentrate will be provided @ 500 gms per Buck per day	Kg	5400	**0**	32	32		0	172800	172800	69120	103680	0	2880	1152	1728	0
E-4	Sirohi Goat unit distribution (1 buck, 3 goa and one kid) to selected families	No.	6	**0**	26000	26000		0	156000	156000	62400	93600	0	2600	1040	1560	0
E-5	Livestock management training cu m exposure visit	No.	2	0	12600	12600		0	25200	25200	2520	22680	0	420	42	378	0
E-6	Promoting Improved Animal husbandry practices - breed with feed management, mineral bricks, silage, etc.				82300	82300	Vagda 4		82300	82300	0		82300	1372	0	0	1372

E-7	Livestock insurance corpus	No.				50000				50000	0	0	50000	833	0	0	833
E-8	Backyard Poultry units	No.	30		2000	2000			60000	60000	0	0	60000	1000	0	0	1000
E-9	Training & resource support on Azolla cultivation					20000				20000			20000	333	0	0	333
E-10	Azolla cultivation units	No.	25	200	1300	1500		5000	32500	37500			37500	625	0	0	625
	Total - E							**5000**	**749050**	**824050**	**222140**	**352110**	**249800**	**13734**	**3702**	**5869**	**4163**
F	**Women development & drudgery reduction programme**													0	0	0	0
F-1	SHG Strengthening (Diary, Box, Record Register)	No.	4	0	2000	2000		0	8000	8000	0	8000	0	133	0	133	0
F-2	Women federation programme support		1	0	125000	125000		0	125000	125000	0	125000	0	2083	0	2083	0
F-3	Women literacy camp	No.	1	0	61250	61250		0	61250	61250	0	61250	0	1021	0	1021	0
F-4	Women's Day (March 08)		1	0	10000	10000		0	10000	10000	0	10000	0	167	0	167	0
F-5	Well Development - Parapet and Pulley Mechanism (Drinking Purpose)	No.	3	12500	28000	40500		37500	84000	121500	30375	91125	0	2025	506	1519	0
	Total - F							**37500**	**288250**	**325750**	**30375**	**295375**	**0**	**5429**	**506**	**4923**	**0**
G	**Energy Efficient System**													0	0	0	0
G-1	Improved cook stove	No.	30	0	2000	2000		0	60000	60000	0	0	60000	1000	0	0	1000
G-2	Solar Light (home lighting)	No.	30	0	7000	7000		0	210000	210000	0		210000	3500	0	0	3500
G-3	Solar pump	No.	1	0	125000	125000		0	125000	125000	0	0	125000	2083	0	0	2083
	Total – G							**0**	**395000**	**395000**	**0**	**0**	**395000**	**6583**	**0**	**0**	**6583**
H	**Knowledge management**													0	0	0	0
H-1	RML subscription (3 years) on crop, weather & market info	No.	100		1500	1500		0	150000	150000	0	0	150000	2500	0	0	2500
H-2	Geo-Hydrological study and crop-water budgeting	No.	1			150000		0		150000			150000	2500	0	0	2500
H-3	Posters and pamphlet on climate change adaptation									25000	0	0	25000	417	0	0	417
H-4	Financial Inclusion and Banking Plan	No.	0			0				0			0	0	0	0	0
H-5	Educational kit – Manual of Climate Chang Adaptation									100000	0	0	100000	1667	0	0	1667
H-6	Awareness and Mobilization Programs									50000	0	0	50000	833	0	0	833
H-7	Audio Visual Tools – short films									70000	0	0	70000	1167	0	0	1167
H-8	Exposure visits, Peer learning									100000	0	0	100000	1667	0	0	1667
H-9	Grassland Ecology study	No.	2		30000	30000		0	60000	60000	0	0	60000	1000	0	0	1000
H-10	Improving wild harvesting, storage and Transport techniques for custard apple (NTFP)	No.	60		2000	2000		0	120000	120000	0		120000	2000	0	0	2000
H-11	Training on wild harvesting & storage techniques through JLG formation	No.	2		25000	25000		0	50000	50000			50000	833	0	0	833
H-12	Training on Improved Agricultural practices	No.	6	0	10000	10000		0	60000	60000	0	60000	0	1000	0	1000	0

H-13	Formation of beed development group	No.	2	0	2000	2000		0	4000	4000	0	4000	0	67	0	67	0
H-14	Exposure visit on dairy programme	No.	1	0	15000	15000		0	15000	15000	0	15000	0	250	0	250	0
H-15	Exposure visit programme (IGP and SHG)	No.	1	0	31500	31500		0	31500	31500	0	31500	0	525	0	525	0
H-16	Orientation programme (market linkage - animal and agriculture)	No.	3	0	10000	10000		0	30000	30000	0	30000	0	500	0	500	0
H-17	Orientation programme (Nursery raising)	No.	1	0	15000	15000		0	15000	15000	0	15000	0	250	0	250	0
H-18	Institution building	No.	7	0	3000	3000		0	21000	21000	0	21000	0	350	0	350	0
H-19	Documentation and leaflet of the prepare material	No.	1	0	10000	10000		0	10000	10000	0	10000	0	167	0	167	0
	Total-H							**0**	**566500**	**1061500**	**0**	**186500**	**875000**	17692	0	3108	14583
I	**Other Interventions**													0	0	0	0
I-1	Watershed Day (Dec. 07)	No	3	0	15000	15000		0	45000	45000	0	45000	0	750	0	750	0
I-2	Livestock Day (Last week of April)		3	0	10000	10000		0	30000	30000	0	30000	0	500	0	500	0
I-3	Measuring Tape, Bund Frame, A-Frame, etc	No.	1	0	10000	10000		0	10000	10000	0	10000	0	167	0	167	0
I-4	Display Board and Wall Painting	No.	1	0	20000	20000		0	20000	20000	0	20000	0	333	0	333	0
	Total -I							**0**	**105000**	**105000**	**0**	**105000**	**0**	1750	0	1750	0
J	**Total for project measures from A to K**									**12557927**	**1804219**	**7599585**	**3154123**	**209299**	**30070**	**126660**	**52569**
K	**Supervision charges (NABARD)**									**940380**		**940380**		**15673**	**0**	**15673**	**0**
L	**Maintenance fund (50% of Shramdan of FIP & CBP)**									**792629**		**792629**		**13210**	**0**	**13210**	**0**
M	**Unallocated fund (NABARD)**									**282105**		**282105**		**4702**	**0**	**4702**	**0**
N	**Total to VWC (J-M)**							**0**	**0**	**14573041**	**1804219**	**9614700**	**3154123**	**242884**	**30070**	**160245**	**52569**
O	**Project Management Cost (NABARD)**									**2098100**		**2098100**		**34968**	**0**	**34968**	**0**
P	**Total project cost / grant (N+O)**									**16671141**	**1804219**	**11712800**	**3154123**	**277852**	**30070**	**195213**	**52569**

Annexure IV A

Summary of proposed interventions towards climate proofing with Adaptation Fund **Jhabla watershed**

S. No.	Particulars	Unit of Measurement	Length in m/ Nos./ ha)	Size/ Cross Section (sq m)	Total units (ha/ cu m/m/ No.)	Avg Rate (Rs/ Unit)			Rate reference	Labour Cost (`)	Material cost (`)	Total Cost (`)	Convergence	Contribution from community (`)	Grant Amount from IGWDP	Grant Amount from AFB	Total Cost	Convergence	Contribution from community	Grant Amount from IGWDP	Grant Amount from AFB
						Labour (`)	Material (`)	Total (`)													
										Amount in INR							Amount in US$				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
A	**Crop area treatment (230.19 ha)**																				
A.1	Field Bund	CUM	1210	0.54	653.40	75	0	75		49005	0	49005		9801	39204	0	817	0	163	653	0
A.2	Stone Bund	m	14550	0.30	4365.00	354	0	354		1546956	0	1546956		309391	1237565	0	25783	0	5157	20626	0
A.3	Stone Bund Repair	m	283	0.30	84.81	354	0	354		30057	0	30057		6011	24045	0	501	0	100	401	0
A.4	Grass seeding - *sevan, hamata* , etc. (incl. that on 50% of existing bunds)	ha-equivalent	9	1.00	9.08	338	398	736		3063	3615	6678		613	6066	0	111	0	10	101	0
A.5	Bund planting/ seeding - *sahjan, Adusa* etc. (fodder tree species)	No.	605	1.00	605.00	0	12	12		0	7260	7260		0	7260	0	121	0	0	121	0
A.6	Stone Gully Plug Private Land	m	11587	0.48	5603.33	325	0	325		1818842	0	1818842		363768	1455074	0	30314	0	6063	24251	0
A.7	Stone Gully Plug Repair Private Land	m	23	1.65	37.20	325	0	325		12075	0	12075		2415	9660	0	201	0	40	161	0
A.8	Castor seeding on field bund and along thor fencing	rmt	10000	1.00	10000.00	1.00	0.50	1.50	GKN 2014 page no.1 item no. 2 b	10000	5000	15000			0	15000	250	0	0	0	250
	Sub total -A									**3469998**	**15875**	**3485873**		**692000**	**2778874**	**15000**	**58098**	**0**	**11533**	**46315**	**250**
B	**Afforestation & Pasture land development**																0	0	0	0	0
B.1	**Physical measures**																0	0	0	0	0
B1.1	CCT/ SCT	m	244476	0.20	48895.25	92	0	92		4498363	0	4498363		719738	3778625	0	74973	0	11996	62977	0
B1.2	SCB	m	48895	0.12	5867.43	265	0	265		1554282	0	1554282		248685	1305597	0	25905	0	4145	21760	0
B1.3	Gully Plug	m	23243	0.56	12923.21	325	0	325		4194874	0	4194874		671180	3523694	0	69915	0	11186	58728	0
	Sub Total -B1									**10247519**	**0**	**10247519**		**1639603**	**8607916**	**0**	**170792**	**0**	**27327**	**143465**	**0**
B.2	**Vegetative measures**																0	0	0	0	0
B2.1	Tree Seeding	ha	100		100.00	443	150	593		44280	15000	59280		7085	52195	0	988	0	118	870	0
B2.2	Grass Seeding	ha	100		100.00	270	266	536		27000	26560	53560		4320	49240	0	893	0	72	821	0
B2.3	Nursery for Forestry Plants	No.	15000		15000.00	5	0	5		75000	0	75000		12000	63000	0	1250	0	200	1050	0
B2.4	Plantation (Teak & fuel wood & other Multipurpose forestry species)	No.	15000	0.00	15000.00	22	0	22		336900	0	336900		53904	282996	0	5615	0	898	4717	0
B2.5	Box trench and stone pitched crescent bund for small plants/ root stocks	No.	7000	1.00	7000.00	25	0	25	Rajasthan 1	177940	0	177940				177940	2966	0	0	0	2966
B2.6	1 cft pitting and tree seeding	No.	10000	1.00	10000.00	5	1	6	ex Jhabla 1	50000	10000	60000				60000	1000	0	0	0	1000
	Sub Total -B2									**711120**	**51560**	**762680**		**77309**	**447431**	**237940**	**12711**	**0**	**1288**	**7457**	**3966**
	Common Land Area Treatment (B1+B2)									**10958639**	**51560**	**11010199**		**1716912**	**9055347**	**237940**	183503	0	28615	150922	3966
	Total of Area Treatment (A+B)									**14428637**	**67435**	**14496072**		**2408911**	**11834221**	**252940**	**241601**	**0**	**40149**	**197237**	**4216**
																	0	0	0	0	0
C	**Drainage Line treatment**																0	0	0	0	0
C.1	Gabion structure	No.	2		2.00	33139	22946	56085		66278	45892	112170		10604	101566	0	1870	0	177	1693	0
C.2	Small masonry structure	No.	0		0.00			0		0	0	0		0	0	0	0	0	0	0	0
C.3	Earthen Nala bund (dry stone pond)	No.	0		0.00			0		0	0	0		0	0	0	0	0	0	0	0
C.4	Open recharge pit on major drainage line	No.	10		10.00	3590	24357	27947		35900	243570	279470		5744	273726	0	4658	0	96	4562	0
C.5	Open recharge pit on upslope side of gully plugs	rmt	2000	0.60	1200.00	104	0	104	GKN 2014 page no.1 item no. 2 b	124800	0	124800				124800	2080	0	0	0	2080
	Sub total -C									**226978**	**289462**	**516440**		**16348**	**375292**	**124800**	**8607**	**0**	**272**	**6255**	**2080**

	TOTAL SWC (A+B+C)									**14655615**	**356897**	**15012512**		**2425260**	**12209512**	**377740**	**250209**	**0**	**40421**	**203492**	**6296**
D	**Agriculture development**																0	0	0	0	0
D.1	Drip Irrigation small kits for vegetable cultivation	No.	100		100.00	0	200	200		0	20000	20000		8000	12000	0	333	0	133	200	0
D.2	Nursery (Horticulture plants)	No.	3000		3000.00	0	15	15		0	45000	45000		18000	27000	0	750	0	300	450	0
D.3	Plantation (including transportation, replantation etc.)	No.	3000		3000.00	0	70	70		0	210000	210000		84000	126000	0	3500	0	1400	2100	0
D.4	Nursery (Vegetable)	No.	30		30.00	0	1000	1000		0	30000	30000		12000	18000	0	500	0	200	300	0
D.5	RWHS for Backyard plantation	No.	2		2			69990	RWHS_Raj	0	0	139980		0	0	139980	2333	0	0	0	2333
D.6	Vermicompost beds	No.	22		22.00	0	4000	4000		0	88000	88000		35200	52800	0	1467	0	587	880	0
D.7	Crop production (High Yielding Variety seeds)	No.	60		60.00	0	500	500		0	30000	30000		12000	18000	0	500	0	200	300	0
D.8	Crop insurance awareness programme	No.	5		5.00			10000				50000				50000	833	0	0	0	833
D.9	Drip Irrigation (0.5 acre unit)		20		20.00	0	8000	8000		0		160000				160000	2667	0	0	0	2667
D.10	Vegetable cultivation with Trellis	No.	6		6.00		35110	35110	rajasthan 2	0	210660	210660				210660	3511	0	0	0	3511
D.11	Wadi (20 No. of horticulture plant)	No.	20		20.00	9229	7056	16285	ex Jhabla 1	184580	141120	325700				325700	5428	0	0	0	5428
D.12	Compost Pits (size 4.5x3.0x1.5 m)say 20.25cum	No.	20		20.00	2000	0	2000	GKN 2014 page no.1 item no. 2 b	40000	0	40000				40000	667	0	0	0	667
	Sub total -D									**224580**	**774780**	**1349340**		**169200**	**253800**	**926340**	**22489**	**0**	**2820**	**4230**	**15439**
E	**Livestock development**																0	0	0	0	0
E.1	Sirohi Goats	No.	21		21.00	0	4000	4000		0	84000	84000		33600	50400	0	1400	0	560	840	0
E.2	Sirohi Bucks	No.	15		15.00	0	6000	6000		0	90000	90000		36000	54000	0	1500	0	600	900	0
E.3	Animal Health camps	No.	10		10.00	0	8000	8000		0	80000	80000		0	80000	0	1333	0	0	1333	0
E.4	Travis installation	No.	5		5.00	0	7000	7000		0	35000	35000		0	35000	0	583	0	0	583	0
E.5	Pair of High Yielding poultry birds	No.	130		130.00	0	2000	2000		0	260000	260000		104000	156000	0	4333	0	1733	2600	0
E.6	Cattle sheds (for small animals)	No.	8		8.00	8361	23556	31917	Annex Jhabla 3	66888	188448	255336		0	0	255336	4256	0	0	0	4256
E.7	Azolla unit	No.	10		10.00	1300	200	1500		13000	2000	15000		0		15000	250	0	0	0	250
E.8	Training & resource support for Azolla cultivation	L.S.										20000				20000	333	0	0	0	333
E.9	Silage making demo	No.	20		20.00	250	1600	1850	As per market rate	5000	32000	37000		0		37000	617	0	0	0	617
E.10	Large Animal breed improvement - AI of desi breeds like Gir	No.	50		50.00			200	As per market rate	0	0	10000		0	0	10000	167	0	0	0	167
E.11	Livestock insurance corpus	L.S.	1		1.00	0	50000	50000		0	50000	50000		0		50000	833	0	0	0	833
	Sub total -E									**84888**	**821448**	**936336**		**173600**	**375400**	**387336**	**15606**	**0**	**2893**	**6257**	**6456**
																	0	0	0	0	0
F	**Women Development**																0	0	0	0	0
F.1	Roof top Rain water Harvesting structure (individual)	No.	5		5.00	15880	27622	43502		79400	138110	217510		31760	185750	0	3625	0	529	3096	0
F.2	Roof top Rain water Harvesting structure (common)	No.	1		0.00	41980	73020	115000		0	0	0		0	0	0	0	0	0	0	0
F.3	Well parapet and Deepening	No.	7		7.00	24746	24726	49472		173222	173082	346304		86576	259728	0	5772	0	1443	4329	0
F.4	Bio-Sand /other filters for safe drinking water	No.	50		50.00	0	1000	1000		0	50000	50000		12500	37500	0	833	0	208	625	0
F.5	Women Federation - seed money	No.	1		1.00	0	125000	125000		0	125000	125000		0	125000	0	2083	0	0	2083	0
F.6	Women day Celebration	No.	4		4.00	0	10000	10000		0	40000	40000		0	40000	0	667	0	0	667	0
	Sub total -F									**252622**	**526192**	**778814**		**130836**	**647978**	**0**	**12980**	**0**	**2181**	**10800**	**0**
																	0	0	0	0	0
G	**Energy efficient system**																0	0	0	0	0
G.1	Smokeless Stoves (Unnat Chulha)	No.	250		250.00	0	450	450		0	112500	112500		28125	84375	0	1875	0	469	1406	0
G.2	Solar Pumping Unit and Overhead tank on common wells for drinking water purpose	No.	2		2.00	35000	440000	475000	Annex Jhabla 2	70000	880000	950000				950000	15833	0	0	0	15833

	Sub total -G									**70000**	**992500**	**1062500**		**28125**	**84375**	**950000**	**17708**	**0**	**469**	**1406**	**15833**
H	**Knowledge management**																0	0	0	0	0
H.1	AWS and agro-advisory	No	1		1.00	0	520000	520000	Annex – AgroMetStation	0	520000	520000		0		520000	8667	0	0	0	8667
H.2	RML subscription	No.	100		100.00			1500				150000		0		150000	2500	0	0	0	2500
H.3	Geo-hydrological study & Crop water budgeting		1		1.00			150000		0		150000		0		150000	2500	0	0	0	2500
H.4	Posters and pamphlet on climate change adaptation	L.S	1		1.00	0	25000	25000		0	25000	25000		0		25000	417	0	0	0	417
H.5	Educational kit – Change Adaptation	L.S	1		1.00	0	50000	50000		0	50000	50000		0		50000	833	0	0	0	833
H.6	Awareness and Mobilization Programs	No.	2		2.00	0	25000	25000		0	50000	50000		0		50000	833	0	0	0	833
H.7	Audio Visual Tools – short films	L.S	1		1.00	0	50000	50000		0	50000	50000		0		50000	833	0	0	0	833
H.8	Environment day Celebration	No.	4		4.00	0	10000	10000		0	40000	40000		0	40000	0	667	0	0	667	0
H.9	Financial Inclusion and Credit facilitation through Banking Plan	No.	0		0.00	0	0	0		0	0	0		0	0	0	0	0	0	0	0
H.10	Exposure visits, peer learning	No.	2		2.00	0	25000	25000		0	50000	50000		0		50000	833	0	0	0	833
																	0	0	0	0	0
	Sub total -H									**0**	**785000**	**1085000**		**0**	**40000**	**1045000**	**18083**	**0**	**0**	**667**	**17417**
I	**Other interventions**																0	0	0	0	0
I.1	Housing	No.	130	0.00	130.00	500	2000	2500		65000	260000	325000		130000	195000	0	5417	0	2167	3250	0
I.2	NTFP / grass depot	No.	900	0.00	900.00	400	200	600		360000	180000	540000		216000	324000	0	9000	0	3600	5400	0
I.3	Revolving fund for marketing	No.	1	0.00	1.00	0	50000	50000		0	50000	50000		20000	30000	0	833	0	333	500	0
I.4	Other incentives like Tailoring, broom making etc.	No.	1	0.00	1.00	0	130000	130000		0	130000	130000		52000	78000	0	2167	0	867	1300	0
I.5	Trainings (Poultry, Goatry, Agriculture, Management etc,)	No.	4		4.00	0	4000	4000		0	16000	16000		0	16000	0	267	0	0	267	0
	Sub total -I									**425000**	**636000**	**1061000**		**418000**	**643000**	**0**	**17683**	**0**	**6967**	**10717**	**0**
																	0	0	0	0	0
J	**Total cost of all project measures**									**15712705**	**4892817**	**21285502**		**3345021**	**14254065**	**3686416**	**354758**	**0**	**55750**	**237568**	**61440**
K	**Supervision Charges (NABARD)**											**1759909**		**0**	**1759909**		**29332**	**0**	**0**	**29332**	**0**
L	**Maintenance fund (50% of contribution on phy. treatment under CBP & FIP)**											**1289611**		**0**	**1289611**		**21494**	**0**	**0**	**21494**	**0**
M	**Unallocated fund (NABARD)**											**527915**		**0**	**527915**		**8799**	**0**	**0**	**8799**	**0**
N	**Total to VWC (L~O)**									**15712705**	**4892817**	**24862937**		**3345021**	**17831500**	**3686416**	**414382**	**0**	**55750**	**297192**	**61440**
O	**Project Management Cost (NABARD)**											**3883300**		**0**	**3883300**		**64722**	**0**	**0**	**64722**	**0**
P	**Total project cost / grant (P+Q)**									**15712705**	**4892817**	**28746237**		**3345021**	**21714800**	**3686416**	**479104**	**0**	**55750**	**361913**	**61440**

Annexure IV A

Summary of proposed interventions towards climate proofing with Adaptation Fund **Malvi watershed**

