

Project Inception Report

Climate Proofing of Watershed Development Projects in the States of Rajasthan and Tamil Nadu



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List of abbreviations

NABARD: National Bank for Agriculture and Rural Development

DGM: Deputy General Manager

AGM: Assistant General Manager

PMU: Project Management Unit

IWMP: Integrated Water Shed Management Programme

PFA: Project Facilitation Agency

TNAU: Tamil Nadu Agriculture University

ASSEFA: Association for Serva Seva Farms

SWEET: Social Welfare Educational Economic Trust

CIRHEP: Center for improved Rural Health and Environmental Protection

VWC: Village Watershed Committee

AFB: Adaptation Fund Board

NRAA: National Rainfed Area Authority

MGNREGA: Mahatma Gandhi National Rural Employment Guarantee Act

NIE: National Implementation Entity

EE: Executing Entity

FES: Foundation for Ecological Security

1. Introduction

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. 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. As per Planning Commission classification, the State of Rajasthan falls under Trans-Gangetic Plains and Tamil Nadu in West Coast Plains and Ghat.

Risk of occurrence of drought / consecutive drought is common in all the 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. 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.

The risks and impact of climate variability are listed below:

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		
Flood / Flash Flood	Soil erosion	Occasional	Low
	Crop damage / high mortality		
	Low productivity		

In India, watershed programmes in rainfed and drought prone areas have been emphasized. Tamil Nadu and Rajasthan States 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 unfavorable 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.

2. Project objective

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 Rajasthan and Tamil Nadu”. The program will deliver this objective and will have these four outcomes:

- i. 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.
- ii. Promoting climate resilient farming system and diversification of livelihoods engaging community and their associations in the concrete adaptation pathway.
- iii. Reducing climate change vulnerability and process of marginalization with integration of risk mitigation products, like crop, weather and market advisory; and information system.
- iv. Creation of knowledge management system on climate change adaptation and sharing the learning to wider audience for replication and technology cascading.

3. Launch meeting objective

To roll out the Climate Change Adaptation Project implementation, the project teams convened Project Launch Meetings on 22 August 2016 and 01 September 2016 for project areas in Rajasthan and Tamil Nadu respectively. These launch meetings were conducted with the objective of introducing the project components and management team to the various important stakeholders and seek their support and advice. Specific objectives of the launch meetings were:

1. Introduce the project team, roles and responsibilities
2. Orient key stakeholders on the objectives, activities and results framework
3. Describe roles and responsibilities of each institution
4. Provide an overview of reporting, monitoring and evaluation requirements
5. Share the project components, budgets and take inputs from the participants.

3.1 Meeting Details

Project State	Day and Date	Venue	Number of Participants
Tamil Nadu	01 September 2016	Hotel P V K Grand, 80, Thadicombu Rd, Ashok Nagar, Dindigul, Tamil Nadu 624001	35
Rajasthan	22 August 2016	Vidya Bhawan Polytechnic College, Badgaon Road, Udaipur, Rajasthan 313011	33

4. Proceedings of the Inception workshops

4.1. Proceedings of the meetings at Tamil Nadu held on 01 September 2016

During the inaugural address, Shri Jinnah, Chief General Manager, NABARD informed that this is the first project conceived by NABARD for posing to AFB and was formulated internally with assistance from TNAU. Based on the strengths of the project, NABARD could obtain approval from AFB and now the Executing Entities comprising of various NGOs should ensure that the project is implemented in right earnest in a time bound manner befitting international requirement. He also said that there should be clarity among NGOs about the baseline, adaptation interventions and impact indicators which will facilitate in proper monitoring and documentation of the project results. He further said that the project components include technological interventions, risk mitigation and knowledge management. He requested all the NGOs to get all their doubts clarified in the workshop so that project measures could be implemented without much problem.

Shri. V. Mashar, Deputy General Manager, NABARD during his remarks indicated that the international recognition, visibility and importance these projects have given to NABARD as also to the project partners are immense. He emphasized that as the project is an international project, it should be implemented at par with international standards as per AFB requirements.

Presentations -

Thereafter Shri Mashar made presentations explaining the implementation processes, terms and conditions for implementation, reporting and monitoring. In the initial remarks Mr. Mashar told that the project is actually designed for 3 years from June 2015 and should be completed by June 2018. Though the inception of the project has been

delayed, the project should be completed by June 2018 as per terms of agreement and all EEs should gear up to complete the project components by that time.

Presentation 1 – Importance of Climate Proofing etc.

Shri Mashar explained in detail the basis for selection and implementation of the 10 Climate Proofing watersheds in Tamil Nadu. He said that the entire process of climate proofing of the watersheds was done in 4 stages viz., Screening, detailed climate analysis, prioritization of needs for action and integration of these activities in project design. At the screening stage, changes in the climate parameters like temperature, rainfall, water availability have been identified followed by their impact on various sectors like agriculture etc. Thereafter detailed climate analysis was made covering all the aspects and their impact on the community with special reference to vulnerable community. Based on this, the direct and indirect impact of the changes in climate stimuli and adaption options have been arrived at and they have been prioritized. Depending on this, the Climate Resilient Interventions for the watersheds have been decided. The major components under the project implementation include –

- Complementary Soil and Water Conservation Component
- Climate Resilient Livelihoods Systems
- Risk Mitigation
- Knowledge Management
- Project Management

Shri Mashar explained the project objectives and the expected outcomes as under:

Sl. No.	Project Objectives	Project Outcome
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.	Improved soil and water regime for better crop productivity and resultant increase of income of farmers.
2	Promoting climate resilient farming system and diversification of livelihoods engaging community and their	Increased adaptation to climate change through climate resilient farming system approach and diversification of livelihoods

	associations in the concrete adaptation pathway	
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.	Integration of risk mitigation products like weather advisory/insurance and other financial products for the farmers
4	Creation of knowledge management system on climate change adaptation and sharing the learning to wider audience for replication and technology cascading	Creation of knowledge management system for climate change adaptation in rainfed areas

He also explained the results framework analysis which will be used for monitoring –

Outcome/Output	Indicator	Target
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 productivity enhanced	Livelihood vulnerability of percentage of farmers reduced through increased water availability	At least 60% farmers living in the project villages directly benefited from reduced vulnerability to climate change related impacts
Output 1.1: Soil health improved through summer / deep ploughing,	Area covered under summer ploughing / deep tillage	summer ploughing – 1607 ha; Deep ploughing – 966 ha

Output 1.2: Increased water availability through farm pond, catch pit, well recharge pit and other water harvesting structures	Number of catch pit, well recharge pit constructed	800 Nos. of catch pit & well recharge pits constructed Recharge Pit on upslope side 6300 cum and open recharge pit in drainage line – 2880 cum.
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	At least 50% farmers adopt climate resilient farming system
Output 2.1: Increased availability of fodder/fuel through afforestation & pasture land development	Picher irrigation Fodder Development Korangad Development Nursery for forest species Azolla Development -Agro forestry in channel	Pitcher irrigation – 1000nos Fodder development /chaff cutter 1007 nos Plantation in 2.8 ha area 1 nursery for forest plants -334 units of Azolla -15000 castor seeding unit
Output 2.2: Improved resilience through adoption of climate resilient	Kitchen garden Well recharge Micro irrigation	-617 kitchen garden units -560 well recharge pits -52 units of set up under micro-irrigation

farming/livelihood systems	Seed bank Silage