Sr.No	Description of Treatment	Unit of Measurement	Qty	Rate (per Qty/ cu m)			Rate reference	Labour Cost	Material cost (`)	Total Cost (`)	(WDF/IGWDP) Business as usu		Fund support sought from AFB (`)	Total Cost	(WDF/IGWDP) Business as usua		Fund support sought from AFB
				Labour (`)	Material (`)	Total (`)					Community Contribution (`)	Fund support by NABARD (`)			Community Contribution	Fund support by NABARD	
										Amount in INR					Amount in US$		
1	2	3	4	5	6	7	7a	8	9	10	11	12	13	14	15	16	17
A	**Crop area treatment**																
1	Field Bund (0.45CS)	cu m	16578.9	76.5	0	76.5		1268286	0	1268286	253657	1014629	0	21138	4228	16910	0
2	Repair Field Bund (0.45CS)	cu m	3630.56	76.5	0	76.5		277738	0	277738	55548	222190	0	4629	926	3703	0
3	Stone Outlet (1.5 m avg crest length)	No.	374	600	80	680		224400	29920	254320	44880	209440	0	4239	748	3491	0
4	Grass Seeding on FB	ha	184.21	337.5	398.4	735.9		62171	73389	135560	12434	123126	0	2259	207	2052	0
5	Puerto Rico Bunding (0.61CS)	cu m	164	81.7	0	81.7		13399	0	13399	2680	10719	0	223	45	179	0
6	Stone Field Bund (0.27 CS)	cu m	1529.01	278	0	278		425065	0	425065	85013	340052	0	7084	1417	5668	0
7	Repair of Stone Field Bund (0.23 CS)	cu m	119.86	278	0	278		33321	0	33321	6664	26657	0	555	111	444	0
	Sub total of crop area treatment							**2304380**	**103309**	**2407689**	**460876**	**1946813**	**0**	**40128**	**7681**	**32447**	**0**
B	**Afforestation and Pasture Land Development**													0	0	0	0
1	CCT/CST (0.18 CS) Pvt Land	cu m	24441.84	82	0	82		2004231	0	2004231	400846	1603385	0	33404	6681	26723	0
2	CCT/CST (0.18 CS) Common Land	cu m	11009.7	82	0	82		902795	0	902795	144447	758348	0	15047	2407	12639	0
3	Plantation	No.	15000	22.46	18.13	40.59		336900	271950	608850	82380	526470	0	10148	1373	8775	0
4	Grass Seeding/ Neem Seeding	ha	100	270	265.5	535.5		27000	26560	53560	4320	49240	0	893	72	821	0
5	Contour Stone Bund	cu m	150	278	0	278		41700	0	41700	8340	33360	0	695	139	556	0
6	Thawla for Existing Plants	No.	5000	2.4	0	2.4		12000	0	12000	1920	10080	0	200	32	168	0
7	Fruit Plantation	No.	1000	76.5	80	156.5		76500	80000	156500	16400	140100	0	2608	273	2335	0
8	Box Trench for Existing Plants	cu m	562.5	82	0	82		46125	0	46125	7380	38745	0	769	123	646	0
9	Thor Fencing	m	2500	14.65	0	14.65		36625	0	36625	5860	30765	0	610	98	513	0
10	Plant Seeding in bushes and notches	ha	60	489	400	889	Malvi-Annex-II	29340	24000	53340	0	0	53340	889	0	0	889
11	1 cft pitting along CCT for tree seeding/planting	No.	5000	5	0.5	5.5	Malvi-Annex-III	25000	2500	27500	0	0	27500	458	0	0	458
12	Gradonis (bench terracing) - demo	m	2500	53	0	53	Malvi-Annex-IV	132500	0	132500	0	0	132500	2208	0	0	2208
13	Creation of Pasture group and fodder bank	No.	2	0	50000	50000		0	100000	100000	0	0	100000	1667	0	0	1667
	Sub Total of Afforestation and Pasture Land Development							**3670716**	**505010**	**4175726**	**671893**	**3190493**	**313340**	**69595**	**11198**	**53175**	**5222**
C	**Drainage line treatment**													0	0	0	0
1	Earthen Gully Plug (EGP) 0.86 CS	cu m	762.55	82	0	82		62529	0	62529	12506	50023	0	1042	208	834	0
2	Stone Gully Plug (0.51 CS)	cu m	2319.115	278	0	278		644714	0	644714	128943	515771	0	10745	2149	8596	0
3	LSCD (0.68 CS)	cu m	637.62	278	0	278		177258	0	177258	35452	141806	0	2954	591	2363	0
4	Open Recharge Pit in drainage line (~ 4 x 1 x 0.45 m)	cu m	1080	101	0	101	GKN Item # 2b	109080	0	109080	0	0	109080	1818	0	0	1818
5	Masonary Check Dam - Charwara	No.	1	41145	129496	170641		41145	129496	170641	6583	164058	0	2844	110	2734	0
6	Tree plantation for gully stabilisation	No.	3000	29.5	20	49.5	Malvi Annex-V	88500	60000	148500	0	0	148500	2475	0	0	2475
	Sub total of Drainage line treatment							**1123226**	**189496**	**1312722**	**183484**	**871658**	**257580**	**21879**	**3058**	**14528**	**4293**

D	**Agriculture Development**													0	0	0	0
1	Drip Irrigation (1 acre unit)	No.	10			16000	Annex - Raj-1			160000	0	0	160000	2667	0	0	2667
2	Sprinkler Irrigation (1 acre unit)	No.	4	5000	45000	20000				80000	0	0	80000	1333	0	0	1333
3	UG pipes and outlets for irrigation (1 acre unit)	No.	10	0	30000	12000				120000	0	0	120000	2000	0	0	2000
4	Kharif Demonstration	No.	50	850	1400	2250		42500	70000	112500	45000	67500	0	1875	750	1125	0
5	Rabi Demonstration	No.	50	1500	1500	3000		75000	75000	150000	60000	90000	0	2500	1000	1500	0
6	Demonstration of Cash Crop	No.	30	1000	4000	5000		30000	120000	150000	60000	90000	0	2500	1000	1500	0
7	Vermi Compost Unit	No.	5	1200	2800	4000		6000	14000	20000	8000	12000	0	333	133	200	0
8	Horti-Plantation along field bund in 1 cu m pits	No.	800	144	205	349	Malvi-Annex-I	115200	164000	279200	0	0	279200	4653	0	0	4653
9	RWHS for Backyard plantation	No.	2			69990	RWHS_Raj			139980	0	0	139980	2333	0	0	2333
10	Agro Horticulture WADI	No.	15	12150	14050	26200		182250	210750	393000	157200	235800	0	6550	2620	3930	0
11	Trellis with vegetable cultivation (0.2 acre unit)	No.	8			35110				280880			280880	4681	0	0	4681
12	Kitchen garden	No.	100			200				20000			20000	333	0	0	333
13	Crop insurance awareness programme	No.	5			10000				50000	0	0	50000	833	0	0	833
	Sub Total of Agriculture Development							**450950**	**653750**	**1955560**	**330200**	**495300**	**1130060**	**32593**	**5503**	**8255**	**18834**
E	**Livestock Development**													0	0	0	0
1	Formation of GUG	No.	5	0	1500	1500		0	7500	**7500**	0	7500	0	125	0	125	0
2	Goatry Program {Sirohi Breed Unit = 4+1}	No.	25	0	25000	25000		0	625000	**625000**	156250	468750	0	10417	2604	7813	0
3	Training of GUG	No.	5	0	5000	5000		0	25000	**25000**	0	25000	0	417	0	417	0
4	Exposure visit member of GUG, VDC and SHG	No.	1	0	35000	35000		0	35000	**35000**	0	35000	0	583	0	583	0
5	Support for concentrated & feed supplemnt for bucks	No.	3600	0	15	15		0	54000	**54000**	27000	27000	0	900	450	450	0
6	Poultry unit of 20 colour birds	No.	15	0	5000	5000		0	75000	**75000**	30000	45000	0	1250	500	750	0
7	Health and Treatment camp	No.	8	0	8000	8000		0	64000	**64000**	6400	57600	0	1067	107	960	0
8	Liquid Manure Tank, Feed Manger and Animal Shelter	No.	5	8000	21750	29750		40000	108750	148750	59500	89250	0	2479	992	1488	0
9	Drinking water tank for animals	No.	10	0	5000	5000		0	50000	**50000**	4000	46000	0	833	67	767	0
10	Azolla Unit	No.	30	200	1300	1500		6000	39000	**45000**	0	0	45000	750	0	0	750
11	Training & resource support on Azolla cultivation	No.	1			20000		0	0	**20000**	0	0	20000	333	0	0	333
12	Livestock Insurance - corpus	No.	1	0	50000	50000		0	50000	**50000**	0	0	50000	833	0	0	833
	Sub Total of Livestock Development							**46000**	**1133250**	**1199250**	**283150**	**801100**	**115000**	**19988**	**4719**	**13352**	**1917**
F	**Women Development**													0	0	0	0
1	One day capacity building fro SHG	No.	19	0	3800	3800		0	72200	72200	0	72200	0	1203	0	1203	0
2	Three days capacity building program on accountancy and record keeping	No.	2	0	22500	22500		0	45000	45000	0	45000	0	750	0	750	0
3	Followup of the training program	No.	2	0	15000	15000		0	30000	30000	0	30000	0	500	0	500	0
4	SHG strengthening	No.	19	0	1200	1200		0	22800	22800	2280	20520	0	380	38	342	0
5	Training material	No.	10	0	600	600		0	6000	6000	0	6000	0	100	0	100	0
6	Federation Capacity Building	No.	4	0	22500	22500		0	90000	90000	0	90000	0	1500	0	1500	0
7	Half yearly meeting of federation general body	No.	8	0	5000	5000		0	40000	40000	0	40000	0	667	0	667	0
8	Working Capital for Federation	No.	1	0	125000	125000		0	125000	125000	0	125000	0	2083	0	2083	0
9	One day training on gender sensitization	No.	2	0	7850	7850		0	15700	15700	0	15700	0	262	0	262	0
10	Exposure - At sahaj	No.	1	0	45250	45250		0	45250	45250	0	45250	0	754	0	754	0
11	Transparent Fiber Sheet (2.5 ft X 1.5 ft) @ Rs.60.0 Per Sqft	No.	50	0	225	225		0	11250	11250	4500	6750	0	188	75	113	0
12	Well Development - Parapet and Pulley Mechanism (Drinking Purpose)	No.	10	10000	20000	30000		100000	200000	300000	75000	225000	0	5000	1250	3750	0
13	Adult literacy camp	No.	3	0	18000	18000		0	54000	54000	0	54000	0	900	0	900	0
	Sub Total of Women Development							**100000**	**757200**	**857200**	**81780**	**775420**	**0**	**14287**	**1363**	**12924**	**0**

G	**Energy Efficient System**													0	0	0	0
1	Solar Light (home lighting)	No.	30			7000		0	0	210000		0	210000	3500	0	0	3500
2	Solar Pump	No.	4			125000		0	0	500000		0	500000	8333	0	0	8333
3	Biogas plant	No.	5			19000				95000	0	0	95000	1583	0	0	1583
4	Improved Cook Stove	No.	300	200	400	600		60000	120000	180000	72000	108000	0	3000	1200	1800	0
	Sub Total of Energy Efficient System							**60000**	**120000**	**985000**	**72000**	**108000**	**805000**	**16417**	**1200**	**1800**	**13417**
H	**Knowledge management**													0	0	0	0
1	Posters and pamphlet on climate change adaptation	LS	1	0	25000	25000		0	25000	**25000**	0	0	25000	417	0	0	417
2	Educational kit – Manual of Climate Change Adaptation	LS	1	0	100000	100000		0	100000	**100000**	0	0	100000	1667	0	0	1667
3	Awareness and Mobilization Programs	No.	2	0	25000	25000		0	50000	**50000**	0	0	50000	833	0	0	833
4	Watershed Day	No.	4	0	15000	15000		0	60000	60000	0	60000	0	1000	0	1000	0
5	Women's Day	No.	4	0	15000	15000		0	60000	60000	0	60000	0	1000	0	1000	0
6	Livestock Day	No.	3	0	10000	10000		0	30000	30000	0	30000	0	500	0	500	0
7	Audio Visual Tools – short films	LS	1	0	70000	70000		0	70000	**70000**	0	0	70000	1167	0	0	1167
8	Meeting with families	No.	1	0	4000	4000		0	4000	4000	0	4000	0	67	0	67	0
9	Exposure visits, peer learning	No.	2	0	50000	50000		0	100000	**100000**	0	0	100000	1667	0	0	1667
10	Grass land Ecology Study	No.	2	0	23000	23000		0	46000	46000	0	46000	0	767	0	767	0
11	RML subscription (3 years) on crop, weather & market info	No.	100	0	1500	1500		0	150000	150000	0	0	150000	2500	0	0	2500
12	Geo- hydrological study and crop water budgeting	No.	1	0	150000	150000		0	150000	150000	0	0	150000	2500	0	0	2500
13	Financial Inclusion drive and Credit facilitation through Banking Plan	No.	0	0	0	0		0	0	0	0	0	0	0	0	0	0
	Sub Total of Knowledge management							**0**	**845000**	**845000**	**0**	**200000**	**645000**	**14083**	**0**	**3333**	**10750**
I	**Other Interventions/activities**													0	0	0	0
1	Measuring Tape, Bund Frame, etc.	No.	1	0	10000	10000		0	10000	10000	0	10000	0	167	0	167	0
2	Display Board	No.	1	0	20000	20000		0	20000	20000	0	20000	0	333	0	333	0
	Sub Total of Other Interventions							**0**	**30000**	**30000**	**0**	**30000**	**0**	**500**	**0**	**500**	**0**
J	**Supervision**							**0**	**0**	**1050217**	**0**	**1050217**	**0**	**17504**	**0**	**17504**	**0**
K	**Maintenance Fund**							**0**	**0**	**727399**	**0**	**727399**	**0**	**12123**	**0**	**12123**	**0**
L	**Unallocated Fund**							**0**	**0**	**315100**	**0**	**315100**	**0**	**5252**	**0**	**5252**	**0**
M	**Project Management Cost**							**0**	**0**	**2310400**	**0**	**2310400**	**0**	**38507**	**0**	**38507**	**0**
	Grand Total							**7755272**	**4337015**	**18171263**	**2083383**	**12821900**	**3265980**	**302854**	**34723**	**213698**	**54433**

Summary of proposed interventions towards climate proofing with Adaptation Fund — **Chainpuriya watershed**

Sr. No.	Activity	Area(ha)	LCC	Unit of Measurement	Length in m/ No./ ha)	Size/ Cross Section (sq m)	Total units (ha/ cu m/m/ No.)	Avg Rate (Rs/ Unit)			Rate reference	Labour Cost (`)	Material cost (`)	Total Cost (`)	Beneficiary/ Community Contribution	Grant Amount under IGWDP	Fund support sought from AFB (`)	Total Cost	Beneficiary/ Community Contribution	Grant Amount under IGWDP	Fund support sought from AFB
								Labour	Skilled Labour & Material	Total				Amount in INR				Amount in US$			
A	***Crop Area Treatment***																				
A1	Farm Bund (0.60m2)			cu m	4747	0.6	2848	75	0	75		213,587	0	213587	42717	170869	0	3560	712	2848	0
A2	Farm Bund (0.45m2)			cu m	631	0.45	284	75	0	75		21,293	0	21293	4259	17035	0	355	71	284	0
A3	Repair of Stone Bund (0.12m2)			cu m	70	0.12	8	276	0	276		2,321	0	2321	464	1857	0	39	8	31	0
A4	Stone Bund (0.20m2)			cu m	0	0.2	0	276	0	276		0	0	0	0	0	0	0	0	0	0
A5	Stone Bund (0.18m2)			cu m	34749	0.18	6255	276	0	276		1,728,607	0	1728607	477810	1250797	0	28810	7963	20847	0
A6	Waste weir (COF/0.6 sq m bund section; 1m avg. crest length)			cu m	62	1	62	556	93	649		34,528	5775	40303	8061	32242	0	672	134	537	0
A7	Water Absorption Trench (WAT) (0.81m2)			cu m	1404	0.81	1137	91	0	91		103,887	0	103887	20777	83109	0	1731	346	1385	0
A8	Boulder Farm Bund (0.30m2)			cu m	6470	0.3	1941	276	0	276		536,422	0	536422	107284	429138	0	8940	1788	7152	0
A9	Boulder Farm Bund (0.18m2)			cu m	10396	0.18	1871	276	0	276		517,154	0	517154	103431	413723	0	8619	1724	6895	0
A10	Repairing of Boulder Farm Bund (0.18m2)			cu m	0	0.18	0	276	0	276		0	0	0	0	0	0	0	0	0	0
A11	Farm Pond (10*10*3 m)			cu m	5	1	0			0		0	0	0	0	0	0	0	0	0	0
A12	Farm Pond (7*7*3 m)			cu m	5	1	10	8762	2655	11417		87,620	26550	114170	22834	91336	0	1903	381	1522	0
A13	Diversion drain in crop cultivated area			cu m	1500	0.6	900	104	0	104.20	GKN Badi sadri item 134b	93,780	0	93780	0	93780	0	1563	0	1563	0
	Sub total -A	**672.34**										**3,339,200**	**32325**	**3371525**	**787637**	**2583888**	**0**	**56192**	**13127**	**43065**	**0**
B	**Afforestation & pasture land development (G/GT: 369.05 ha)**																	0	0	0	0
B1	Stone Fencing bund (0.9 m H x 0.6 m B)			cu m	555	0.54	300	336	76	412		100,728	22642	123371	16117	107254	0	2056	269	1788	0
B1a	Stone Fencing bund - increasing height (0.5 m H x 0.6 m B)			cu m	540	0.3	162	336	76	412		54,448	12239	66687	8712	57975	0	1111	145	966	0
B2	Box trench			cu m	1100	0.18	198	91	0	91		18,087	0	18087	2894	15193	0	301	48	253	0
B3	V Trench			cu m	2900	0.18	522	91	0	91		47,685	0	47685	7630	40055	0	795	127	668	0
B4	Plantation of fodder trees in 30 ha common land (3 patches)			No.	1500		1500	22	18	41		33,690	27195	60885	5390	55495	0	1015	90	925	0
B5	Grass seeding on pasture land (Stylo / Dhaman grass)			ha	154		154	270	266	536		41,710	41030	82739	6674	76066	0	1379	111	1268	0
B6	Grass seeding on pasture land (Stylo / Dhaman grass) by tractor			ha	67		67	0	500	500		0	33260	33260	0	33260	0	554	0	554	0
B7	Grass seeding on Earthen Bund (crop area)			ha-equivalent	65		65	338	398	736		22,022	25996	48017	3524	44494	0	800	59	742	0
B8	Continuous/ Staggered Contour Trench (CCT/SCT) (CS 0.18m2) private			cu m	7704	0.18	1387	91	0	91		126,677	0	126677	25335	101341	0	2111	422	1689	0
B9	Continuous/ Staggered Contour Trench (CCT/SCT) (CS 0.18m2) Common			cu m	90419	0.18	16275	91	0	91		1,486,760	0	1486760	237882	1248878	0	24779	3965	20815	0
B10	Stone Gully Plugs I (CS 0.62m2)			cu m	27	1	27	371	0	371		10,017	0	10017	1603	8414	0	167	27	140	0
B11	Stone Gully Plugs II (CS 0.81m2)			cu m	34	1	34	456	0	456		15,504	0	15504	2481	13023	0	258	41	217	0
B12	Bund Plantation (crop area)			No.	22875	1	22875		5	5		0	114375	114375	0	114375	0	1906	0	1906	0
B13	Bamboo Plants with thoor/ bio-fencing			No.	14410	1	14410		6	6		0	86460	86460	0	86460	0	1441	0	1441	0
B14	1 cft pitting along CCT for tree seeding/ planting			No	10000	1	10000	4.55	1	5.55		45,500	10000	55500	0	0	55500	925	0	0	925
B15	Creation of Pasture group and fodder bank			No	1		1	0	50000	50000		0	50000	50000	0	0	50000	833	0	0	833
	Sub Total -B	**369.05**										**2002827**	**423197**	**2426024**	**318239**	**2002284**	**105500**	**40434**	**5304**	**33371**	**1758**
C	***Drainage Line treatment***																	0	0	0	0
C1	Renovation of Water harvesting Structure			No.	1	1	1	3240	14960	18200		3,240	14960	18200	518	17682	0	303	9	295	0
C2	Stone Gully Plugs I (CS 0.62m2)			No.	150	1	150	371	0	371		55,650	0	55650	8904	46746	0	928	148	779	0
C3	Stone Gully Plugs II (CS 0.81m2)			No.	180	1	180	456	0	456		82,080	0	82080	13133	68947	0	1368	219	1149	0

C4	Open Recharge Pit in drainage line (~ 4 x 1 x 0.45 m)			cu m	1600	0.45	720	104.20	0	104.20	GKN Badi sadri page no.19 item 134b	75,024		75024	0	0	75024	1250	0	0	1250
	Sub total -C											**215,994**	**14,960**	**230,954**	**22,555**	**133,375**	**75,024**	3849	376	2223	1250
D	**Agriculture Development**																	0	0	0	0
D1	Crop demonstration (0.1 ha) of Soybean crop			No.	74		74		660	660		0	48840	48840	9768	39072	0	814	163	651	0
D2	Dry land Horticulture			No.	2730		2730		50	50		0	136500	136500	0	136500	0	2275	0	2275	0
D3	Vegetable cultivation Demo			No.	200		200		500	500		0	100000	100000	20000	80000	0	1667	333	1333	0
D4	Wadi (1 acre) - demo			No.	14		14	1750	7250	9000		24,500	101500	126000	50400	75600	0	2100	840	1260	0
D5	Vermi Compost demonstration			No.	35		35	500	2000	2500		17,500	70000	87500	35000	52500	0	1458	583	875	0
D6	Horti-Plantation along field bund in 1 cu m pits			No.	1000		1000	135.7	205.3	341	Chainpuriya 1	135,700	205300	341000			341000	5683	0	0	5683
D7	RWHS for Backyard plantation			No.								0	0					0	0	0	0
D8	Compost pit			No.	200		200	0	1500	1500		0	300000	300000	0	0	300000	5000	0	0	5000
D9	Drip/ Sprinkler Irrigation (1 acre unit)			No.	15		15			16000	Rajasthan 5	0	240000	240000			240000	4000	0	0	4000
D10	Well Recharge			No.	30	1	30	7000	1000	8000		210,000	30000	240000	0	0	240000	4000	0	0	4000
D11	Crop insurance awareness programme	No.	5	No.	5	1	5			10000		0	50000	50000			50000	833	0	0	833
D12	Trellis with vegetable cultivation (0.2 acre unit)			No.	20	1	20			35110	Rajasthan 2	0	702200	702200	0	0	702200	11703	0	0	11703
	Sub total -D											**387,700**	**1,984,340**	**2,372,040**	**115,168**	**383,672**	**1,873,200**	**39534**	**1919**	**6395**	**31220**
E	**Livestock Development**																	0	0	0	0
E1	Introduction of improved sirohi goats (3 goats with kids)			No.	50		50	0	15000	15000		0	750000	750000	300000	450000	0	12500	5000	7500	0
E2	Goat breed improvement (Sirohi breed buck 1~1.5 year old)			No.	50		50	0	5000	5000		0	250000	250000	62500	187500	0	4167	1042	3125	0
E3	Health & treatment camps (2 camps per year for four years) for the animals.			No.	8		8	0	4000	4000		0	32000	32000	0	32000	0	533	0	533	0
E4	Formation of GUG (Goat User Group)			No.	6		6	0	500	500		0	3000	3000	0	3000	0	50	0	50	0
E5	Deworming & vaccination package for Goats for 3 continuous years			No.	1000		1000	0	45	45		0	45000	45000		45000	0	750	0	750	0
E6	Fabrication and installation of Travis			No.	3		3	0	8000	8000		0	24000	24000		24000	0	400	0	400	0
E7	Demonstration of manger (Feed trough for stall feeding for large ruminants)			No.	100		100	0	1000	1000		0	100000	100000	40000	60000	0	1667	667	1000	0
E8	Insurance of dairy animals through the scheme of "Dugdh Akshhay Yojana" with the convergence of Department of animal husbandry.			No.	100		100	0	400	400		0	40000	40000	20000	20000	0	667	333	333	0
E9	Support for concentrate & feed supplement for buck: The feed concentrate will be provided @ 500 gms per buck per month i.e.50*15*12=3600 Kg per year for one year			No.	9000		9000	0	12	12		0	108000	108000	54000	54000	0	1800	900	900	0
E10	IGWDP Veterinary Day (Every year in last week of April)			No.	4		4	0	8000	8000		0	32000	32000	0	32000	0	533	0	533	0
E11	Training to GUG members: Related to goat rearing and management every year for three years			No.	4		4	0	4500	4500		0	18000	18000	0	18000	0	300	0	300	0
E12	Exposure visit: Exposure visit (minimum 2 person selected form each GUG + VWC members). (For approx 30 members)			No.	1		1	0	19500	19500		0	19500	19500	0	19500	0	325	0	325	0
E13	Goat Rally (One every year for two years only)			No.	2		2	0	5000	5000		0	10000	10000	0	10000	0	167	0	167	0

E14	Farmers Club			No.	3		3	0	5000	5000		0	15000	15000	15000	0	0	250	250	0	0
E15	Water Trough - Khel/ Kundi (drinking water channel for livestock)			No.	7		7	0	18025	18025		0	126175	126175	50470	75705	0	2103	841	1262	0
E16	Support for AI in Cow			No.	312		312	0	25	25		0	7800	7800	3120	4680	0	130	52	78	0
E17	Burdigeous-Castrator			No.	7		7	1500	0	1500		10,500	0	10500	0	10500	0	175	0	175	0
E18	Backyard Poultry units			No.	30		30		2000	2000		0	60000	60000			60000	1000	0	0	1000
E19	Training & resource support on Azolla cultivation			No.	1		1			20000		0	20000	20000			20000	333	0	0	333
E20	Azolla cultivation units			No.	10		10	200	1300	1500		2,000	13000	15000			15000	250	0	0	250
E21	Livestock insurance corpus									50000			50000	50000			50000	833	0	0	833
	Sub total -E											12500	1723475	1735975	545090	1045885	145000	28933	9085	17431	2417
F	**Women Development**																	0	0	0	0
F1	Organisation of SHGs			No.	25		25	0	1000	1000		0	25000	25000	0	25000	0	417	0	417	0
F2	Nursery Development for women SHG Group			No.	3		3	0	5000	5000		0	15000	15000	0	15000	0	250	0	250	0
F3	Smokeless Chullah			No.	150		150	200	200	400		30,000	30000	60000	24000	36000	0	1000	400	600	0
F4	Women development fund (for women federation)			No.	1		1	0	125000	125000		0	125000	125000	0	125000	0	2083	0	2083	0
F5	SHG formation & training to SHG members (for at least 25 SHGs)			No.	25		25	0	3000	3000		0	75000	75000	0	75000	0	1250	0	1250	0
F6	Capacity building of SHG members to form a women federation (including one exposure)			No.	1		1	0	18000	18000		0	18000	18000	0	18000	0	300	0	300	0
F7	Women day celebration (8th March)			No.	4		4	0	10000	10000		0	40000	40000	0	40000	0	667	0	667	0
F8	Account training of SHGs			No.	2		2	0	3000	3000		0	6000	6000	0	6000	0	100	0	100	0
F9	Training on Food & nutrition			No.	0		0	0	0	0		0	0	0	0	0	0	0	0	0	0
F10	Sunlight reflection Fiber sheet			No.	200		200	0	350	350		0	70000	70000	28000	42000	0	1167	467	700	0
F11	Sanitation Kit			No.	0		0	0	0	0		0	0	0	0	0	0	0	0	0	0
F12	Soak Pit (individual household)			No.	200		200	750	0	750		150,000	0	150000	60000	90000	0	2500	1000	1500	0
F13	Soak Pit community handpump			No.	30		30	3994	0	3994		119,820	0	119820	19171	100649	0	1997	320	1677	0
F14	Platform for Bath			No.	0		0	0	0	0		0	0	0	0	0	0	0	0	0	0
F15	Kitchen Garden			No.	200		200	0	300	300		0	60000	60000	24000	36000	0	1000	400	600	0
F16	Water filter			No.	200		200	0	1000	1000		0	200000	200000	80000	120000	0	3333	1333	2000	0
F17	Sanitation day celebration & Training for Awareness			No.	0	-	0	**0**	**0**	0		0	0	0	0	0	0	0	0	0	0
F18	Well Deepening (drinking water)			No.	1		1	37500	12500	50000		37,500	12500	50000	12500	37500	0	833	208	625	0
	Sub total - F											337,320	676,500	1013820	247671	766149	0	16897	4128	12769	0
G	**Energy Efficient System**																	0	0	0	0
G1	Solar Lamps			No.	14		14	0	4500	4500		0	63000	63000	44100	18900	0	1050	735	315	0
	Sub total - G													**63000**	**44100**	**18900**	**0**	**1050**	**735**	**315**	**0**
H	**Knowledge management**																	0	0	0	0
H1	Institutionalising Pastureland (User Groups)			No.	4		4		500	500		0	2000	2000	0	2000	0	33	0	33	0
H2	Community Chaff Cutters			No.	2		2		8000	8000		0	16000	16000	6400	9600	0	267	107	160	0
H3	Feed Mangers			No.	0		0		1000	1000		0	0	0	0	0	0	0	0	0	0
H4	Awareness camps on feed and feeding, awareness material			No.	2		2		5000	5000		0	10000	10000	0	10000	0	167	0	167	0
H5	Grassland ecology study			No.	2		2		0	0		0	0	0	0	0	0	0	0	0	0
H6	Exposure visit to successful case study			No.	2		2		5000	5000		0	10000	10000	0	10000	0	167	0	167	0
H7	Training on Nursery raising techniques for villagers			No.	2		2		5000	5000		0	10000	10000	0	10000	0	167	0	167	0
H8	Pasture Land Orientation Training			No.	4		4		5000	5000		0	20000	20000	0	20000	0	333	0	333	0
H9	Project Management Training for VWC			No.	2		2		4000	4000		0	8000	8000	0	8000	0	133	0	133	0
H10	Institutional development training			No.	1		1		4000	4000		0	4000	4000	0	4000	0	67	0	67	0
H11	Training on different Soil & water conservation measures, rainwater harvesting techniques, etc.			No.	2		2	0	3000	3000		0	6000	6000	0	6000	0	100	0	100	0
H12	Accounts Training to VWC			No.	2		2		3000	3000		0	6000	6000	0	6000	0	100	0	100	0
H13	Training on energy conservation			No.	1		1		5000	5000		0	5000	5000	0	5000	0	83	0	83	0
H14	Watershed Orientation Training for all FIP Farmers			No.	0		0	0	4000	4000		0	0	0	0	0	0	0	0	0	0

H15	Watershed Management Training			No.	0		0	0	4000	4000		0	0	0	0	0	0	0	0	0	0
H16	Crop & Cropping pattern training for farmer for Rabi & Kharif			No.	12		12	0	4000	4000		0	48000	48000		48000	0	800	0	800	0
H17	Yoga / human health camps			No.	2		2	0	4000	4000		0	8000	8000		8000	0	133	0	133	0
H18	Exposure tour to developed watershed			No.	2		2	0	5000	5000		0	10000	10000		10000	0	167	0	167	0
H19	Geo-hydrological study & Crop water budgeting			No.	1		1			150000			150000	150000			150000	2500	0	0	2500
H20	RML subscription (3 years) on crop, weather & market info			No.	100		100	0	1500	1500		0	150000	150000			150000	2500	0	0	2500
H21	Financial Inclusion and Credit facilitation through Banking Plan				1		1			0			0	0			0	0	0	0	0
H22	Posters and pamphlet on climate change adaptation			No.						25000			25000	25000		0	25000	417	0	0	417
H23	Educational kit – Manual of Climate Change Adaptation			No.						100000			100000	100000		0	100000	1667	0	0	1667
H24	Awareness and Mobilization Programs			No.						50000			50000	50000		0	50000	833	0	0	833
H25	Audio Visual Tools – short films			No.						100000			100000	100000		0	100000	1667	0	0	1667
H26	Exposure visits, peer learning			No.	4		4	0	30000	30000			120000	120000		0	120000	2000	0	0	2000
	Sub total - H											**0**	**858000**	**858000**	**6400**	**156600**	**695000**	**14300**	**107**	**2610**	**11583**
I	**Other activities**																	0	0	0	0
I1	Roof water harvesting with water storage tank of 5000 ltr.			No.	60	-	60	5046	9949	14995		302,749	596935	899684	422136	477548	0	14995	7036	7959	0
I1a	RWHS for backyard plantation			No.	1	-	1			69990			69990	69990	0	0	69990	1167	0	0	1167
I2	Watershed day celebration (7th Dec)			No.	4		4	0	15000	15000		0	60000	60000	0	60000	0	1000	0	1000	0
I3	Sign board, slogan writing, wall painting, bund frame, stationary for VWC, Iron box for VWC record keeping etc.			No.	1		1	0	15000	15000		0	15000	15000	0	15000	0	250	0	250	0
	Sub total - I											**302,749**	**741925**	**1044674**	**422136**	**552548**	**69990**	**17411**	**7036**	**9209**	**1167**
J	**Total cost of all project measures**											**6598290**	**6454722**	**13116012**	**2508997**	**7643301**	**2963714**	**218600**	**41817**	**127388**	**49395**
K	**Supervision Charges (NABARD)**													**1093052**	**0**	**1093052**		**18218**	**0**	**18218**	**0**
L	**Maintenance fund (50% of contribution on phy. treatment under CBP & FIP)**													**648344**	**0**	**648344**		**10806**	**0**	**10806**	**0**
M	**Unallocated fund (NABARD)**													**327783**	**0**	**327783**		**5463**	**0**	**5463**	**0**
N	**Total to VWC (L~O)**													**15185191**	**2508997**	**9712480**	**2963714**	**253087**	**41817**	**161875**	**49395**
O	**Project Management Cost (NABARD)**													**2479700**	**0**	**2479700**		**41328**	**0**	**41328**	**0**
P	**Total project cost / grant (P+Q)**													**17664891**	**2508997**	**12192180**	**2963714**	**294415**	**41817**	**203203**	**49395**

Name of the watershed	**Sriramapuram-Malvarpatty**
Block	**Vedasandur**
Taluk	**Vedasandur**
District	**Dindigul**
Households	**280 families .**
Total population	**1169**

Sr.No.	Particulars	Unit of Measurement	Length in m/ Nos./ ha)	Size/ Cross Section (sq m)	Total units (ha/ cu m/m/ No.)
A1	**Area Treatments**				
1.1	Field Bund of cross section of 0.60C/s (89536RM)	CUM	89535 M	1x1x0.6 M	53721
1.2	Field Bund of cross section of 0.42 C/s(67683RM)	CUM	67683 M	1x1x0.42 M	28427
1.3	Field Bund of cross section of 0.42 C/s(23002RM) (IP)	CUM	23002 M	1x1x0.42 M	9661
1.4	Field Bund of cross section of 0.03 C/s(10053RM)(IP)	CUM	10053 M	1x1x0.30 M	3016
1.5	Field bund pipe outlet	No	200 No	2x0.6x0.50 M	200
1.6	Farm pond 9 Nos	CUM	9 No	15x20x1 M	2745
1.7	Farm pond Inlet & outlet	No	9 No	3x0.5x0.30 M	9
1.8	Agro forestry	No	42833 No	0.6x0.6x0.6 M	42833
1.9	AF (Replanting 10%)	No	4283 No	0.6x0.6x0.6 M	4283
1.1	Agro Horticulture	No	27615 No	0.75x0.75x0.75 M	27615
1.11	AH (Replanting 10%)	No	2761 No	0.75x0.75x0.76 M	2761
1.12	Grass seeds (IP)	Ha	86 Ha	200x2.3 M	86
1,13	Grass seeds	Kg	1140 Ha	200x2.3 M	1140
1.14	Fodder Development (10cent unit)	No	30 No	10 cent	30
	Sub Total A				

B 2	DRAINAGE LINE TREATMENTS				
2.1	Sunken Pond	cum	4 No	15x20x1 M	1255
2.2	Sunken Pond Outlet	No	4 No	2X1X0.5 M	4
2.3	Channel Forming(IP)	CUM		2x 0.5 M	160
	Sub Total				
C 3	**Agriculture Development**				
3.1	Fodder Development	Units	142	10 cent	142
3.2	Well Recharge Pit (WRP)	Nos	104	2x2x2 M	104
3.3	Summer ploughing	HA	397	1Ft Depth	397
3.4	Deep Tillage	HA	115	1Ft Depth	115
3.5	Vermi compost	NOS	20	5.5x3x0.5 M	20
3.6	Kurangad Development	Acre	7	1 acre	7
3.7	Drip Irrigation-Demo	Acre	5	1 Kit	5
3.9	Bio gas	Units	5	2 CUM	5
3.1	Micro sprinkler system	Kit	7	1Kit	7
3.12	Tank Silt Application	HA	11	1000 Sq.Ft	11
3.13	Integrated Farming System (Demo)	Units	7	1 No	7
3.14	Azolla	Units	20	15x10 Ft	20
3.15	Nutritional units	Units	20	436 Sq.Ft	20
3.16	Cultivation of small millet crops (To give the Sorghum,Pearlmillet,minor millets seeds to the farmers)	Ha	110	500 Rs/Per ha	110
	Sub Total				
D4	*Risk Mitigation*				
4.2	*Instrumentation*				
4.3	RML subscription(3 yrs) on crop, weather and market info	nos	100		
4.4	Geo Hydrological study and crop water budgeting	nos	1		
	Sub total				
E5	Knowledge Management				

5.2	Posters and Pamphlets on Climate change adaptation				
5.3	*Education kit - Maual of Climate change adaptation*				
5.4	*Audio visual tools - short films(Before ,During and After the project photos and short films)*				
5.5	*Exposure Visits(2 Exposure visits to Poosaripatti and Appiyampatti watershed and vermi compost industry,Vadipatti ,and Moringa Nursery field,Pallapatti)*				
5.6	*Monitoring and Documentation, audio visual tool*				
	Sub total				
6	Livelihood support for Landless and women				
7	Productivity Enhancement Measures				
8	Training and demonstration				
	Sub total				
9	**Total cost of all project measures**				
10	Supervision charges (NABARD)				
11	Maintenance fund (50% of Shramdan in FIP & CBP)				
12	**Total to VWC (1 ~ 11)**				
13	Project Management Cost (NABARD)				
15	**Total project cost / grant ('12'+13' +14'')**				

Avg Rate (Rs/ Unit)		Rate reference	Labour Cost (Rs)	Material Cost (Rs)	Total Cost (Rs)	Contribution from community (Rs)	Grant Amount from WDF (Rs)
Labour	Skilled Labour & Material						
					Amount in Rs		
50.22		MGNREGS	2697869		2697869	431659	2266210
50.22		MGNREGS	1427604		1427604	228417	1199187
50.22		MGNREGS	485175		485175	77628	407547
50.22		MGNREGS	151464		151464	24234	127229
95	236	TN.Govt	19000	47200	66200	3040	63160
50.22		TN.Govt	137854		137854	22057	115797
450.0	1300.0	TN.Govt	4050	11700	15750	648	15102
16	17	TN.Govt	685328	728161	1413489	109652	1303837
5.5	13	TN.Govt	23557	55679	79236	3769	75467
25	49	TN.Govt	690375	1353135	2043510	110460	1933050
11	45	TN.Govt	30371	124245	154616	4859	149757
40	160	TN.Govt	3440	13760	17200	550	16650
20	95	TN.Govt	22800	108300	131100	3648	127452
1500	3000	TN.Govt	45000	90000	135000	7205	127795
			6423886	**2532180**	**8956066**	**1027825**	**7928240**

50.22		TN.Govt	63026		63026	10084	52942
450.00	1300	TN.Govt	1800	5200	7000	290	6710
50.22		TN.Govt	8035		8035	1286	6750
			72861	**5200**	**78061**	**11658**	**66401**
1700	2500	TN.Govt	241400	355000	596400		
1500	3000	TN.Govt	156000	312000	468000		
	1750	TN.Govt		694750	694750		
	175	TN.Govt	0	20125	20125		
800	2200	TN.Govt	16000	44000	60000		
800	1700	TN.Govt	5600	11900	17500		
	18000	TN.Govt	0	90000	90000		
1000	21000	TN.Govt	5000	105000	110000		
	40000	TN.Govt	0	40000	280000		
	7500	TN.Govt			82500		
	28500	TN.Govt		28500	199500		
500	1000	TN.Govt			30000		
	1500	TN.Govt	0	30000	30000		
	500				55000		
					2733775		**0**
	80000			80000	80000		
1500					150000		
150000					150000		
	80000			**80000**	**380000**		

	25000			25000	25000		
	100000			100000	100000		
	70000			70000	70000		
	100000			100000	100000		
	50000				50000		
	345000			**495000**	**345000**		
					1070000		1070000
					425000		425000
					355000		355000
					1850000		**1850000**
					14342902	**1039483**	**9844642**
					519740		519740
					660820		660820
					15523462	**1039483**	**11025202**
					2209780		2209780
					17733242	**1039483**	**13234982**

Annexure IV B

Rate	1 US$ =	60 INR

Grant Amount from AFB (Rs)	Total Cost (US$)	Contribution from community (US$)	Grant Amount from WDF (US$)	Grant Amount from AFB (US$)
Amount in US$				
	44964	7194	37770	0
	23793	3807	19986	0
	8086	1294	6792	0
	2524	404	2120	0
	1103	51	1053	0
	2298	368	1930	0
	263	11	252	0
	23558	1828	21731	0
	1321	63	1258	0
	34059	1841	32218	0
	2577	81	2496	0
	287	9	278	0
	2185	61	2124	0
	2250	120	2130	0
	149268	**17130**	**132137**	**0**

	0	0	0	0
	1050	168	882	0
	117	5	112	0
	134	21	112	0
	1301	**194**	**1107**	**0**
	0	0	0	0
596400	9940	0	0	9940
468000	7800	0	0	7800
694750	11579	0	0	11579
20125	335	0	0	335
60000	1000	0	0	1000
17500	292	0	0	292
90000	1500	0	0	1500
110000	1833	0	0	1833
280000	4667	0	0	4667
82500	1375	0	0	1375
199500	3325	0	0	3325
30000	500	0	0	500
30000	500	0	0	500
55000	917	0	0	917
2733775	**45563**	**0**	**0**	**45563**
	0	0	0	0
80000	1333	0	0	1333
150000	2500	0	0	2500
150000	2500	0	0	2500
380000	**6333**	**0**	**0**	**6333**
	0	0	0	0

25000	417	0	0	417
100000	1667	0	0	1667
70000	1167	0	0	1167
100000	1667	0	0	1667
50000	833	0	0	833
345000	**5750**	**0**	**0**	**5750**
	17833	0	17833	0
	7083	0	7083	0
	5917	0	5917	0
	30833	**0**	**30833**	**0**
3458775	239048	17325	164077	57646
	8662	0	8662	0
	11014	0	11014	0
3458775	**258724**	**17325**	**183753**	**57646**
	36830	0	36830	0
3458775	**295554**	**17325**	**220583**	**57646**

ofing with Adaptation Fund- Ayyampalayam Watershed Project

Sr.no	Particulars	Unit (m3 / m/ No./ ha etc)	Length in m/ No.s./ ha)	Size/ Cross Section (sq m)	Total units (ha/ cu m/m/ No..)	Avg Rate (Rs/ Unit)		
						Labour	Material	Total
A	**Crop Area Treatment**							
1	Field Bund -(0.60) RM-	CUM	160262 RM	0.6	96157		50.22	50.22
2	Field Bund stone outlet	No	380 No	2x06x0.15 M	380	8	252	260
3	Farm pond - 15Nos	CUM	15 No	25x10x1 M	3375		50.22	50.22
4	Farm pond - Inlet/outlet	No	15 No	4 inch Dia pipe	15	380	580	960
5	Water Absorpation Trench (WAT)	Cum	18665 M	1x1 x M	18665		50.22	50.22
6	Well Recharge Pit	No	20 No	2x2 M	20	2200	1250	3450
7	Well Recharge Pit	No	98 No	2x2 M	98	1500	3000	4500
8	Deep Tillage	Ha	162 Ha	1Ft Depth	162		175	175
9	Summer Ploughing	Ha	135 Ha	1Ft Depth	135		1750	1750
10	Tank Silt/ FYM Application	Ha	50 Ha	1000 Sq Ft	50		7500	7500
11	Intergarted farming system	No	14 No	1 unit	14		28500	28500
12	Supervision (given under WDF sanction)							
	SUB TOTAL A							
B	**Pasture Land Development & Afforestation**							
1	Dryland Horticulture	No	20000	0.75x0.75x0.75 M	20000	25	49	74
2	DH (replanting)	No	2000	0.75x0.75x0.75 M	2000	11	45	56
3	Agro forestry	No	30000	0.6x0.6x0.60 M	30000	16	17	33
4	Agro forestry replanting	No	3000	0.6x0.6x0.60 M	3000	5.5	13	18.5
5	Supervision (given under WDF sanction)							
	SUB TOTAL B							
C	**Drainage Area Treatment**							
1	Sunken pond - 10 Nos	CUM	2500 Cum	25x10x1 M	2500			50.22
2	Sunken pond outlet	No	10 No	4 inch Dia pipe	10			960
3	Loose Boulders Structure (LBS)	RM	160 M	0.68	160			254
4	Check Dam- 7 M	No.	7 No	7x1.2x1.2 M	5			100000

5	Supervision (given under WDF sanction)							
	Sub Total (C)							
D	**Agricultural Development**							
1	Vegetable cultivation in polyhouses	No	5	1 Unit				75000
2	Vermicompost	Units	12	1 Unit	3000			3000
3	Sprinkler irrigation	No.	5	1 Kit				40000
	Sub Total (D)							
E	**Livestock Development**							
1	Azolla Unit	No	15	1 Unit				4500
2	Fodder Development		143	10 cent				4200
3	Backyard Poultry units	No	68	1 Cent				1500
	Sub Total (E)							
F	**Produvitity enhancement measures**							
	Sub Total (F)							
G	**Women Development**							
1	Livelihood support of landless and women							
2	Training and demonstration							
	Sub Total (G)							
H	**Energy Efficient Systems**							
1	Biogas	No.	10	2 Cum/unit				22000
	Sub Total (H)							
I	**Knowledge Management**							
1	Posters and Pamphlets on Climate change adaptation							
2	Tarinning awareness all mulching organicsfarming IPM,INM,integrated crop and live stock system.							
3	*Audio visual tools - short films*							
4	*Exposure Visits*							
5	*Village knowledge center*							
	Sub Total (I)							
J	**Other Interventions**							
	Instruments							

	Installation of Automatic weather stations	nos	1			520000		
	RML subscription(3 yrs) on crop, weather and market info	nos	100			1500		
	Geo Hydrological study and crop water budgeting	nos	1			150000		
	Sub Total (J)							
L	**Maintenance fund (NABARD)**							
M	**Project Management Cost**							
N	**Total project cost / grant**							

Annexure IV B

Rate reference	Unskilled Labour Cost (Rs)	Material Cost (Rs)	Total Cost (Rs)	Contribution from community	Grant (existing NABARD sanction)	Grant Amount from AFB	Total Cost (US$)	Contribution from communit	Grant (existing NABARD	Grant Amount from AFB
			Amount in INR				Amount in US$			
MGNREGS	4829005		4829005	772641	4056364	0	80483	12877	67606	0
MGNREGS	98800		98800	486	98314	0	1647	8	1639	0
TN.Govt	169493		169493	27119	142374	0	2825	452	2373	0
TN.Govt	5700	8700	14400	912	13488	0	240	15	225	0
TN.Govt	937356		937356	149978	787378	0	15623	2500	13123	0
TN.Govt	69000		69000	7040	61960	0	1150	117	1033	0
TN.Govt	147000	294000	441000			441000	7350	0	0	7350
TN.Govt		28350	28350			28350	473	0	0	473
TN.Govt		236250	236250			236250	3938	0	0	3938
TN.Govt		375000	375000			375000	6250	0	0	6250
TN.Govt		399000	399000			399000	6650	0	0	6650
			479087		479087		7985	0	7985	0
			8076741	**958176**	**5638965**	**1479600**	**134612**	**15970**	**93983**	**24660**
TN.Govt	500000	980000	1480000	80000	1400000	0	24667	1333	23333	0
TN.Govt	22000	90000	112000	3520	108480	0	1867	59	1808	0
TN.Govt	480000	510000	990000	76800	913200	0	16500	1280	15220	0
TN.Govt	16500	39000	55500	2640	52860	0	925	44	881	0
			81480		81480		1358	0	1358	0
			2718980	**162960**	**2556020**	**0**	**45316**	**2716**	**42600**	**0**
							0	0	0	0
MGNREGS	125550		125550	20088	105462	0	2093	335	1758	0
TN.Govt	380		9600	608	8992	0	160	10	150	0
TN.Govt	8320		40640	1332	39308	0	677	22	655	0
TN.Govt	0		500000	0	500000	0	8333	0	8333	0

			11014		11014		184	0	184	0
	134250		**686804**	**22028**	**664776**	**0**	**11447**	**367**	**11080**	**0**
							0	0	0	0
			375000			375000	6250	0	0	6250
			36000			36000	600	0	0	600
			200000			200000	3333	0	0	3333
			611000	**0**	**0**	**611000**	**10183**	**0**	**0**	**10183**
							0	0	0	0
			67500			67500	1125	0	0	1125
			600600			600600	10010	0	0	10010
			102000			102000	1700	0	0	1700
			770100	**0**	**0**	**770100**	**12835**	**0**	**0**	**12835**
							0	0	0	0
			767500		**767500**		12792	0	12792	0
							0	0	0	0
			1156500		1156500		19275	0	19275	0
			385000		385000		6417	0	6417	0
			1541500	**0**	**1541500**	**0**	25692	0	25692	0
							0	0	0	0
			220000			220000	3667	0	0	3667
			220000	**0**	**0**	**220000**	**3667**	**0**	**0**	**3667**
							0	0	0	0
			25000			25000	417	0	0	417
			100000			100000	1667	0	0	1667
			70000			70000	1167	0	0	1167
			100000			100000	1667	0	0	1667
			70000			70000	1167	0	0	1167
			365000	**0**	**0**	**365000**	**6083**	**0**	**0**	**6083**
							0	0	0	0
			80000			80000	1333	0	0	1333

			520000			520000	8667	0	0	8667
			150000			150000	2500	0	0	2500
			150000			150000	2500	0	0	2500
			900000	**0**	**0**	**900000**	**15000**	**0**	**0**	**15000**
			723990		723990	**0**	12067	0	12067	0
			2385380		2385380		39756	0	39756	0
			19766995	**1143164**	**14278131**	**4345700**	329450	19053	237969	72428

NABARD WDF: Watershed Development Programme									
d Project Report									
Name of Watershed	**VANNIKONENDAL-KURUKKALPATTI WATERSHED**						Name of Villages under watershed:		
Name of EEs	**VOICE**						Name of village under CBP: **Mesiap**		
Name of District	**Tirunelveli**						Total Population in the watershed		
Name of Block	**Melaneelithanallur**						Total h/h in the watershed area		
Total area of watershed (ha)	**1487**						Total popoulation FIP area		
Area udner FIP (ha)	**1379**						Total h/h in FIP area		
Forest area under wastershed (ha)	**0**						Average annual rainfall (mm)		
CBP area (ha)	**108**								
Summary of proposed interventions towards climate proofing with Adaptation Fund									

Sr.no.	Particulars	Unit of Measure	Length in m/ Nos./ ha)	Size/ Cross Section (sq m)	Total units (ha/ cu m/m/ No.)	Avg .Rate (Rs/ Unit)			Rate reference	Labour Cost (Rs)
						Total	Labour	Skilled Labour & Material		
A	**Area Treatment**									
1	Field bund of cross section of 0.6 C/s -labour work	CUM	82451 M	1x1x0.6 M	49471	50.22	50.22		MGNREGS	2484434
2	Field bund of cross section of 0.42 C/s	CUM	37071 M	1x1x0.42 M	15570	50.22	50.22		MGNREGS	781925
3	Field Bund Outlet	No.	12 No	2x0.6x0.50 M	12	331	95	236	TN.Govt	1140
4	Agro forestry	No.	10675 No	0.6x0.6x0.6 M	10675	33	16	17	TN.Govt	170800
5	AF (Replanting @10%)	No.	1067 No	0.6x0.6x0.6 M	1067	18.5	5.5	13	TN.Govt	5869
6	Agro Horticulture	No.	30400 No	0.75x0.75x0.75 M	30400	74	25	49	TN.Govt	760000
7	Agro Horti (Replanting @10%)	No.	3040 No	0.75x0.75x0.75 M	3040	56	11	45	TN.Govt	33440
8	Dryland Horticulture	No.	26200 No	0.75x0.75x0.75 M	26200	75	26	49	TN.Govt	681200
9	DH (Replanting @ 10%)	No.	2620 No	0.75x0.75x0.75 M	2620	56	11	45	TN.Govt	28820
10	Stone Gully Plugs	RM	120 m	3x0.5x0.65 M	120	214	61	153	TN.Govt	7320

11	Grass Seeding (Ha)	kg	90 Ha	200x2.3 M	90	200	40	160	TN.Govt	3600
12	Farm Pond (21 Nos + 10 Nos of size 15x6x1.5)	CUM	11212 Cum	15x15x0.75 M	11212	50.22	50.22	0	TN.Govt	563067
13	Farm Pond Outlet	No	31 No	3x1x1 M	31	2944	1345	1599	TN.Govt	41695
14	Disc Ploughing	Ha	112 Ha	1 Ft Depth	112	2250		2250	TN.Govt	0
15	Bush Cleaning	ha	92 Ha	10000 Sqm	92	5500		5500	TN.Govt	0
16	Stone wall	Rm	100 Ha	1x0.8x0.6 M	100	650	425	225	TN.Govt	42500
17	Catch Pit	No	5 No	10x10x1 M	5	4000	4000		TN.Govt	20000
18	Agroforestry on bunds	No	2000 No	0.60x0.6x0.6 M	2000	33	16	17	TN.Govt	32000
19	Silvipasture	Ha	20 Ha	10000 Sqm	20	9312.5	2000	7312.5	TN.Govt	40000
20	**Supervison cost @8% of total labour cost**									**455825**
	Sub.total (A)									**6153634**
B	**Drainage Line Treatment**									
1	Check Weir -Type 1 (20 M Span)	No	2	20x1.2x1.2 M	2	185591	81019	104572	TN.Govt	162038
2	Gabion Check Dam	No	2	5X1.2x1 M	2	37077	15523	21554	TN.Govt	31046
3	Loose Rock Check Dam	RM	30	1x1x0.60 M	30	375	165	210	TN.Govt	4950
4	Loose Boulders Structure	RM	40	1x1x0.60 M	40	570	374	196	TN.Govt	14960
5	Check Weir-Type 2 (6m Span)	No	2	6x1.2x1 M	2	44070	17630	26440	TN.Govt	35260
6	**Supervison cost @8% of total labour cost**									**1593**
	Sub.total (B)									**249847**
C	Livelihood support for Landless and women									
D	Productivty enhancement									
E	Training and demonstration									
F	Project management									
G	Maintenance fund									
	Sub total C									
I	**Capacity Building of Stakeholders**									
1	Sensitization of Climate change, its impacts on Agriculture and mitigation strategies to farmers	Nos			2	10000			TN.Govt	

2	Sensitization of Climate change, its impacts on Livelihoods and mitigation strategies to women	Nos			2	10000			TN.Govt	
3	Capacity Development training on Climate Resilient Agricultural techniques to farmers	Nos			2	10000			TN.Govt	
4	Sensitization t training on Various Climate Adaptation techniques to village community	Nos			2	10000			TN.Govt	
	Sub.total I									**0**
II	**Water Resource Development Activities**									
1	Ground water recharge through Well Recharge Pit	Nos	100	1no	100	4500	1500	3000	TN.Govt	**150000**
2	Low Cost Drip lrrigation-Demo-1Acre model	Units	2	1 Unit	2	35000			TN.Govt	
3	Micro Sprinkler System-1 Acre Demo	Unit	1	1 Kit	1	50000			TN.Govt	
4	Digging of Rain Water Catch Pit (10m*8m*1m Size) 20 Nos	CUM	1600	10x0.8x1 M	1600	50.22	**80352**		TN.Govt	
	Sub.total II									***150000***
III	**Agricultural Development Activities**									
1	Capacity Development Training on ICM, ICPM, ICDM, INM	No	2		2	10000			TN.Govt	
2	Summer Ploughing	Ha	400	1 ft Depth	400	1750	0	700000	TN.Govt	
3	Deep Tillage	Ha	100	1 ft Depth	100	175			TN.Govt	
4	Tank Silt Application	Ha	80	1000 Sqft	80	7500			TN.Govt	
5	Intergrated Farming System [IFS]	No	8	1 No	8	28500			TN.Govt	
6	Development Vermi Compost	Units	30	5x4 M	30	3000	**2200**	**800**	TN.Govt	**66000**
7	Demo plot for Minor millet Cultivation	Ha	2	1 Ha/unit	2	10000			TN.Govt	
8	Establishment of Community Seed Bank for Minor millets	No	1	1 Unit	1	15000			TN.Govt	
	Sub.total III									***66000***
IV	**Livestock Development Activities**									
1	Fodder Development	Units	60	10 Cent	60	4200	1700	2500	TN.Govt	**102000**

2	Azolla fodder unit development	No	30	5x4 M	30	1500			TN.Govt	
3	Conducting Veterinary Camps	No	6		6	5000			TN.Govt	
	Sub.total IV									***102000***
V	**Women and Child Development Activities**									
1	Income Generation Skill training	No	10		10	5000			TN.Govt	
2	Development of Home based Nutrional Garden	No	50		50	1500			TN.Govt	
3	Demonstration on Preparation of minor millet based food item for food security	No	4		4	10000			TN.Govt	
4	Silage Making- Demo in 2 villages	No	2		2	10000			TN.Govt	
	Sub.total V									***0***
VI	**Energy development Activities**									
1	Bio gas (2m3) Demo in 2 villages	Units	2	2 Cum / Unit	2	22000			TN.Govt	
2	Solar water pumping - Demo	Units	1	1 Unit	1	125000			TN.Govt	
	Sub.total VI									***0***
VII	**Insurance/ Risk Mitigation**									
1	Installation of Automatic weather stations		1		1	520000				
2	RML subscription(3 yrs) on crop, weather and market info		100		**100**	**1500**				
3	Geo Hydrological study and crop water budgeting		1		**1**	**150000**				
	Sub.total VII									**0**
VIII	**Knowledge development Activities**									
1	Posters and Pamphlets on Climate change adaptation									
2	Education kit - Maual of Climate change adaptation									
3	Audio visual tools - short films									
4	Exposure Visits to stakeholders									
6	Establishment of Village Knowledge Centre (VKC)	Nos								

7	Development of 20 farmers as PARA Extention Workers for Animal Husbandary and Agri	Nos								
	Sub.total VII									***0***
	Total Project Cost									

Livestock Development Activities

Skill development and skill upgradation Activities

Human Resource Development Activities

Vannikonendal, Mesiapuram								
uram								
	10594							
	2540							
	10594							
	2540							
	832							

Annexure IV B

Material Cost (Rs)	**Total Cost (Rs)**	**Contribution from community (Rs)**	**Grant Amount from NABARD (Rs)**	**Grant Amount from AFB**	**Total Cost (US$)**	**Contribution from community (US$)**	**Grant Amount from NABARD (US$)**	**Grant Amount from AFB (US$)**
	Amount in INR				**Amount in US$**			
	2484434	397509	2086924	0	41407	6625	34782	0
	781925	125108	656817	0	13032	2085	10947	0
2832	3972	182	3790	0	66	3	63	0
181475	352275	27328	324947	0	5871	455	5416	0
13871	19740	939	18801	0	329	16	313	0
1489600	2249600	121600	2128000	0	37493	2027	35467	0
136800	170240	5350	164890	0	2837	89	2748	0
1283800	1965000	108992	1856008	0	32750	1817	30933	0
117900	146720	4611	142109	0	2445	77	2368	0
18360	25680	1171	24509	0	428	20	408	0

14400	18000	576	17424	0	300	10	290	0
0	563067	90091	472976	0	9384	1502	7883	0
49569	91264	6671	84593	0	1521	111	1410	0
252000	252000	0	252000	0	4200	0	4200	0
506000	506000	0	506000	0	8433	0	8433	0
22500	65000	6800	58200	0	1083	113	970	0
0	20000	3200	16800	0	333	53	280	0
34000	66000	5120	60880	0	1100	85	1015	0
146250	186250	6400	179850	0	3104	107	2998	0
	455825		**455825**		**7597**	**0**	**7597**	**0**
4269357	**10422991**	**911649**	**9511342**		**173717**	**15194**	**158522**	**0**
					0	0	0	0
209144	371182	0	371182		6186	0	6186	0
43108	74154	0	74154		1236	0	1236	0
6300	11250	792	10458		188	13	174	0
7840	22800	2394	20406		380	40	340	0
52880	88140	0	88140		1469	0	1469	0
	1593		**1593**		27	0	27	0
319272	**569119**	**3186**	**565933**		**9485**	**53**	**9432**	**0**
	1190000		1190000		19833	0	19833	0
	786750		786750		13113	0	13113	0
	395000		395000		6583	0	6583	0
	2345255		2345255		39088	0	39088	0
	605741		605741		10096	0	10096	0
	5322746	**0**	**5322746**		**88712**	**0**	**88712**	**0**
					0	0	0	0
	20000			20000	333	0	0	333

	20000			20000	333	0	0	333
	20000			20000	333	0	0	333
	20000			20000	333	0	0	333
0	**80000**	**0**	**0**	**80000**	**1333**	**0**	**0**	**1333**
					0	0	0	0
300000	450000			450000	7500	0	0	7500
	70000			70000	1167	0	0	1167
	50000			50000	833	0	0	833
	80352			80352	1339	0	0	1339
300000	***650352***	***0***	***0***	***650352***	**10839**	**0**	**0**	**10839**
					0	0	0	0
	20000			20000	333	0	0	333
700000	700000			700000	11667	0	0	11667
17500	17500			17500	292	0	0	292
	600000			600000	10000	0	0	10000
	228000			228000	3800	0	0	3800
24000	90000			90000	1500	0	0	1500
	20000			20000	333	0	0	333
	15000			15000	250	0	0	250
741500	***1690500***	***0***	***0***	***1690500***	**28175**	**0**	**0**	**28175**
					0	0	0	0
150000	252000			252000	4200	0	0	4200

	45000			45000	750	0	0	750
	30000			30000	500	0	0	500
150000	***327000***	***0***	***0***	***327000***	**5450**	**0**	**0**	**5450**
					0	0	0	0
	50000			50000	833	0	0	833
	75000			75000	1250	0	0	1250
	40000			40000	667	0	0	667
	20000			20000	333	0	0	333
0	***185000***	***0***	***0***	***185000***	**3083**	**0**	**0**	**3083**
					0	0	0	0
	44000			**44000**	733	0	0	733
	125000			**125000**	2083	0	0	2083
0	***169000***	***0***	***0***	***169000***	**2817**	**0**	**0**	**2817**
					0	0	0	0
	520000			520000	8667	0	0	8667
	150000			150000	2500	0	0	2500
	150000			150000	2500	0	0	2500
0	**820000**	**0**	**0**	**820000**	**13667**	**0**	**0**	**13667**
					0	0	0	0
	25000			25000	417	0	0	417
	100000			100000	1667	0	0	1667
	70000			70000	1167	0	0	1167
	100000			100000	1667	0	0	1667
	100000			100000	1667	0	0	1667

	10000			10000	167	0	0	167
0	***405000***	***0***	***0***	***405000***	**6750**	**0**	**0**	**6750**
	20641708	**914835**	**15400021**	**4326852**	**344028**	**15247**	**256667**	**72114**

Chinnapoolampatti Watershed
Kallupatti Block
Madurai District

Summary of proposed interventions towards climate proofing with Adaptation Fund

Sl. No.	Activity	Unit of Measurement	Length in m/ No./ ha)	Size/ Cross Section (sq m)	Total units (ha/ cum/m/ No.)	Avg Rate (Rs/ Unit)			Rate reference	Labour Cost (`)
						Labour	Skilled Labour & Material	Total		
A	***Crop Area Treatment***									
A.1	Field Bund 0.30	Cum	214273	1x1x0.3 M	64282	30.00		30.00	MGNREGS	1,928,460
A.2	Field Bund Stone Outlet	Nos	729 No	2x0.6x0.50 M	729	34.00	106.00	140.00	MGNREGS	24,786
A.3	Farm Pond - 9 No	Cum	9No	15x10x1 M	1925	35.00		35.00	TN.Govt	67,375
A.4	Farm Pond Silt Trap Trench	Nos	9 No	3x1x1 M	9	95.00	152	247.00	TN.Govt	855
A.5	Agro forestry	Nos	16000 No	0.6x0.6x0.6 M	16000	8.00	16	24.00	TN.Govt	128,000
A.6	Agro forestry Replanting	Nos	1600 No	0.6x0.6x0.6 M	1600	3.00	12	15.00	TN.Govt	4,800
A.7	Agro horticulture	Nos	5625 No	0.75x0.75x0.75	5625	13.00	26	39.00	TN.Govt	73,125
A8	Grass seeding on field fund	Kg	804 kg	200x2.3 M	804	6.00	44	50.00	TN.Govt	4,824
A9	Agro Horticulture replanting	Nos	563 no	0.75x0.75x0.75	563	5.00	20	25.00	TN.Govt	2,815
A10	Disc Ploughing	Ha	80 ha	1 Ft Depth	80		1150	1150.00	TN.Govt	0
A11	Stone Gully Plug	Rm	328 RM	1x0.8x0.6 M	328	41.00	94	135.00	TN.Govt	13,448
A12	Well Recharge pit	Nos	28 No	2x2 M	28	1500.00	3000	4500.00	TN.Govt	42,000
A13	summer ploughing	Ha	105 Ha	1 Ft Depth	105		1750	1750.00	TN.Govt	0
A14	Deep Tilage	Ha	105 Ha	1 Ft Depth	105		175	175	TN.Govt	0
	Sub total -A									**2,290,488**
B	**Afforestation and Pasture land**									
B.1	Herbal garden in Temple Land	Nos		1 unit	1	12500.00	12500	25,000	TN.Govt	12,500
	Sub Total -B									**12,500**
C	***Drainage Line treatment***								TN.Govt	
B1	Channel Clerarnce(J/C)	Sqm	10095	1x1 M	10095	2.00		2.00	TN.Govt	20,190

B1	Channel Training(Formation of Odai)	Cum	7097	1x1x0.3 M	7097	35.00		35.00	TN.Govt	248,393
B2	Deepening of Oorani	Cum	1704	1x1x0.3 M	1704	35.00		35.00	TN.Govt	59,640
B3	Deepening of Kanmai	Cum	3047	1x1x0.3 M	3047	35.00		35.00	TN.Govt	106,659
B4	Jungle clerance (Kanmai)	Sqm	10400	1x1x0.3 M	10400	2.00		2.00	TN.Govt	20,800
	Sub Total -C									**455,682**
D	**Agriculture Development**									
D.1	Vermi Compost	Nos	8	1 unit	8	1600	4400	6000	TN.Govt	12,800
D.2	Drip Irrigation Demo(Vegitables)	Acr	5	I unit	5		20000	20000	TN.Govt	0
D.3	Micro sprinkler Demo	Nos	5	1 kit	5		40000	40000	TN.Govt	0
D.4	Tank silt Application	Ha	56	1000 sqft	56		7500	7500	TN.Govt	0
D.5	Integrated Farming System	Ha	5	1 Ha	5		28500	28500	TN.Govt	0
D.6	Compost pit	Nos	10	5*4*1	10	2000		2000	TN.Govt	20,000
D.7	Cropping Pettern Change in wetland water intensity crops to millets/pulses/oil seed crops	Ha	25		25		5000	5000	TN.Govt	125,000
D.8	Vegitable cultivation with trellis		5		5		35110	35110	TN.Govt	
	Sub total -D									**157,800**
E	**Livestock Development**									
E.1	Fodder Development	Nos	48	**10 cent**	48	1700	2500	4200	TN.Govt	81,600
E.2	Green Fodder shaff cutter	Nos	4	**1 unit**	4		18000	18000	TN.Govt	0
E.4	Drinking Water tank for Animals	Nos	2	10*10*1	2	20000	60000	80000	TN.Govt	40,000
E.5	Trevis Instaltation for Animal Treatment	Nos	2		2	1000	5000	6000	TN.Govt	2,000
	Sub total -E									**123,600**

F	**Women Development**									
F.1	Homestead Garden		33	1 unit	33		5800	5800	TN.Govt	
	Sub total - F									**0**
G	**Energy Efficient System**									
G.1	Bio Gas Plant		3	2 cum /unit	3	7900	22900	30800	TN.Govt	23,700
	Sub total - G									**23,700**
H	**Knowledge management**									
H.1	RML subscription(3 yrs) on crop, weather and market info	Nos	100			1500				
H.2	Geo Hydrological study and crop water budgeting	Nos	1			150000				
H.3	IEC Meterial						30000	30000		
H.4	Information Board						5000	5000		
H.5	Posters and pamphlets on climate change adaptation							25000		
H.6	Awarness and moblization Programme							50000		
H.7	Exposure visit				2					
	Sub total - H									**0**
I	**Women Development**									
J	**Training and Demonstration**									
K	**Project Management Cost**									
L	**Supervision Charges (NABARD)**									
M	**Maintenance fund (50% of contribution on phy. treatment under CBP & FIP)**									
	Sub-Total to VWC (I to M)									**0**

	Total project cost / grant (P+Q)									

Annexure IV B

Material cost	Total Cost	Beneficiary/ Community Contribution	Grant Amount under NABARD	Fund support sought from AFB	Total Cost	Beneficiary/ Community Contribution	Grant Amount under NABARD	Fund support sought from AFB
	Amount in INR				Amount in US$			
0	1928460	308554	1619906	0	32141	5143	26998	0
77274	102060	3966	98094	0	1701	66	1635	0
0	67375	10780	56595	0	1123	180	943	0
1368	2223	137	2086	0	37	2	35	0
256000	384000	23040	360960	0	6400	384	6016	0
19200	24000	768	23232	0	400	13	387	0
146250	219375	11700	207675	0	3656	195	3461	0
35376	40200	772	39428	0	670	13	657	0
11260	14075	450	13625	0	235	8	227	0
92000	92000	0	92000	0	1533	0	1533	0
30832	44280	2152	42128	0	738	36	702	0
84000	126000	0		126000	2100	0	0	2100
183750	183750	0		183750	3063	0	0	3063
18375	18375	0		18375	306	0	0	306
955,685	**3,246,173**	**362,318**	**2,555,730**	**328,125**	**54103**	**6039**	**42595**	**5469**
					0	0	0	0
12500	25000			25000	417	0	0	417
12,500	**25,000**	**0**	**0**	**25,000**	**417**	**0**	**0**	**417**
					0	0	0	0
	20190	3230	16960		337	54	283	0

	248393	39743	208650		4140	662	3478	0
	59640	9542	50098		994	159	835	0
	106659	17065	89594		1778	284	1493	0
	20800	3328	17472		347	55	291	0
0	**455,682**	**72,909**	**382,773**	**0**	**7595**	**1215**	**6380**	**0**
					0	0	0	0
35200	48000			48000	800	0	0	800
100000	100000			100000	1667	0	0	1667
200000	200000			200000	3333	0	0	3333
420000	420000			420000	7000	0	0	7000
142500	142500			142500	2375	0	0	2375
0	20000			20000	333	0	0	333
125000	250000			250000	4167	0	0	4167
175550	175550			175550	2926	0	0	2926
					0	0	0	0
1,198,250	**1,356,050**	**0**	**0**	**1,356,050**	**22601**	**0**	**0**	**22601**
					0	0	0	0
120000	201600			201600	3360	0	0	3360
72000	72000			72000	1200	0	0	1200
120000	160000			160000	2667	0	0	2667
10000	12000			12000	200	0	0	200
					0	0	0	0
322,000	**445,600**	**0**	**0**	**445,600**	**7427**	**0**	**0**	**7427**

					0	0	0	0
191400	191400			191400	3190	0	0	3190
191,400	**191,400**	**0**	**0**	**191,400**	**3190**	**0**	**0**	**3190**
					0	0	0	0
68700	92400			92400	1540	0	0	1540
68,700	**92,400**	**0**	**0**	**92,400**	**1540**	**0**	**0**	**1540**
					0	0	0	0
	150000			150000	2500	0	0	2500
	150000			150000	2500	0	0	2500
30000	30000			30000	500	0	0	500
20000	20000			20000	333	0	0	333
	25000			25000	417	0	0	417
	50000			50000	833	0	0	833
	100000			100000	1667	0	0	1667
50000	**525000**	**0**	**0**	**525000**	**8750**	**0**	**0**	**8750**
	381700		**381700**		**6362**	**0**	**6362**	**0**
	159500		**159500**		**2658**	**0**	**2658**	**0**
	688100	**0**	**688100**	**0**	**11468**	**0**	**11468**	**0**
	217614	**0**	**217614**		**3627**	**0**	**3627**	**0**
	268500	**0**	**268500**		**4475**	**0**	**4475**	**0**
0	**1715414**	**0**	**1715414**	**0**	**28590**	**0**	**28590**	**0**

	8052719	435228	4653916	2963575	134212	7254	77565	49393

Chithalai Watershed
Thirumangalam Block
Madurai District

Annexure IV B

Summary of proposed interventions towards climate proofing with Adaptation Fund

Sl. No.	Activity	Unit of Measurement	Length in m/ No./ ha)	Size/ Cross Section (sq m)	Total units (ha/ cum/m/ No.)	Avg Rate (Rs/ Unit)			Rate reference	Labour Cost (`)	Material cost (`)	Total Cost (`)	Beneficiary/ Community Contribution	Grant Amount under NABARD	Fund support sought from AFB	Total Cost	Beneficiary/ Community Contribution	Grant Amount under NABARD	Fund support sought from AFB
						Labour	Skilled Labour & Material	Total											
												Amount in INR				Amount in US$			
A	***Crop Area Treatment***																		
A1	Field Bund 0.60	Cum	33508	1x1x0.3 M	20105	50.22		50.22	MGNREGS	1,009,673		1009673	302902	706771		16828	5048	11780	0
A2	Field Bund 0.42	Cum	32914	1x1x0.42 M	13824	50.22		50.22	MGNREGS	694,191		694191	208257	485934		11570	3471	8099	0
A3	Field Bund Stone Outlet	Nos	50 no	3x1x1 M	50	8.00	252	260.00	TN.Govt	400	12600	13000	64	12936		217	1	216	0
A4	Farm pond 51 nos	Cum	51 no	15x15x1	10425	50.22		50.22	TN.Govt	523,544		523544	83767	439777		8726	1396	7330	0
A5	Farm pond Outlet	Nos	50 No	3x1x1M	51	325.00	580	905.00	TN.Govt	16,575	29580	46155	2652	43503		769	44	725	0
A6	Agro Forestry	Nos	28343 No	0.6x0.6x0.6 M	28343	16.00	19	35.00	TN.Govt	453,488	538517	992005	72561	919444		16533	1209	15324	0
A7	Agro Forestry Replanting	Nos	2834 No	0.6x0.6x0.6 M	2834	6.00	15	21.00	TN.Govt	17,004	42510	59514	2721	56793		992	45	947	0
A8	Agro horticulture	Nos	16830 No	0.75x0.75x0.75	16830	25.00	49	74.00	TN.Govt	420,750	824670	1245420	67320	1178100		20757	1122	19635	0
A9	Agro horticulture Replanti	Nos	1683 No	0.75x0.75x0.75	1683	11.00	45	56.00	TN.Govt	18,513	75735	94248	2962	91286		1571	49	1521	0
A10	Jungle clearance	Ha	31 Ha	10000 sqm	31		5500	5500.00	TN.Govt	170,500		170500		170500		2842	0	2842	0
A11	Disc Ploughing	Ha	68 Ha	1 Ft Depth	68		2250	2250.00	TN.Govt	153,000		153000		153000		2550	0	2550	0
A12	Well Recharge pit	Nos	20 No	2x2x2 M	20	2200.00	1250	3450.00	TN.Govt	44,000	25000	69000	7040	61960		1150	117	1033	0
A13	Well Recharge pit	Nos	20 No	2x2x2 M	20	1500	3000	4,500	TN.Govt	30,000	60000	90000			90000	1500	0	0	1500
A14	Summer Ploguhing	Ha	100 Ha	1 Ft Depth	100		1750	1,750	TN.Govt		175000	175000			175000	2917	0	0	2917
A15	Deep Tilage	Ha	100 Ha	1 Ft Depth	100		175	175	TN.Govt		17500	17500			17500	292	0	0	292
A16	Caster seeding	Nos	5000 No	0.6x0.6x0.6 M	5000	1	0.50	1.50	TN.Govt	5,000	2500	7500			7500	125	0	0	125
	Sub total -A									**3,556,638**	**1,803,612**	**5,360,250**	**750,246**	**4,320,004**	**290,000**	**89338**	**12504**	**72000**	**4833**
B	**Afforestation and Pasture land**															0	0	0	0
B.1	Nursery for Forestry speices	Nos	1 No	1 unit	1	5000.00	20000	25,000	TN.Govt	5,000	20000	25000			25000	417	0	0	417
B.2	Pitchar Irrigation for common land of forestry Species	Nos	1000 No	15 litters /pot	1000		40	40	TN.Govt		40000	40000			40000	667	0	0	667
B.3	Herbal garden in Temple Land	Nos	1 No	1 unit	2	12500.00	12500	25,000	TN.Govt	25,000	25000	50000			50000	833	0	0	833
	Sub Total -B									**30,000**	**85,000**	**115,000**	**0**	**0**	**115,000**	**1917**	**0**	**0**	**1917**
C	***Drainage Line treatment***															0	0	0	0
B1	Bush Clearance - Oorani	Sqm	850 Sqm	1x1xM	850	4.66		4.66	TN.Govt	3,961		3961	634	3327		66	11	55	0
B1	Bush Clearance - Odai	Sqm	4400 sqm	1x1xM	4400	4.66		4.66	TN.Govt	20,504		20504	3281	17223		342	55	287	0
B2	Earth work - Oorani	Cum	850 cum	1x1xM	850	50.22		50.22	TN.Govt	42,687		42687	6830	35857		711	114	598	0
B3	Channel Formation - Odai	Cum	1320 cum	2x0.50 M	1320	50.22		50.22	TN.Govt	66,290		66290	10606	55684		1105	177	928	0
B4	Agro Forestry in Channel	Nos	440 No	0.6x0.6x0.6 M	440	16.00	19	35.00	TN.Govt	7,040	8360	15400	1130	14270		257	19	238	0
	Sub Total -C									**140,482**	**8,360**	**148,842**	**22,481**	**126,361**	**0**	**2481**	**375**	**2106**	**0**
D	**Agriculture Development**															0	0	0	0
D.1	Vermi Compost	Nos	10 unit	1 unit	10	1600	4400	6000	TN.Govt	16,000	44000	60000			60000	1000	0	0	1000
D.2	Drip Irrigation Demo(Vegitables)	Nos	5	1 unit	5		20000	20000	TN.Govt		100000	100000			100000	1667	0	0	1667
D.3	Micro sprinkler Demo	Nos	3	1 kit	3		40000	40000	TN.Govt		120,000	120000			120000	2000	0	0	2000
D.4	Tank silt Application	Ha	30	1000 sqft	30		7500	7500	TN.Govt		225000	225000			225000	3750	0	0	3750
D.5	Integrated Farming System	Ha	5	1 unit	5		28500	28500	TN.Govt		142500	142500			142500	2375	0	0	2375
D.6	Compost pit	Nos	30	5*4*1	30	2000		2000	TN.Govt		60000	60000			60000	1000	0	0	1000

D.7	Cropping Pettern Change in wetland water intensity crops to millets/pulses/oil seed crops	Ha	50		50		5000	5000		250,000	250000	500000			500000	8333	0	0	8333
D.8	Organic Farming Prometion	Nos	5		5	5000		5000			25000	25000			25000	417	0	0	417
	Sub total -D									**266,000**	**966,500**	**1,232,500**	**0**	**0**	**1,232,500**	**20542**	**0**	**0**	**20542**
E	**Livestock Development**															0	0	0	0
E.1	Fodder Development	Nos	105	10 cent/ unit	105	1700	2500	4200	TN.Govt	178,500	262500	441000			441000	7350	0	0	7350
E.2	Green Fodder shaff cutter	Nos	4	1 unit	4		18000	18000	TN.Govt		72000	72000			72000	1200	0	0	1200
E.3	Interducing of Jamuna bari cross breed male Goat for breeding Purpose	Nos	5	1 No	5		8000	8000			40000	40000			40000	667	0	0	667
E.4	Drinking Water tank for Animals	Nos	2	10*10*1	2	20000	60000	80000		40,000	120000	160000			160000	2667	0	0	2667
E.5	Trevis Instaltation for Animal Treatment	Nos	4		4	1000	5000	6000		4,000	20000	24000			24000	400	0	0	400
																0	0	0	0
	Sub total -E									**222500**	**514500**	**737000**	**0**	**0**	**737000**	**12283**	**0**	**0**	**12283**
F	**Women Development**															0	0	0	0
F.1	Homestead Garden		30	**1 unit**	30		5800	5800	TN.Govt		174000	174000			174000	2900	0	0	2900
	Sub total - F									**0**	**174000**	**174000**	**0**	**0**	**174000**	**2900**	**0**	**0**	**2900**
G	**Energy Efficient System**															0	0	0	0
G.1	Bio Gas Pant		3		3	7900	22900	30800	TN.Govt	23,700	68700	92400			92400	1540	0	0	1540
	Sub total - G									**23,700**	**68700**	**92400**	**0**	**0**	**92400**	**1540**	**0**	**0**	**1540**
H	**Knowledge management**															0	0	0	0
H.1	Installation of Automatic weather stations	nos	1		1	520000						520000			520000	8667	0	0	8667
H.2	RML subscription(3 yrs) on crop, weather and market info	nos	100		100	1500						150000			150000	2500	0	0	2500
H.3	Geo Hydrological study and crop water budgeting	Nos	1		1	150000						150000			150000	2500	0	0	2500
H.4	IEC Meterial						30000	30000			30000	30000			30000	500	0	0	500
H.5	Information Board				4		5000	5000			20000	20000			20000	333	0	0	333
H.6	LCD Projecter & Documentation				1		70000	70000			70000	70000			70000	1167	0	0	1167
H.7	Posters and pamphlets on climate change adaptation							25000				25000			25000	417	0	0	417
H.8	Awarness and moblization Programme							50000				50000			50000	833	0	0	833
H.9	Training come Demonstration/Exposure visit (Cotton,Vegitables and Fodder)							100000				100000			100000	1667	0	0	1667
	Sub total - H									**0**	**120000**	**1115000**	**0**	**0**	**1115000**	**18583**	**0**	**0**	**18583**
	Women Development (R.F)											500000		500000		8333	0	8333	0

I	Productivity Enhancement											350000		350000		5833	0	5833	0
J	Training and Demonstration											185000		185000		3083	0	3083	0
K	Project Management Cost											1269236	0	1269236	0	21154	0	21154	0
L	Supervision Charges (NABARD)											267089	0	267089		4451	0	4451	0
M	Maintenance fund (50% of contribution on phy. treatment under CBP & FIP)											348810	0	348810		5814	0	5814	0
	Total to VWC (I to M)											2920135	0	2920135	0	48669	0	48669	0
P	Total project cost / grant (P+Q)											11895127	772727	7366500	3755900	198252	12879	122775	62598

Name of the Project : Peikulam
Name of the PFA : ASSEFA
T.kalligudi Block Madurai Dt

Watershed Area : 962Ha
CBP Area : 79.80 Ha
Number of Household in the watershed 625

S.NO	Particulars	Unit of Measureme	Length in m/ Nos./	Size/ Cross Section (sq m)	Total units (ha/ cu	Avg Rate (Rs/ Unit)	Labour
A	**AREA TREATMENTS**						
A1	Field Bund (0.3)RM-( )	CUM	103446.7	1x1x0.3 M	31034	28	28
A2	Field Bund stone outlet	No	552 no	2x0.6x0.50 M	552	171	39
A3	Farm pond - 22 Nos	CUM	22 No	15x10x1 M	9650	30	30
A4	Farm pond Silt Trap Trench	No	22 No	3x1x1 M	22	233	90
A5	Agroforsty Plam	No	44865 No	0.6x0.6x0.6 M	44865	4.0	2.5
A6	Agroforsty Plam Replanting 10/-	CUM	4487 No	0.6x0.6x0.6 M	4487	2.75	1.25
A7	Deep ploughing / disc ploughing in wasteland	Ha.	7 Ha	1 Ft Depth	7	1150	
A8	Agro forestry without CCT	No	9460 No	0.6x0.6x0.6 M	9460	18	8.5
A9	Agro forestry Replantig 10/-	Ha.	946 No	0.6x0.6x0.6 M	946	11	3
A10	Agro Horticulture	No	2650 No	0.75x0.75x0.75	2650	35	15
A11	Well recharge pit	No	15 No	2 x2x2 M	15	478	185
A12	Agro Horticulture Replanting	No	265 No	0.75x0.75x0.75	265	25.00	5
A14	Silvipasture and fodder Development	No	1035 No	10000 sqm	1035	45	5
A15	Stone gully plug	No	821 No	1 x0.6 M	821	129	30
A17	Activity 1 - 1 Summer Ploughing	Ha	170 Ha	1 Ft Depth	170	1750	
A18	Well recharge pit Activity 1.4	Nos	10 No	2 x2x2 M	10	4500	
A19	Activity 2.1. Deep Tillage	Ha	134 Ha	1 Ft Depth	134	175	
A20	Castor seeding	No	10000 No	0.6x0.6x0.6 M	10000	1.5	1
	Supervision Cost 8% of labour cost						
	Grant Total - A						
B	**DRAINAGE LINE TREATMENTS**						
B1	Channel training	SQM	72345	1x1xM	72345	2	

B2	Retainingwall(2Repair 5-New)		5	1x 0.6 M	5		
B3	Herbel gardan in temple land	NO	2	1 unit	2	12500	
	Sub-Total -B						**0**
	Supervision cost - 8% of labour cost						
	TOTAL-B						
C	RENOVATION OF WATER HARVESTING STRUCTURES						
C1	Deepening Of Oorani-8No	CUM	**9455**	1x1xM	**9455**		
C2	Deepeninig Of Kanmai-2No	CUM	**5058**	1x1xM	**5058**		
C3	Deepening Of Odai	CUM	15033	1x1xM	15033		
	Supervision cost - 8% of labour cost						
	Sub-Total -C			**-**			
1	livelyhood land less						
2	Training & domonstraion						
3	Maintenance fund						
4	MANAGEMENT						
	TOTAL-D						
D	**Agriculture Development**						
D1	Activity -2.8. VermiCompost	Nos	19	2x2x2 M	19	6000	1600
D2	Activity 2.8 Compost Pit	Units	22	**10 x3ft**	22	2000	
D3	Activity 2-8. Tank Silt application	Ha	20	**1000 sqft**	20	7500	
D4	Activity-2.9Drip Irrigation Domo	Units	4	1 unit	4	20000	
D5	Activity 2.9 Micro Sprinkler Demo	Units	4	1 kit	4	40000	
D6	Organic forming system prometion	Nos	5	1 unit	5	5000	
D7	Integrated farming system	Nos	5	1 unit	5	28500	
	Sub total - D						**1600**
E	**Livestock development**						
E1	Fodder development	Units	74	10 cent	74	4200	1700
E2	Drinking For Animels 10*10*1	Units	2	1 unit	2	80000	20000
	Sub total - E						**21700**
F	**Women development**						
F1	Homestead garden	Units	26	1 unit	26	5800	
	Sub Total -F						

G	**Energy effcient system**						
G1	Activity-2.7. Biogas pant (2.M3)	Units	5		5	30800	
Sub total - G						**30800**	**0**
H	**Knowledge management**						
H.1	RML subscription(3 yrs) on crop, weather and market info	nos	100		1500		
H.2	Geo Hydrological study and crop water budgeting	nos	1		150000		
H.3	IEC Material		1		1	30000	
H.4	Information Board	units	4		4	5000	
H.5	LCD projecter & Documention , Audio video tolls short films		1		1	70000	
H.6	Poster and Pamphlets on climate change adapatation		1		1	25000	
H.7	Awarness and moblization programme		1		1	50000	
H.8	Exposure vist					100000	
	Sub total - H					**280000**	**0**
I	**TOTAL COST OF ALL PROJECT MEASURES**						**23300**
J	**Total Project cost / grant (P+Q)**						

Skilled Labour & Material	Rate reference	Labour Cost (Rs)	Material Cost (Rs)	Total Cost (Rs)	Contribution from	Grant Amount from	Grant Amount from AFB	Total Cost	Contributi on from
				Amount In INR					Amou
0	MGNREGS	868946	0	868946	139031	729915		14482	2317
132	TN.Govt	21528	72864	94392	3444	90948		1573	57
0	TN.Govt	289500	0	289500	46320	243180		4825	772
143	TN.Govt	1980	3146	5126	317	4809		85	5
1.5	TN.Govt	112163	67298	179460	17946	161514		2991	299
1.5	TN.Govt	5608	6730	12338	897	11441		206	15
1150	TN.Govt	0	8050	8050		8050		134	0
9.5	TN.Govt	80410	89870	170280	12866	157414		2838	214
8	TN.Govt	2838	7568	10406	454	9952		173	8
20	TN.Govt	39750	79500	119250	6360	112890		1988	106
293	TN.Govt	2775	4395	7170	444	6726		120	7
20	TN.Govt	1325	5300	6625	212	6413		110	4
40	TN.Govt	5175	41400	46575	828	45747		776	14
99	TN.Govt	24630	81279	105909	3941	101968		1765	66
	TN.Govt			148750			148750	2479	0
	TN.Govt			42600			42600	710	0
	TN.Govt			23450			23450	391	0
0.5	TN.Govt	10000	5000	15000			15000	250	0
				114560		114560		1909	0
		1466628	**472400**	**2268387**	**233059.48**	**1805528**	**229800**	**37806**	**3884**
		0				0		0	0
0	TN.Govt	144690		144690	23150	121540		2412	386

	TN.Govt	0		131076	5129	125947		2185	85
	TN.Govt			25000			25000	417	0
0	**0**	**144690**	**0**	**300766**	**28279**	**247487**	**25000**	**5013**	**471**
				16110		**16110**		269	0
				316876	**28279**	**263597**	**25000**	**5281**	**471**
								0	0
	TN.Govt	330925		330,925	52948	277977		5515	882
	TN.Govt	177030		177,030	28325	148705		2951	472
	TN.Govt	**526155**		526,155	84185	441970		8769	1403
								0	0
		1034110	**0**	**1034110**	**165458**	**868652**		**17235**	**2758**
				362957		363000		6049	0
				159500		159500		2658	0
				261793		261793		4363	0
				690600		690600		11510	0
				1474850		**1474893**		**24581**	**0**
								0	0
4400	TN.Govt	30400	83600	114000			114000	1900	0
2000	TN.Govt	0	44000	44000			44000	733	0
7500	TN.Govt			150000			150000	2500	0
20000	TN.Govt		80000	80000			80000	1333	0
40000	TN.Govt		160000	160000			160000	2667	0
5000	TN.Govt			25000			25000	417	0
28500	TN.Govt		142500	142500			142500	2375	0
107400	**0**	**30400**	**510100**	**715500**	**0**	**0**	**715500**	**11925**	**0**
								0	0
2500	TN.Govt	125800	185000	310800			310800	5180	0
60000	TN.Govt	40000	120000	160000			160000	2667	0
62500	**0**	**165800**	**305000**	**470800**	**0**	**0**	**470800**	**7847**	**0**
				0			0	0	0
5800	TN.Govt			150800			150800	2513	0
5800	**0**	**0**	**0**	**150800**	**0**	**0**	**150800**	**2513**	**0**

							0	0	0
				154000			154000	2567	0
0	**0**	**0**	**0**	**154000**	**0**	**0**	**154000**	**2567**	**0**
								0	0
				150000			150000	2500	0
				150000			150000	2500	0
			30000	30000			30000	500	0
			20000	20000			20000	333	0
			70000	70000			70000	1167	0
				25000			25000	417	0
				50000			50000	833	0
				100000			100000	1667	0
0	**0**	**0**	**120000**	**595000**	**0**	**0**	**595000**	**9917**	**0**
175700	**0**	**2696938**	**1407500**	**7180323**	**426796.48**	**4412670**	**2340900**	119672	7113
				7180323	**426796**	**4412670**	**2340900**	**119672**	**7113**

Annexure IV B

Grant Amount	Grant Amount
nt In US$	
12165	0
1516	0
4053	0
80	0
2692	0
191	0
134	0
2624	0
166	0
1882	0
112	0
107	0
762	0
1699	0
0	2479
0	710
0	391
0	250
1909	0
30092	**3830**
0	0
2026	0

2099	0
0	417
4125	**417**
269	0
4393	**417**
0	0
4633	0
2478	0
7366	0
0	0
14478	**0**
6050	0
2658	0
4363	0
11510	0
24582	**0**
0	0
0	1900
0	733
0	2500
0	1333
0	2667
0	417
0	2375
0	**11925**
0	0
0	5180
0	2667
0	**7847**
0	0
0	2513
0	**2513**

0	0
0	2567
0	**2567**
0	0
0	2500
0	2500
0	500
0	333
0	1167
0	417
0	833
0	1667
0	**9917**
73544	39015
73544	**39015**

NABARD WDF: Watershed Development Programme

Standard Project Report

Name of Watershed	**ANJUKULIPATTI**					Name of Villages under
Name of EEs	**SPACE**					Name of village under
Name of District	**Dindigul**					Total Population in the
Total area of water shed (ha)						Total popoulation FIP a
Forest area under wastershed (ha)						Average annual rainfall

Summary of proposed interventions towards climate proofing with Adaptation Fund

Sr.no.	Particulars	Unit of Measure	Length in m/ Nos./ ha)	Size/ Cross Section (sq m)	Total units (ha/ cu m/m/ No.)	Avg Rate (Rs/ Unit)			Rate reference
						Total	Labour	Material Cost	
A	**Area Treatment**								
1	Field Bund (0.42) RM-( )	CUM	82064	1x0.42 M	82064		50.22		MGNREGS
2	Field Bund (0.3)RM-( )	CUM	9006	1x0.30M	9006		50.22		MGNREGS
3	Field Bund -(0.63)RM- ( )	CUM	25716	1x0.63M	25716		50.22		MGNREGS
4	Field Bund -(0.63)RM- ( )	CUM	1373	1x0.63M	1373		35.65		MGNREGS
5	Field Bund Pipe outlet	No	556	4 inch Dia	556		30	230	TN.Govt
6	Farm pond 4 Nos.	CUM	1463	10x15x1M	1463		50.2		TN.Govt
7	Farm pond 5 Nos.	CUM	1312	12x12x1M	1312		35.65		TN.Govt
8	Farm pond outlet	Nos.	9	3x1x1 M	9		450	1300	TN.Govt
9	Fodder Development (10 cent unit)	No	10	10 cent unit	10		1500	3000	TN.Govt
10	Water Absorption Trench - RM	CUM	6195	1x1 M	6195		50.22		TN.Govt
11	Water Absorption Trench - RM	CUM	1396	1x1 M	1396		35.65		TN.Govt
12	Agro forestry	No	42301	0.6x0.60x0.6M	42301		16	17	TN.Govt
13	AF (replanting @ 10%)	No	4230	0.6x0.60x0.6M	4230		5.50	13	TN.Govt
14	Agro Horticulture	No	15394	0.75x0.75x0.75M	15394			49	TN.Govt
15	AH (replanting @ 10%)	No	1539	0.75x0.75x0.75M	1539		11	45	TN.Govt
16	Green Coverage (Gliricidia sepium)	No	25600	0.3x0.3x0.3	25600			5	TN.Govt
18	Supervision 8 % from Unskilled Labour cost								

	Sub Total - A								
19	Loose Rock Check Dam	CUM	184 Cum	1x0.60 M	184		243	517	TN.Govt
20	Gabion Check Dam	RM	12 RM	1.2x1 M	12		9227	16109	TN.Govt
21	Sunken pond	CUM	1168 Cum	15x15x1M	1168		50.22		TN.Govt
21	Sunken pond IP	CUM	669 Cum	15x15x1M	669		35.65		TN.Govt
22	Sunken pond outlet	No	4 No	3x1x1 M	4		450.00	1300	TN.Govt
23	**Supervison cost @8% of total labour cost**								
	Sub.total (B)								
A	Livelihood support for Landless and women								
B	Productivty enhancement								
C	Training and demonstration								
D	Project management								
E	Maintenance fund								
	Climate Proofing Project Activities								
I	**Component**								
1	Fodder Development	Units	25 No	10 cent Unit	25	4500	1500	3000	TN.Govt
2	Well Recharge Pit (WRP)	Nos	83 No	2x2x1 M	83	5500	1500	4000	TN.Govt
3	Summer Ploughing	Ha	300 Ha	1 Ft Depth	300	1750	0	525000	TN.Govt
4	Deep Tillage	Ha	250Ha	1 Ft Depth	250	175			TN.Govt
5	Vermi Compost	Units	10 No	10x3 Ft	10	3750	1000	2750	TN.Govt
6	Micro Sprinkler System	Units	6 No	1 Kit	6	40000			TN.Govt
7	Intergrated Farming System	No	6 No	1 Unit	6	38000			TN.Govt
8	Kitchen garden	No	108 No	1 Unit	108	1750			TN.Govt
9	Catch pit	No	200 No	3x3x1.2 M	200	1025	625	400	TN.Govt
10	Azolla development	No	10 No	1 Unit	10	4000	1000	3000	TN.Govt
11	Mushroom Cultivation	Units	5 No	1 Unit	5	10000	1000	9000	TN.Govt
	Sub.total (I)								
II	**Component**								
	Installation of Automatic weather stations		1		1				

	RML subscription(3 yrs) on crop, weather and market info		100		100				1500
	Geo Hydrological study and crop water budgeting								
3	Instrumentation								
	Sub.total (II)								
III	**Component**								
1	streetplay and posters on Climate change adaptation								
2	IEC activities in the project area								
3	Awareness and mobilisation programme								
4	Audio visual tools - short films								
5	Exposure Visits								
	Sub.total (III)								
F	Total of Climate Proofing Actitivities								
	GRAND TOTAL								

Annexure IV B

r watershed: **Anjukulipatty,Cholakulathupatty,Padukaikattur, Chinnakalip**

CBP: **Padukaikattur**					
watershed		**7786**			
area		**7786**			
l (mm)		**700**			

Labour Cost (Rs)	Material Cost (Rs)	Total Cost (Rs)	Contribution from community (Rs)	Grant Amount from NABARD	Grant Amount from AFB	Total Cost	Contribution from community	Grant Amount from NABARD	Grant Amount from AFB
		Amount In INR				**Amount In US$**			
4121254		4121254	659401	3461853		68688	10990	57698	0
452281		452281	72364	379918		7538	1206	6332	0
1291458		1291458	206633	1084824		21524	3444	18080	0
48947		48947	7832	41116		816	131	685	0
16680	127880	144560	2669	141891		2409	44	2365	0
73472		73472	11756	61716		1225	196	1029	0
46773		46773	7484	39289		780	125	655	0
4050	11700	15750	648	15102		263	11	252	0
1500	30000	45000	2400	42600		750	40	710	0
311113		311113	49778	261335		5185	830	4356	0
49767		49767	7963	41805		829	133	697	0
676816	719117	1395933	108291	1287642		23266	1805	21461	0
23265	54990	78255	3722	74533		1304	62	1242	0
	754306	754306	0	754306		12572	0	12572	0
16929	69255	86184	2709	83475		1436	45	1391	0
	128000	128000	0	128000		2133	0	2133	0
		571824		**571824**		9530	0	9530	0

		9614877	**1143648**	**8471229**		**160248**	**19061**	**141187**	**0**
44712	95128	139840	7153	132687		2331	119	2211	0
110724	193308	304032	17715	286316		5067	295	4772	0
58657		58657	9385	49272		978	156	821	0
23850		23850	3816	20034		398	64	334	0
1800.00	5200	7000	288	6712		117	5	112	0
		19179		**19179**		320	0	320	0
		552558	**38358**	**514200**		**9209**	**639**	**8570**	**0**
		1048000		1048000		17467	0	17467	0
		699000		699000		11650	0	11650	0
		350000		350000		5833	0	5833	0
		2382887		2382887		39715	0	39715	0
		744250		744250		12404	0	12404	0
						0	0	0	0
						0	0	0	0
37500	75000	112500	0	0	112500	1875	0	0	1875
124500	332000	456500	0	0	456500	7608	0	0	7608
	525000	525000	0	0	525000	8750	0	0	8750
	43750	43750	0	0	43750	729	0	0	729
10000	27500	37500	0	0	37500	625	0	0	625
		240000	0	0	240000	4000	0	0	4000
		228000	0	0	228000	3800	0	0	3800
		189000	0	0	189000	3150	0	0	3150
125000	80000	205000	0	0	205000	3417	0	0	3417
10000	30000	40000	0	0	40000	667	0	0	667
5000	45000	50000	0	0	50000	833	0	0	833
		2127250			**2127250**	**35454**	**0**	**0**	**35454**
						0	0	0	0
		520000	0	0	520000	8667	0	0	8667

		150000	0	0	150000	2500	0	0	2500
		150000	0	0	150000	2500	0	0	2500
		80000	0	0	80000	1333	0	0	1333
		900000	**0**	**0**	**900000**	**15000**	**0**	**0**	**15000**
						0	0	0	0
		25000			25000	417	0	0	417
		100000			100000	1667	0	0	1667
		50000			50000	833	0	0	833
		85000			85000	1417	0	0	1417
		150000			150000	2500	0	0	2500
		410000			**410000**	**6833**	**0**	**0**	**6833**
		3437250			**3437250**	57288	0	0	57288
		18828822	**1182006**	**14209566**	**3437250**	**313814**	**19700**	**236826**	**57288**

Name of Watershed		**Bettamugilalam WS**		
	Annexure IV B			
Name of EEs		**MYRADA**		
Name of District		**Krishnagiri**		
Name of Block		**Kelamangalam**		
Total area of water shed (ha)		**1407.055**	Ha	
Area udner FIP (ha)		**1304.49**	Ha	
CBP area (ha)		**102.565**	Ha	

S.No	Particulars	Unit of Measurement	Length in m/ Nos./ ha)	Size/ Cross Section (sq m)	Total units (ha/ cu m/m/ No.)
A	**AREA TREATMENTS**				
1	Field Bund (0.45) RM-(39270)	CUM	54978 M	1x1x0.45 M	24740
2	Field Bund stone outlet	No	500 No	2x1x0.50 M	500
3	Farm pond	CUM	32897 Cum	20x20x1 M	32897
4	Silt Trap Trench for FP	No	108 No	3x1x1 M	108
5	Stone Bund	Rm	11790 Cum	1X0.50 M	11790
6	Grass seeding	Ha.	100 Ha	1X1.65 M	100
7	Contour Continuous Trench(CCT) - RM	CUM	40560 Cum	0.60x0.30 M	40560
8	Water Absorption Trench - RM	CUM	4525 Cum	1x1 M	4525
9	Agro forestry	No	11465 Cum	0.6x0.6x0.6 M	11465
9.a	Agro forestry Replanting	No	1147 No	0.6x0.6x0.6 M	1147
10	Agro Horticulture	No	8070 No	0.75x0.75x0.75 M	8070
10.a	AH Replanting	No	807 No	0.75x0.75x0.75 M	807
11	Dryland Horticulture	No	5540 No	0.75x0.75x0.75 M	5540
12	DH - Replanting	No	554 No	0.75x0.75x0.75 M	554
	Sub Total - A				

	Supervision Cost 8% of labour cost				464,915
	Grant total (A)				**464,915**
B	**DRAINAGE LINE TREATMENTS**				
1	Stone Gully Plug	Rm	1020 M	1x0.60 M	1020
2	LRCD (5m)	No	3 No	1x1.2x0.8 M	3
3	LRCD (6m)	No	3 No	1x1.2x0.8 M	3
4	LRCD (7m)	No	2 No	1x1.2x0.8 M	2
5	LRCD (8m)	No	4 No	1x1.2x0.8 M	4
6	LRCD (9m)	No	2 No	1x1.2x0.8 M	2
	Sub total - B				
	Supervision cost-8% of labour cost				10,645
	Grant total (B)				**10,645**
C	**Livelihood Support for Landless and Women**				1,024,500
D	**Productivity Enhancement measures**				-
E	**Training & Demonstration**				165,000
F	**Project Management**				2,379,900
G	**Maintanance Fund**				627,300
	Grant total (A+B+C) NABARD				**4,672,260**
H	**Component 1**				
1	Well recharge pits	Nos	36 No	2x2x1 M	36
	Sub-Total - H				
I	**Component 2**				
1	Composting Pits.	Nos	344 No	10x3 Ft	344
2	Backyard Kitchen garden	Nos	344 No	1 Unit	344
3	Green Manure	Nos	344 No	1 Unit	344
4	Azolla Units	Nos	88 No	1 Unit	88
5	Bio Gas	Nos	10 No	2 Cum/ Unit	10
6	Vermicompost	Nos	134 No	10x3 Ft	134
7	Fodder Development	Units	176 No	10 cent Unit	176
8	Soil Test (2 times)	Nos	150 No	5 sample mix/ No	150
9	Tank Silt / FYM Application	Ha	25 Ha	1000 Sqft	25
	Sub-Total - I				
J	**Component 3**				

1	RML subscription(3 yrs) on crop, weather and market info	Nos	100		
2	Geo Hydrological study and crop water budgeting	No	1		
	Sub-Total - J				
K	**Component 4**				
1	Posters and pamphlet on climate change adaptation	Set	1		1
2	Awareness Training on climate change adaptation	Nos	10		10
3	Audio Visual Tools – short films	Set	1		1
	Sub-Total - K				
	TOTAL (H+I+J+K)				
	TOTAL GRAND NABARD & AFB				

NABARD WDF: Watershed Development Programme

Standard Project Report

		Name of Villages under watershed : **Bettamugilalam, Kalliyur, Mookankari, Kanigapuram, Sukkalbeedu, Pudukolla Malgavani, Polgakollai,Kavithimarapodu, K**
		Name of village under CBP : **Bettamugilalam**
		Total Population in the watershed : **2300**
		Total h/h in the watershed area : **550**
		Total popoulation FIP area : **2300**
		Total h/h in FIP area : **550**
		Average annual rainfall (mm) : **1304.49 mm**

Summary of proposed interventions towards climate proofing with Adaptation Fund

Avg Rate (Rs/ Unit)			Rate reference	Labour Cost (Rs)	Material Cost (Rs)	Total Cost (Rs)
Total	Labour	Skilled Labour & Material				
50.22	50.22	-	50.22	1,242,443	-	1,242,443
564.00	103.00	461.00	564.00	51,500	230,500	282,000
50.22	50.22	-	50.22	1,652,087	-	1,652,087
874.00	230.00	644.00	874.00	24,840	69,552	94,392
219.00	33.00	186.00	219.00	389,070	2,192,940	2,582,010
200.00	50.00	150.00	200.00	5,000	15,000	20,000
50.22	50.22	-	50.22	2,036,923	-	2,036,923
50.22	50.22	-	50.22	227,246	-	227,246
30.00	7.00	30.00	30.00	80,255	343,950	424,205
15.00	4.00	15.00	15.00	4,588	17,205	21,793
72.00	7.00	65.00	72.00	56,490	524,550	581,040
54.00	4.00	50.00	54.00	-	40,350	40,350
62.00	7.00	55.00	62.00	38,780	304,700	343,480
44.00	4.00	40.00	44.00	2,216	22,160	24,376
				5,811,438	**3,760,907**	**9,572,345**

						464,915
-	**-**	**-**	**-**	**5,811,438**	**3,760,907**	**10,037,260**
						-
701.00	111.00	590.00	701.00	113,220	601,800	715,020
6,305.00	1,094.00	5,211.00	6,305.00	3,282	15,633	18,915
7,185.00	1,250.00	5,935.00	7,185.00	3,750	17,805	21,555
8,941.00	1,563.00	7,378.00	8,941.00	3,126	14,756	17,882
8,941.00	1,563.00	7,378.00	8,941.00	6,252	29,512	35,764
9,817.00	1,719.00	8,098.00	9,817.00	3,438	16,196	19,634
				133,068	695,702	828,770
						10,645
-	**-**	**-**	**-**	**133,068**	**695,702**	**839,415**
						1,024,500
						-
						165,000
						2,379,900
						627,300
-	**-**	**-**	**-**	**5,944,506**	**4,456,609**	**15,073,375**
10,743.00	2,658.00	8,085.00	10,743.00	95,688	291,060	386,748
10,743.00				**95,688**	**291,060**	**386,748**
500	500	-	500	172,000	-	172,000
500	-	500	500	-	172,000	172,000
500	-	500	500	-	172,000	172,000
2,001	587	1,414	2,001	51,656	124,432	176,000
15,000	4,000	11,000	15,000	40,000	110,000	150,000
7,296	2,146	5,150	7,296	287,564	690,100	977,664
700	200	500	700	35,200	88,000	123,200
300	-	300	300	-	45,000	45,000
6,000	6,000	-	6,000	150,000	-	150,000
32,797				**736,420**	**1,401,532**	**2,137,864**

1,500						150,000
150,000						150,000
						300,000
			10,000			10,000
			3,000			30,000
			5,000			5,000
-	**-**	**-**	**18,000**	**-**	**-**	**45,000**
43,540	**-**	**-**	**18,000**	**832,108**	**1,692,592**	**18,048,128**
						17,942,987

i, Mandhakollai, Boopanur, Bolakollai, Karukakollai, Basavapuram, keelgavani, Kamagiri

Contribution from community (Rs)	Grant Amount from NABARD (Rs)	Grant Amount from AFB	Total Cost	Contribution from	Grant Amount from	Grant Amount from AFB
Amount In INR			Amount In US$			
434,855	807,588	-	20707	7248	13460	0
18,025	263,975	-	4700	300	4400	0
578,231	1,073,857	-	27535	9637	17898	0
8,694	85,698	-	1573	145	1428	0
1,158,721	1,423,289	-	43034	19312	23721	0
800	19,200	-	333	13	320	0
325,908	1,711,015	-	33949	5432	28517	0
36,359	190,886	-	3787	606	3181	0
12,841	411,364	-	7070	214	6856	0
734	21,059	-	363	12	351	0
9,038	572,002	-	9684	151	9533	0
-	40,350	-	673	0	673	0
6,205	337,275	-	5725	103	5621	0
355	24,021	-	406	6	400	0
2,590,765	**6,981,579**	**-**	**159539**	**43179**	**116360**	**0**

	464,915	-	7749	0	7749	0
2,590,765	**7,446,494**	**-**	**167288**	**43179**	**124108**	**0**
-	-	-	0	0	0	0
18,115	696,905	-	11917	302	11615	0
525	18,390	-	315	9	306	0
600	20,955	-	359	10	349	0
500	17,382	-	298	8	290	0
1,000	34,764	-	596	17	579	0
550	19,084	-	327	9	318	0
21,291	807,479	-	13813	355	13458	0
1,703	8,942	-	177	28	149	0
22,994	**816,421**	**-**	**13990**	**383**	**13607**	**0**
	1,024,500		17075	0	17075	0
	-		0	0	0	0
	165,000		2750	0	2750	0
	2,379,900		39665	0	39665	0
	627,300		10455	0	10455	0
2,613,760	**12,459,616**	**-**	**251223**	**43563**	**207660**	**0**
			0	0	0	0
-	-	386,748	6446	0	0	6446
-	**-**	**386,748**	**6446**	**0**	**0**	**6446**
			0	0	0	0
-	-	172,000	2867	0	0	2867
-	-	172,000	2867	0	0	2867
-	-	172,000	2867	0	0	2867
-	-	176,000	2933	0	0	2933
-	-	150,000	2500	0	0	2500
-	-	977,664	16294	0	0	16294
-	-	123,200	2053	0	0	2053
-	-	45,000	750	0	0	750
-	-	150,000	2500	0	0	2500
-	**-**	**2,137,864**	**35631**	**0**	**0**	**35631**
			0	0	0	0

		150,000	2500	0	0	2500
		150,000	2500	0	0	2500
-	**-**	**300,000**	**5000**	**0**	**0**	**5000**
			0	0	0	0
	-	10,000	167	0	0	167
	-	30,000	500	0	0	500
	-	5,000	83	0	0	83
-	**-**	**45,000**	**750**	**0**	**0**	**750**
-	**-**	**2,869,612**	300802	0	0	47827
2,613,760	**12,459,616**	**2,869,612**	**299,050**	**43,563**	**207,660**	**47,827**

NABARD WDF

Annexure IV B

Name of Watershed	**Salivaram WS**		
Name of EEs	**MYRADA**		
Name of District	**Krishnagiri**		
Name of Block	**Kelamangalam**		
Total area of water shed (ha)	**1174.93**	Ha	
Area udner FIP (ha)	**1075**	Ha	
Forest area under wastershed (ha)	**57.05**	Ha	
CBP area (ha)	**99.93**	Ha	

Summary of proposed interve

S.No	Particulars	Unit of Measurement	Length in m/ Nos./ ha)	Size/ Cross Section (sq m)	Total units (ha/ cu m/m/ No.)
A	**AREA TREATMENTS**				
1	Field Bund (0.45) RM	CUM	166600 M	1x1x0.45 M	74970
2	Field Bund stone outlet	No	1281 No	2x1x0.50 M	1281
3	Farm pond	CUM	6480 Cum	25x25x1 M	6480
4	Silt Trap Trench for FP	No	60 No	3x3x1 M	60
5	Grass seeding	Ha.	500	1x1.6 M	500
6	Contour Continuous Trench(CCT) - RM	CUM	18510 Cum	0.60x0.30 M	18510
7	Water Absorption Trench - RM	CUM	9834 Cum	1x1 M	9834
8	Agro forestry	No	52300 No	0.60x0.60x0.60 M	52300
8.a	Agro forestry Replanting	No	5230 No	0.6x0.6x0.6 M	5230
9	Agro Horticulture	No	3500 No	0.75x0.75x0.75 M	3500
9.a	AH Replanting	No	350 No	0.75x0.75x0.75 M	350
10	Vermicopost (3x2x0.6)	No	30 No	0.75x0.75x0.75 M	30
11	Kitchen Garden	No	500 No	0.75x0.75x0.75 M	500
	Sub Total - A				**173,545**
	Supervision Cost 50% of Shramadan				517,127
	Grant total (A)				**690,672**
B	**DRAINAGE LINE TREATMENTS**				

1	Stone Gully Plug	Rm	428	1x0.60 M	428
2	LRCD (5m)	No	13 No	1x1.2x0.8 M	13
3	LRCD (6m)	No	12 No	1x1.2x0.8 M	12
4	Check weir (5m)	No	4 No	1x1.2x0.9 M	4
5	Check weir (6m)	No	6 No	1x1.2x0.9 M	6
6	Sunken Pond	Cum	3750 Cum	15x15x1 M	3750
7	Percolation pond	Cum	5100 Cum	1x1x1 M	5100
	Sub total - B				
	Supervision Cost 50% of Shramadan				58,838
	Grant total (B)				**58,838**
C	**Livelihood Support for Landless and Women**				1,092,130
D	**Productivity Enhancement measures**				700,000
E	**Training & Demonstration**				220,000
F	**Project Management**				2,444,751
G	**Maintanance Fund**				733,037
	Grant total (A+B+C+D+E+F+G) NABARD				**5,939,428**
H	**Component 1**				
1	Well recharge pits	Nos	37 No	2x2x1 M	37
	Sub-Total - H				
I	**Component 2**				
1	Composting Pits.	Nos	330 No	10x3 Ft	330
2	Green Manure	Nos	330 No	1 Unit	330
3	Azolla Units	Nos	85 No	1 Unit	85
4	Bio Gas	Nos	15 No	1 Unit	15
5	Vermicompost	Nos	150 No	2 Cum/ Unit	134
6	Fodder Development	Units	169	10x3 Ft	169
7	Soil Test (2 times)	Nos	150 No	10 cent Unit	150
8	Tank Silt / FYM Application	Ha	75	5 sample mix/ No	75
	Sub-Total - I			**1000 Sqft**	
J	**Component 3**				
	Installation of Automatic weather stations	Nos	1		1
	RML subscription(3 yrs) on crop, weather and market info	Nos	100		100
	Geo Hydrological study and crop water budgeting	Nos	1		1
	Sub-Total - J				

K	**Component 4**				
1	Posters and pamphlet on climate change adaptation	Set	1		1
2	Awareness Training on climate change adaptation	Nos	6 No		6
3	Audio Visual Tools – short films	Set	1		1
	Sub-Total - K				
	TOTAL (H+I+J+K)				
	TOTAL GRAND NABARD & AFB				

: **Watershed Development Programme**

		Name of Villages under watershed : **Salivaram, Arulalam, Chinnahosur, Sivanapalli, Gonamakanapalli, Poothatikottai**			
		Name of village under CBP : **Salivaram**			
		Total Population in the watershed : **2947**			
		Total h/h in the watershed area : **671**			
		Total popoulation FIP area : **2947**			
		Total h/h in FIP area : **671**			
		Average annual rainfall (mm) : **875 mm**			

ntions towards climate proofing with Adaptation Fund

Avg Rate (Rs/ Unit)			Rate reference	Labour Cost (Rs)	Material Cost (Rs)	Total Cost (Rs)	Contribution from community (Rs)	Grant Amount from NABARD (Rs)
Total	Labour	Skilled Labour & Material						
						Amount In INR		
50.22	50.22	-	50.22	3,764,993	-	3,764,993	602,399	3,162,594
253.00	103.00	150.00	253.00	131,943	192,150	324,093	21,111	302,982
50.22	50.22	-	50.22	325,426	-	325,426	52,068	273,358
950.00	500.00	450.00	950.00	30,000	27,000	57,000	4,800	52,200
200.00	50.00	150.00	200.00	25,000	75,000	100,000	4,000	96,000
50.22	50.22	-	50.22	929,572	-	929,572	148,732	780,841
50.22	50.22	-	50.22	493,863	-	493,863	79,018	414,845
35.00	14.00	21.00	35.00	732,200	1,098,300	1,830,500	117,152	1,713,348
24.00	3.00	21.00	24.00	15,690	109,830	125,520	2,510	123,010
75.00	4.00	71.00	75.00	14,000	248,500	262,500	2,240	260,260
64.00	4.00	60.00	64.00	1,400	21,000	22,400	224	22,176
6,700.00	-	6,700.00	6,700.00	-	201,000	201,000	-	201,000
300.00	-	300.00	300.00	-	150,000	150,000	-	150,000
				6,464,088	**2,122,780**	**8,586,868**	**1,034,254**	**7,552,614**
	-					517,127		517,127
-	**-**	**-**	**-**	**6,464,088**	**2,122,780**	**9,103,995**	**1,034,254**	**8,069,741**
						-	-	-

285.00	100.00	185.00	285.00	42,800	79,180	121,980	6,848	115,132
2,532.00	1,092.00	1,440.00	2,532.00	14,196	18,720	32,916	2,271	30,645
2,864.00	1,249.00	1,615.00	2,864.00	14,988	19,380	34,368	2,398	31,970
59,775.00	20,678.00	39,097.00	59,775.00	82,712	156,388	239,100	13,234	225,866
65,997.00	22,721.00	43,276.00	65,997.00	136,326	259,656	395,982	21,812	374,170
50.22	50.22	-	50.22	188,325	-	188,325	30,132	158,193
50.22	50.22	-	50.22	256,122	-	256,122	40,980	215,142
				735,469	**533,324**	**1,268,793**	**117,675**	**1,151,118**
	-					58,838		58,838
-	**-**	**-**	**-**	**735,469**	**533,324**	**1,327,631**	**117,675**	**1,209,955**
						1,092,130		1,092,130
						700,000		700,000
						220,000		220,000
						2,444,751		2,444,751
						733,037		733,037
-	**-**	**-**	**-**	**7,199,557**	**2,656,104**	**15,621,543**	**1,151,929**	**14,469,614**
10,743.00	2,658.00	8,085.00	10,743.00	98,346	299,145	397,491	-	-
10,743.00				**98,346**	**299,145**	**397,491**	**-**	**-**
500.00	500.00	-	500.00	165,000	-	165,000	-	-
500.00	-	500.00	500.00	-	165,000	165,000	-	-
2,001.00	587.00	1,414.00	2,001.00	49,895	120,190	169,000	-	-
15,000.00	4,000.00	11,000.00	15,000.00	60,000	165,000	225,000	-	-
7,296.00	2,146.00	5,150.00	7,296.00	287,564	690,100	975,000	-	-
700.00	200.00	500.00	700.00	33,800	84,500	118,300	-	-
300.00	-	300.00	300.00	-	45,000	45,000	-	-
6,000.00	6,000.00	-	6,000.00	450,000	-	450,000	-	-
32,297.00				**1,046,259**	**1,269,790**	**2,312,300**	**-**	**-**
520,000.00			520,000.00			520,000		
1,500.00			1,500.00			150,000		
150,000.00			150,000.00			150,000		
						820,000	**-**	**-**

			10,000.00			10,000		-
			3,000.00			18,000		-
			5,000.00			5,000		-
-	**-**	**-**	**18,000.00**	**-**	**-**	**33,000**	**-**	**-**
43,040.00	**-**	**-**	**18,000.00**	**1,144,605**	**1,568,935**	**3,562,791**	**-**	**-**
						19,184,334	**1,151,929**	**14,469,614**

Grant Amount from AFB	Total Cost	Contribution from communit	Grant Amount from NABARD	Grant Amount from AFB
	Amount In US$			
-	62750	10040	52710	0
-	5402	352	5050	0
-	5424	868	4556	0
-	950	80	870	0
-	1667	67	1600	0
-	15493	2479	13014	0
-	8231	1317	6914	0
-	30508	1953	28556	0
-	2092	42	2050	0
-	4375	37	4338	0
-	373	4	370	0
-	3350	0	3350	0
-	2500	0	2500	0
-	**143114**	**17238**	**125877**	**0**
-	8619	0	8619	0
-	**151733**	**17238**	**134496**	**0**
-	0	0	0	0

-	2033	114	1919	0
-	549	38	511	0
-	573	40	533	0
-	3985	221	3764	0
-	6600	364	6236	0
	3139	502	2637	0
-	4269	683	3586	0
-	**21147**	**1961**	**19185**	**0**
-	981	0	981	0
-	**22127**	**1961**	**20166**	**0**
	18202	0	18202	0
	11667	0	11667	0
	3667	0	3667	0
	40746	0	40746	0
	12217	0	12217	0
	260359	**19199**	**241160**	**0**
	0	0	0	0
397,491	6625	0	0	6625
397,491	**6625**	**0**	**0**	**6625**
	0	0	0	0
165,000	2750	0	0	2750
165,000	2750	0	0	2750
169,000	2817	0	0	2817
225,000	3750	0	0	3750
975,000	16250	0	0	16250
118,300	1972	0	0	1972
45,000	750	0	0	750
450,000	7500	0	0	7500
2,312,300	**38538**	**0**	**0**	**38538**
	0	0	0	0
520,000	8667	0	0	8667
150,000	2500	0	0	2500
150,000	2500	0	0	2500
820,000	**13667**	**0**	**0**	**13667**

	0	0	0	0
10,000	167	0	0	167
18,000	300	0	0	300
5,000	83	0	0	83
33,000	**550**	**0**	**0**	**550**
3,562,791	59380	0	0	59380
3,562,791	**319739**	**19199**	**241160**	**59380**

Annexure IV B

Name of Watershed	**Thally Kothanur WS**
Name of EEs	**MYRADA**
Name of District	**Krishnagiri**
Name of Block	**Thally**
Total area of water shed (ha)	**1092.07**
Area udner FIP (ha)	**988**
Forest area under wastershed (ha)	**10.3**
CBP area (ha)	**104.07**

S.No	Particulars	Unit of Measurement	Length in m/ Nos./ ha)	Size/ Cross Section (sq m)	Total units (ha/ cu m/m/ No.)	Length in m/ Nos./ ha)
A	**AREA TREATMENTS**					
1	Field Bund (0.45) RM-(59620)	CUM	180542 M	1x1x0.45 M	81244	81244
2	Field Bund stone outlet	No	900 No	2x1x0.5 M	900	900
3	Farm pond	CUM	4104 No	15x15x1 M	4104	4104
4	Silt Trap Trench for FP	No	38 No	3x1x1	38	38
5	Grass seeding	Ha.	300 Ha	10000Sqm	300	300
6	Contour Continuous Trench(CCT) - RM	CUM	11766 CUM	0.60x0.30 M	11766	11766
7	Water Absorption Trench - RM	CUM	5740 CUM	1x1x1 M	5740	5740
8	Agro forestry	No	45080 No	0.60x0.60x0.60M	45080	45080
8.a	Agro forestry Replanting	No	4508 No	0.60x0.60x0.60M	4508	4508
9	Agro Horticulture	No	2820 No	0.75x0.75x0.75M	2820	2820
9.a	AH Replanting	No	282 No	0.75x0.75x0.75M	282	282
10	Vermicopost (3x2x0.6)	No	10 No	3x2x0.60 M	10	10
11	Kitchen Garden	No	500 No	1 Unit	500	500

	Sub Total - A					
	Supervision Cost 50% of Shramadan					
	Grant total (A)					
B	**DRAINAGE LINE TREATMENTS**					
1	Stone Gully Plug	Rm	566	1x0.6M	566	566
2	LRCD (5m)	No	22 No	1x1.20x0.80 M	22	22
3	LRCD (6m)	No	9 No	1x1.20x0.80 M	9	9
4	Check weir (5m)	**No**	**3 No**	1x1.20x1 M	**3**	**3**
5	Check weir (6m)	No	7 No	1x1.20x1 M	7	7
6	Sunken Pond	Cum	1530	15x10x1 M	1530	1530
	Sub total - B					
	Supervision Cost 50% of Shramadan					
	Grant total (B)					
C	**Livelihood Support for Landless and Women**					
D	**Productivity Enhancement measures**					
E	**Training & Demonstration**					
F	**Project Management**					
G	**Maintanance Fund**					
	Grant total (A+B+C+D+E+F+G) NABARD					
H	**Component 1**					
1	Well recharge pits	Nos	44 No	2x2x1 M	44	44
	Sub-Total - H					
I	**Component 2**					
1	Composting Pits.	Nos	447 No	10x3x0.6 Ft	447	447
2	Green Manure	Nos	447 No	1 Unit	447	447
3	Azolla Units	Nos	100 No	1 Unit	100	100
4	Bio Gas	Nos	20 No	2 Cum/Unit	20	20
5	Vermicompost	Nos	134 No	1 Unit	134	134
6	Fodder Development	Units	200 No	1 Unit	200	200
7	Soil Test (2 times)	Nos	150 No	5 Sample mixed	150	150
8	Tank Silt / FYM Application	Ha	100	1000 Sqft	100	100
	Sub-Total - I					
J	**Component 3**					

	RML subscription(3 yrs) on crop, weather and market info		100		100	
	Geo Hydrological study and crop water budgeting		1		1	
	Sub-Total - J					
K	**Component 4**					
1	Posters and pamphlet on climate change adaptation	Set	1		1	1
2	Awareness Training on climate change adaptation	Nos	8 No		8	8
3	Audio Visual Tools – short films	Set	1		1	1
	Sub-Total - K					
	TOTAL GRAND NABARD & AFB					

NABARD WDF: Watershed Development Programme

			Name of Villages under watershed : **Thally Kothanur, Nallachandram, Dhasarapalli, Chilipil**
			Name of village under CBP : **Thally Kothanur**
			Total Population in the watershed : **4000**
			Total h/h in the watershed area : **1022**
			Total popoulation FIP area : **3469**
			Total h/h in FIP area : **975**
			Average annual rainfall (mm) : **875 mm**

Summary of proposed interventions towards climate proofing with Adaptation Fund

Total units (ha/ cu m/m/ No.)	Avg Rate (Rs/ Unit)			Rate reference	Labour Cost (Rs)	Material Cost (Rs)
	Total	Labour	Skilled Labour & Material			
4,080,073.68	50.22	50.22	-	50.22	4,080,074	-
227,700.00	103.00	103.00	150.00	253.00	92,700	135,000
206,102.88	50.22	50.22	-	50.22	206,103	-
36,100.00	500.00	500.00	450.00	950.00	19,000	17,100
60,000.00	50.00	50.00	150.00	200.00	15,000	45,000
590,888.52	50.22	50.22	-	50.22	590,889	-
288,262.80	50.22	50.22	-	50.22	288,263	-
1,577,800.00	14.00	14.00	21.00	35.00	631,120	946,680
108,192.00	3.00	3.00	21.00	24.00	13,524	94,668
211,500.00	4.00	4.00	71.00	75.00	11,280	200,220
18,048.00	4.00	4.00	60.00	64.00	1,128	16,920
67,000.00	-	-	6,700.00	6,700.00	-	67,000
150,000.00	-	-	300.00	300.00	-	150,000

7,621,667.88						
475,926.39		-				
8,097,594.27	**-**	**-**	**-**	**-**	**-**	**-**
161,310.00	285.00	100.00	185.00	285.00	56,600	104,710
55,704.00	2,532.00	1,092.00	1,440.00	2,532.00	24,024	31,680
25,776.00	2,864.00	1,249.00	1,615.00	2,864.00	11,241	14,535
179,325.00	59,775.00	20,678.00	39,097.00	59,775.00	62,034	117,291
461,979.00	65,997.00	22,721.00	43,276.00	65,997.00	159,047	302,932
76,836.60	50.22	50.22	-	50.22	76,837	-
960,930.60						
31,186.68		-				
992,117.28	**-**	**-**	**-**	**-**	**-**	**-**
925,000.00						
500,000.00						
150,000.00						
2,105,956.00						
657,513.00						
13,428,181	**-**	**-**	**-**	**-**	**-**	**-**
	10,743.00	2,658.00	8,085.00	10,743.00	116,952	355,740
	10,743.00				**116,952**	**355,740**
	500.00	500.00	-	500.00	223,500	-
	500.00	-	500.00	500.00	-	223,500
	2,001.00	587.00	1,414.00	2,001.00	58,700	141,400
	15,000.00	4,000.00	11,000.00	15,000.00	80,000	220,000
	7,296.00	2,146.00	5,150.00	7,296.00	287,564	690,100
	700.00	200.00	500.00	700.00	40,000	100,000
	300.00	-	300.00	300.00	-	45,000
	6,000.00	6,000.00	-	6,000.00	600,000	-
	32,297.00				**1,289,764**	**1,420,000**

	1,500.00					
	150,000.00					
				10,000.00		
				3,000.00		
				5,000.00		
	-	**-**	**-**	**18,000.00**	**-**	**-**
13,428,181	**43,040**	**-**	**-**	**18,000**	**1,406,716**	**1,775,740**

limangalam, Osapuram, Nagondaplayam, Balaripalli, Thipanaagraharam

Total Cost (Rs)	Contribution from community (Rs)	Grant Amount from NABARD (Rs)	Grant Amount from AFB	Total Cost	Contribution from community	Grant Amount from NABARD	Grant Amount from AFB
Amount In INR				Amount In US$			
4,080,074	652,812	3,427,262	-	68001	10880	57121	0
227,700	14,832	212,868	-	3795	247	3548	0
206,103	32,976	173,126	-	3435	550	2885	0
36,100	3,040	33,060	-	602	51	551	0
60,000	2,400	57,600	-	1000	40	960	0
590,889	94,542	496,346	-	9848	1576	8272	0
288,263	46,122	242,141	-	4804	769	4036	0
1,577,800	100,979	1,476,821	-	26297	1683	24614	0
108,192	2,164	106,028	-	1803	36	1767	0
211,500	1,805	209,695	-	3525	30	3495	0
18,048	180	17,868	-	301	3	298	0
67,000	-	67,000	-	1117	0	1117	0
150,000	-	150,000	-	2500	0	2500	0

7,621,668	**951,853**	**6,669,815**	**-**	**127028**	**15864**	**111164**	**0**
475,926		475,926	-	7932	0	7932	0
8,097,594	**951,853**	**7,145,741**	**-**	**134960**	**15864**	**119096**	**0**
			-	0	0	0	0
161,310	9,056	152,254	-	2689	151	2538	0
55,704	3,844	51,860	-	928	64	864	0
25,776	1,799	23,977	-	430	30	400	0
179,325	9,925	169,400	-	2989	165	2823	0
461,979	25,448	436,531	-	7700	424	7276	0
76,837	12,302	64,535		1281	205	1076	0
960,931	**62,373**	**898,557**	**-**	**16016**	**1040**	**14976**	**0**
46,253		46,253	-	771	0	771	0
1,007,184	**62,373**	**944,810**	**-**	**16786**	**1040**	**15747**	**0**
925,000		925,000		15417	0	15417	0
500,000		500,000		8333	0	8333	0
150,000		150,000		2500	0	2500	0
2,105,956		2,105,956		35099	0	35099	0
657,513		657,513		10959	0	10959	0
13,443,247	**1,014,226**	**12,429,021**	**-**	**224054**	**16904**	**207150**	**0**
				0	0	0	0
472,692	-	-	472,692	7878	0	0	7878
472,692	**-**	**-**	**472,692**	**7878**	**0**	**0**	**7878**
				0	0	0	0
223,500	-	-	223,500	3725	0	0	3725
223,500	-	-	223,500	3725	0	0	3725
200,100	-	-	200,100	3335	0	0	3335
300,000	-	-	300,000	5000	0	0	5000
977,664	-	-	977,664	16294	0	0	16294
140,000	-	-	140,000	2333	0	0	2333
45,000	-	-	45,000	750	0	0	750
600,000	-	-	600,000	10000	0	0	10000
2,709,764	**-**	**-**	**2,709,764**	**45163**	**0**	**0**	**45163**
				0	0	0	0

150,000			150,000	2500	0	0	2500
150,000			150,000	2500	0	0	2500
300,000	**-**	**-**	**300,000**	**5000**	**0**	**0**	**5000**
				0	0	0	0
10,000		-	10,000	167	0	0	167
24,000		-	24,000	400	0	0	400
5,000		-	5,000	83	0	0	83
39,000.00	**-**	**-**	**39,000.00**	**650**	**0**	**0**	**650**
16,964,703	**1,014,226**	**12,429,021**	**3,521,456**	**282745**	**16904**	**207150**	**58691**

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Annexure:

Stakeholder Consultation Details

(A) Details of various consultative processes in Tamil Nadu Watershed projects are given in the table below:

The details various consultation processes and their outcome are listed below:

Sl. No	Project	Date of PRA exercise	Outcome
1	Sriramapuram Malvarpatti	26.5.14	Participatory Rural Appraisal (PRA) exercise was completed. This had helped in identification of climate changes, events, resources in the project area etc., over a period of time and discussing solutions to mitigate adverse climate conditions.
2	Ayyampalayam	8.6.14	
3	Anjukulipatti	27 and 28.5.14	
4	Vannikonendal Kurkalpatti	27.5.14	
5	Peikulam	29.5.14	
6	Chinnapoolampatti	28.5.14	
7	Chithalai	30.5.14	
8	Thalli Kothanur	30.5.14	
9	Salivaram	29.5.14	
10	Bettamugilalam	28.5.14	

The Stakeholders workshop was conducted on 25 and 26 July 2014 for discussing various aspects of climate proofing and prepared the Extra Weather Event Table and Climate Proofing Table. They also discussed the details for preparation of draft proposal.

A workshop on climate proofing in watersheds in Tamilnadu and Rajasthan was conducted on 12 September 2014 to discuss the identification of various activities in the project areas.
(List of participants and a few photographs are enclosed)

List of Participants: combined stakeholder consultation on 25th & 26th July 2014

CLIMATE PROOFING OF WATERSHED PROJECTS IN TAMILNADU

STAKEHOLDERS WORKSHOP ON 25TH & 26TH JULY -2014

S.NO	NAME	DISIGNATION	NAME OT THE NGO	NAME OF THE WATERSHED	MOBILNO / EMAIL ID	SIGNATURE
1	K. Elayaraja	Teamleader/PO	MYRADA	3 watershed	9486569596	[signature]
2	P. Ananth kumar	Manager	"	Bettamugilalam	9943395747	[signature]
3	K. Rajalakshmi	Horticulturist	"	Thally Kothanur	9003703777	K. Rajalak[signature]
4	P. Mohan Kumar	SMS	"	Salivaram	9655566309	P.K. Mohan[signature]
5	C. Muniraj	VWC, I	"	Bettamugilalam	9443948700	C. Muni[signature]
6	Srinivasa Reddy	VWC	"	Thally Kothanur	9578091098	[signature]
7	Nagaraj	VWC	"	Salivaram	9751979521	S.K. Nagaraj
8	M. Anbalagan	PM, VOICE	VOICE	Vannikuneodal	9865052855	[signature]
9	G. MUTHUVEL	VOICE ACCOUNTANT	"	"	9698909813	G. Muthuvel
10	M. Selvam	VOICE	VOICE	"	9600254270	[signature]
11	N. Krishnatsan	VWC	VOICE	"	809807036	N. Krishnatsan

12	P. Thangiah	project Incharge	ASSEFA	Chithalai, madurai	9442396013	[illegible]
13	N. Chinnakkannan	Project manager	ASSEFA	Chinnapoolampatti, madurai	9943135549	[illegible]
14	R. Balasundara Pandi	Project manager	Assefa	Peikulam, Madurai	9751832004	[illegible]
15	K. Ganapathi	water bal. 2 [illegible]	.. ..	ChinnaPoolamPatti	9751469533	K. Ganapathy.
16	K. [illegible]	Peikulam	manager.	peikulam	9943371337	K. [illegible]
17	Sivamalai	VWC-	ASSEFA	chithalai	9791643069	B. Sivamalai
18	K.A Chandra.	Vice President	CIRHEP	Mattathi	9976411919	[illegible]
19	K.D. David	Project Engineer	Sri mummaiamman	Vedasandur	8675562579	[illegible]
20	[illegible]	VWC Chairman	Sri-Malvin watershed	Vedasandur	9976010790	[illegible]
21	V. Meena Priya	Social Worker	Sri. [illegible]	CIRHEP	9597056754	V. M. P.
22	P Jeyakumar	CIRHEP project manager	Sri. Mahapan	CIRHEP	9791899966	[illegible]
23	R. GoPinath	Agronomist	CIRHEP	SriRangapuram Maruthapatti	9952624295	[illegible]
24	A. Prema	Account of Sakthi	Sakthi	Ayyapalayam	8526750228	[illegible]
25	S. P. Jothi	President Sakthi trust	Sakthitrust	Ayyampalayam	9865281618	[illegible]

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26	Name	Designation	Name of the NGO	Name of the watershed	Mobile NO	Signature
27	Selvaraj	Computer operator	Sakthi	Ayyampalayam	8280683113	[illegible]
28	Balasupramani	Engineer	Sakthi.	Ayyampalayam.	9787790242 8807443945	[illegible]
29	C. Ramakrishnan	Baildent	Sakthi.	Ayyampalayam	99658 81591	[illegible]
30	C. Ravi Sankar	Space Engineering	Space	Sanarpatty	9842163280	[illegible]
31	Vanarajan.	VWC	Space	"	7639990903	C. Vanarajan
32	Rajasudhiran	VWC	Space	"	9647750969	[illegible]
33	V. John Joseph xavier	VWC	Space	"	9688106284	V. John joseph xavier
34	M. B. THIRUVENI	Project Manager	SPACE	"	8903549122 9543009220	[illegible]
35	A. Arokia Iswarey	social worker	SPACE	"	7810809886	A. Arokia Iswarey.
36	G. Vinodhini	SRF	TNAU	All watersheds Coimbatore	9566940290	[illegible]
37	K. MADHAVI	SRF	TNAU	"	9597770836	[illegible]
38	D. Vishnu Priya	JRF	TNAU	"	9597710157	D. Vishnu
39	Dr. V. Geethalakshmi	Prof	TNAU	"	9994433479	[illegible]

ADAPTATION FUND

40	M. LORDSAVARIRAJ	Consultant Agronomy	PMU Madurai	–	9345089980	[illegible] 25/7/14
41	R. BASKAR	AM	TN RO Chennai		9940110628	R. Baskar
42	R. KANNAN	Engineering Consultant	PMU-Madurai	–	9789300049	R.Kannan
43	[illegible]	DGM, NABARD	PMU-Madurai	–	9940149608	[illegible]
44	A. [illegible]	Climate Change [illegible]		TNAU	9994666643	[illegible]
45	L. [illegible]	NABARD	[illegible]		9443795024	[illegible]
46	U. Selvarani		Sri Sakthi	Ayyampalayam	8883112794	U.Selvarani
47	C. Raja	VWC	Space wood	Anjukulipatty	7667222926	C.Raja
48	S. NATARAJAN	GM	NABARD	Chennai	9360766660	[illegible]
49	P. M. Mohan	Treasurer	CIRHEP		9443905508	[illegible]
50	M. Devendran	Accountant	CIRHEP		9354900914	Devendran
51	P. Rajkumar	Project Manager	CIRHEP		9150449614	P. Ra[illegible]
52						
53						

Centre for Improved Rural Health and Environmental Protection
P. Ra[illegible]
Co-ordinator

Centre for Improved Rural Health and Environmental Protection
Devendran. M
Accountant

Centre for Improved Rural Health and Environmental Protection
[illegible]
Treasurer

ADAPTATION FUND

Stakeholder Consultation Meeting 12 September 2014 (participants list)

Workshop on climate proofing in watersheds in Tamil Nadu and Rajasthan

Date : 12-Sep-14 Venue : Madurai

Sl. No.	Name of the participant	Organisation	Signature
1	S. RAMESH	SPACE	
2.	V. Xavier	SPACE	V. Xavier
3	M. Anbalagan	VOICE	
4	C. DINESH KUMAR	VOICE	C. Dinesh Kumar
5.	Selvam. M	VOICE	
6.	P. THANGIAH	ASSEFA.	
7	P. Bala sundara Pandi	Asseta	P. Bala sundara Pandi
8	T. Deepak Raja	ASSEFA	T
9.	P. Rajkumar	CIRHEP	P. Rajkumar
10	K.A. Chandra	CIRHEP	
11	P. M. Mohan	CIRHEP	
12.	K. Balasubramanian	SSSEEWT	
13.	M. SELVA RAJ	SSSEEWT	
14.	S. P. Joshi	Sri Sakthi Trust (SSSEEWT)	
15	ANANTHKUMAR. P	MYRADA – Hosur	
16.	Elayaraja. k.	" "	
17	Sachin Kamble	NABARD HO	
18	N. Chandrakaran	ASSEFA	
19	R. KANNAN	PMU, Madurai	
20	M. LORD VAHARIRAJ	PMU Madu.	
21	L. Sanjiv,	AGM (DD) Dindigul	
22	SUKANYA SAHOO	PMU, Raj (Udr)	
23.	Rajesh Meena	AM, NABARD, Raj	
24	K. BHUVANESWARI	TNAU	

ADAPTATION FUND

Workshop on climate proofing in watersheds in Tamil Nadu and Rajasthan

Date : 12-Sep-14 Venue : Madurai

Sl. No.	Name of the participant	Organisation	Signature
25	D. VISNUPRIYA	TNAU	D. Visnu
26	V. GEETHALAKSHMI	TNAU	V. Geetha
27	V. MASHAR	NABARD, HO	
28	P. Veera Shankar	NABARD, TN-RO	P. Veera Shankar
29	N. NAGARAJAN	NABARD, PMU Madurai	
30	R. Sankara Narayanan	AGM (DD), NABARD Madurai	

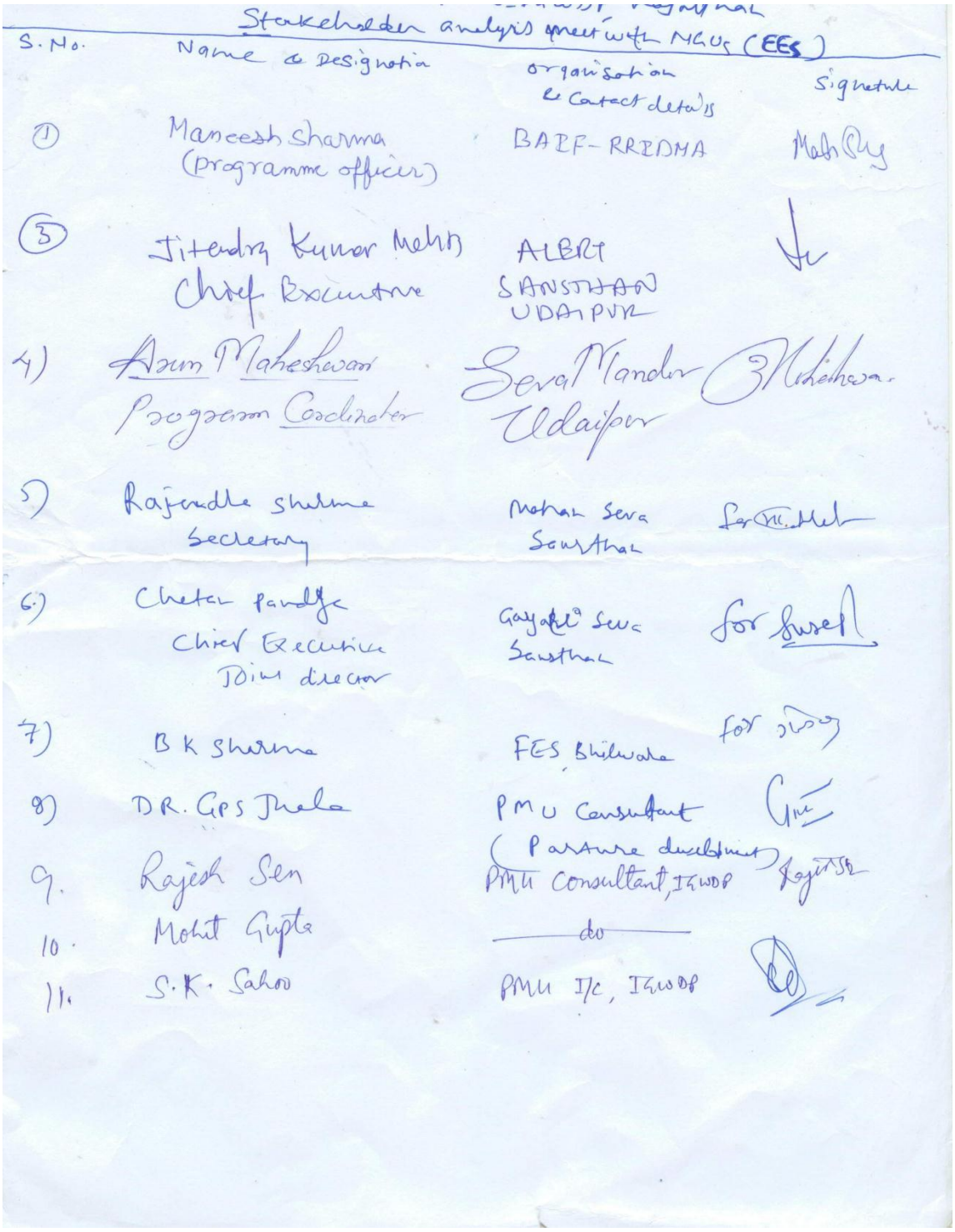
B) Details on stakeholder consultation in Rajasthan Watershed Projects:

The Consultative process/ Exercise with different stakeholders (List of participants attached) included:

a. Stakeholder analysis meet with NGOs (EEs) – 12 May 2014;
b. Strategy meet with PMU, RO and lead NGO -13 May 2104;
c. 1-day strategy meet with selected NGOs (EEs) – 22 May 2014;
d. Orientation workshop for field team (specific focus on PRA, FGD)- 24 May 2014;
e. Field exercise PRA / FGD with community during June/ July 2014;
f. Workshop to finalise the (AFB) project activities – with participation of VWCs, EEs, Lead NGO, PMU and IE including climate experts – 19-20 July 2014;
g. Field visit by climate expert with lead NGO and selected EEs – 21 July 2014.

List of participants is given below.

List of Participants for meeting with EEs in Rajasthan on 12.05.2014



Stakeholder analysis meet with NGOs (EEs)

S.No.	Name & Designation	Organisation & Contact details	Signature
1	Manoesh Sharma (Programme officer)	BAIF-RREDMA	
3	Jitendra Kumar Mehta Chief Executive	ALERT SANSTHAN UDAIPUR	
4)	Arun Maheshwari Program Coordinator	Seva Mandir Udaipur	
5)	Rajendra Sharma Secretary	Mahan Seva Sansthan	
6)	Chetan Pandya Chief Executive Joint director	Gayatri Seva Sansthan	
7)	B K Sharma	FES, Bhilwara	
8)	DR. GPS Jhala	PMU Consultant	
9.	Rajesh Sen	(Pasture development) PMU Consultant, IGNDP	
10.	Mohit Gupta	——do——	
11.	S.K. Sahoo	PMU I/C, IGNDP	

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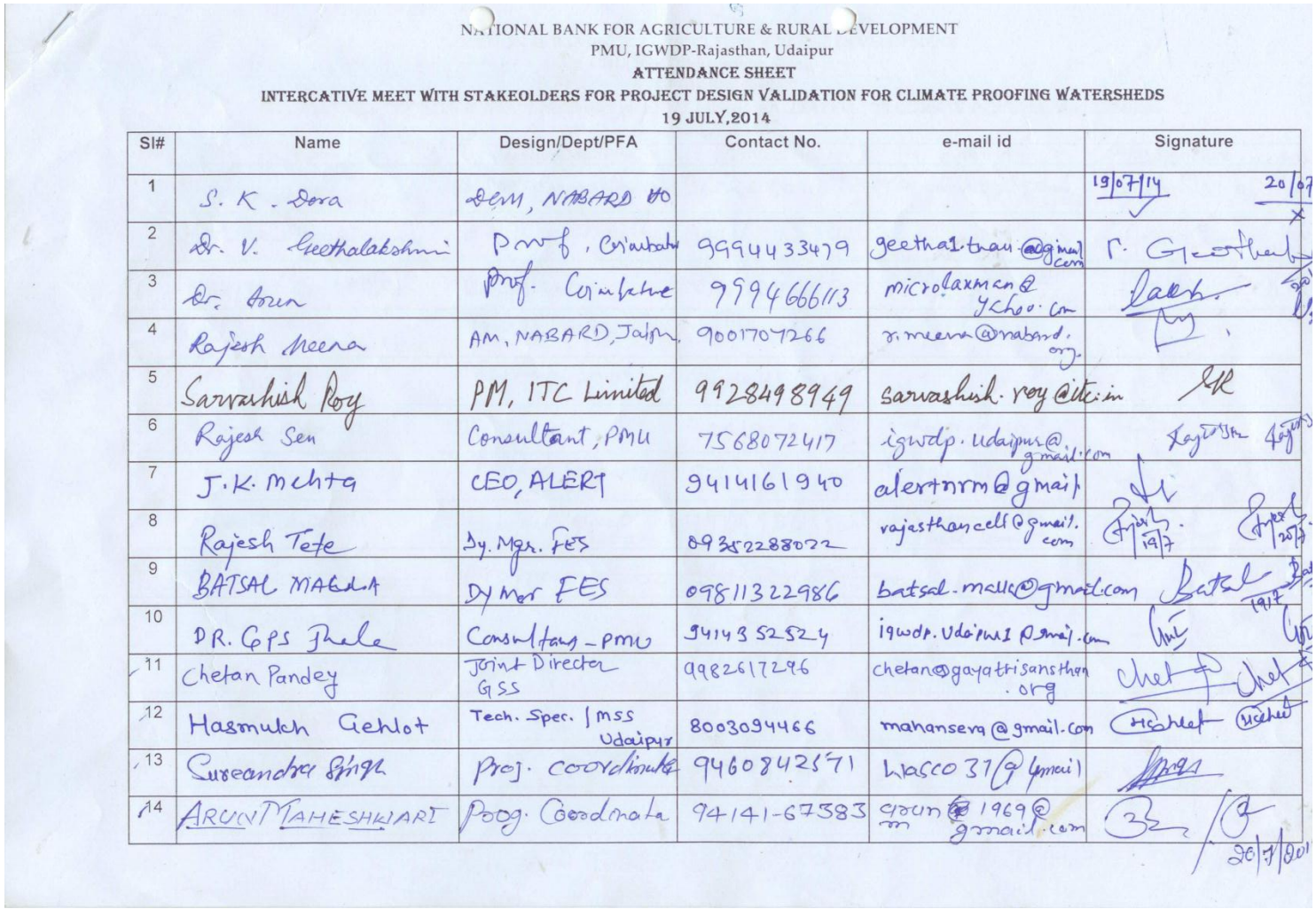
List of Participants for EE meeting: Design Validation: 19.07.2014



NATIONAL BANK FOR AGRICULTURE & RURAL DEVELOPMENT
PMU, IGWDP-Rajasthan, Udaipur
ATTENDANCE SHEET
INTERCATIVE MEET WITH STAKEOLDERS FOR PROJECT DESIGN VALIDATION FOR CLIMATE PROOFING WATERSHEDS
19 JULY,2014

Sl#	Name	Design/Dept/PFA	Contact No.	e-mail id	Signature
1	S. K. Dora	DGM, NABARD HO			19/07/14 20/07
2	Dr. V. Geethalakshmi	Prof., Coimbatore	9994433479	geetha1.tnau@gmail.com	
3	Dr. Arun	Prof. Coimbatore	9994666113	microlaxman@yahoo.com	
4	Rajesh Meena	AM, NABARD, Jaipur	9001704266	r.meena@nabard.org	
5	Sarvashish Roy	PM, ITC Limited	9928498949	sarvashish.roy@itc.in	
6	Rajesh Sen	Consultant, PMU	7568072417	igwdp.udaipur@gmail.com	
7	J.K. Mehta	CEO, ALERT	9414161940	alertnrm@gmail	
8	Rajesh Tete	Dy. Mgr. FES	09352288022	rajasthancell@gmail.com	19/7
9	BATSAL MALLA	DY Mgr FES	09811322986	batsal.malla@gmail.com	19/7
10	DR. GPS Jhala	Consultant - PMU	9414352524	igwdp.udaipur@gmail.com	
11	Chetan Pandey	Joint Director GSS	9982617296	chetan@gayatrisansthan.org	
12	Hasmukh Gehlot	Tech. Spec. MSS Udaipur	8003094466	mahansera@gmail.com	
13	Sureandra Singh	Proj. Coordinator	9460842571	hasco37@gmail	
14	ARUN MAHESHWARI	Prog. Coordinator	94141-67583	arun1969@gmail.com	20/7/2014

NATIONAL BANK FOR AGRICULTURE & RURAL DEVELOPMENT

PMU, IGWDP-Rajasthan, Udaipur

ATTENDANCE SHEET

INTERCATIVE MEET WITH STAKEOLDERS FOR PROJECT DESIGN VALIDATION FOR CLIMATE PROOFING WATERSHEDS

19 JULY,2014

Sl#	Name	Design/Dept/PFA	Contact No.	e-mail id	Signature
15	Maneesh Sharma	Programme officer	9602230887	maneesh453@gmail.com	
16	Harnath Singh	D.P.O. FES JHL	9001699877		
17	MOHIT GUPTA	Consultant	8107311666	igwdp.udaipur1@gmail.com	
18	S.K. Sahoo	PMU I/c & AGM	94-140-29140	do	
19	Dr Anil Kothari	Resource person	94-14354463		
20	P.N. AGRAWAL	PC IIRD	9001998166	sunehrakaliird@gmail.com	
21	S.C. Jat	Project Engineer GSS	8003129562	nrm@gaytrisansthan.org	
22	Yamini Awasthi	Trainee Project Co-ordinator	9929904502	yaminibanasthalims@gmail.com	
23	~~Maneesh Sharma~~	~~Programme officer~~	~~9602230887~~	manc.	
24	J.K. Mehta				
25	ASHOK SINGH	SEVA MANDIR Civil engineer	8769676234	chouhanengineer sne gmail.com	
26	~~MOHIT GUPTA~~				
27	Sarvashish Roy	PM, ITC Jaipur	9928498949	sarvashish-roy@itc.in	
28					

participants → Total 23 Nbd - 6 IA-PFA-14, Cons/RP - 3

DPR Finalization Meeting: 20 July 2014

NATIONAL BANK FOR AGRICULTURE & RURAL DEVELOPMENT
PMU, IGWDP-Rajasthan, Udaipur
ATTENDANCE SHEET
MEETING FOR FINALIZATION OF DPR FOR CLIMATE PROOFING PROJECTS - 20 JULY,2014

Sl#	Name	Design/Dept/PFA	Contact No.	e-mail id	Signature
1	Dr. Geetalaxmi	Climate Expert & Prof. TAU	9994433479		
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5	Rajesh Sen	Consultant PMU		igwdp.udaipur@gmail	[illegible]
6	S K Sahoo	I/c PMU, AGM		—"—	[illegible]
7	GPS Jhala	Consultant			[illegible]
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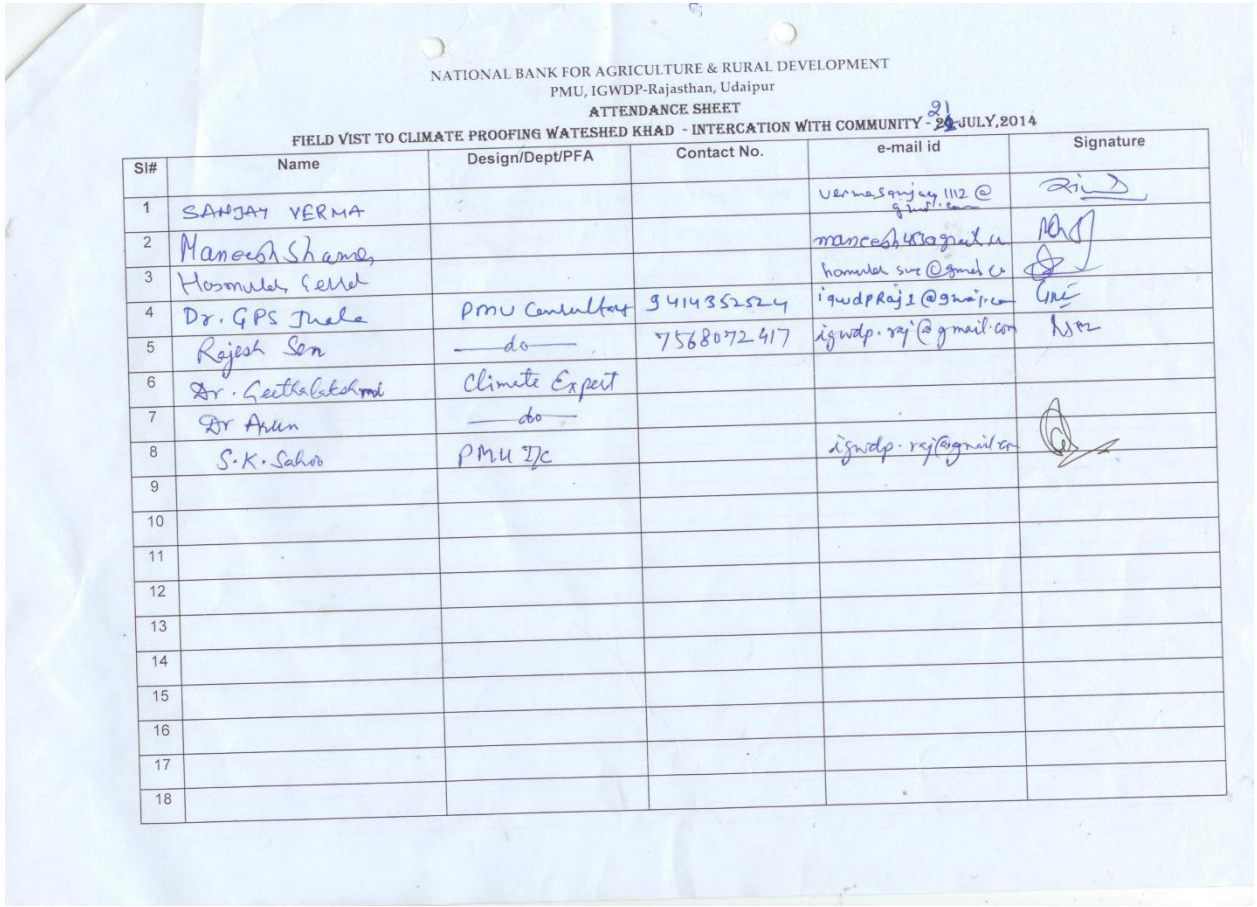
Field Visit to Climate Proofing of Watersheds: Community Interaction: 21 July 2014



NATIONAL BANK FOR AGRICULTURE & RURAL DEVELOPMENT
PMU, IGWDP-Rajasthan, Udaipur
ATTENDANCE SHEET
FIELD VIST TO CLIMATE PROOFING WATESHED KHAD - INTERCATION WITH COMMUNITY - 21 JULY,2014

Sl#	Name	Design/Dept/PFA	Contact No.	e-mail id	Signature
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6	Dr. Geethalakshmi	Climate Expert			
7	Dr Arun	—do—			
8	S.K. Sahoo	PMU I/c		igwdp.raj@gmail.com	
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रवि एस. प्रसाद
आई.ए.एस
संयुक्त सचिव
Ravi S. Prasad
I.A.S.
Joint Secretary

सत्यमेव जयते

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 : 23rd February, 2015**

To,
The Adaptation Fund Board
C/o Adaptation Fund Board Secretariat
E:mail: Secretariat@Adaptation-Fund.org
Fax:2025223240/5

Subject : Endorsement for Proposal on Climate proofing of watershed projects in Tamil Nadu and Rajasthan, India.

In my capacity as designated authority for the Adaptation Fund in India, I wish to endorse above project/ programme proposal 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 to the Adaptation Fund.

If approved, the proposal will be coordinated and implemented by **National Bank for Agriculture and Rural Development** and executed by **the Non-Governmental Organizations (NGOs) as listed below.**

	Executive Entities – Rajasthan		**Executing Entities- Tamil Nadu**
1	Foundation for Ecological Security (FES)	1.	Mysore Resettlement Development Agency (MYRADA)
2	ITC Rural Development Trust (ITC-RDT)	2.	Association of Serva Seva Farms (ASSEFA)
3	Rajasthan Rural Institute of Development Management (RRIDMA)	3.	Society for People's Action for Change and Education (SPACE)
4	Alert Sansthan	4	Centre for Improved Rural Health and Environmental Protection (CIRHEP)
5	Seva Mandir	5	Sri Sakthi Social Economical and Educational Welfare Trust (SWEET)
6	Mahan Seva Sansthan	6	Voluntary Organization for Integration of Community and Environment (VOICE)
7	Gayatri Seva Sansthan		
8	Watershed Consultants Organisation (WASCO)		

Yours sincerely,

(Ravi S. Prasad)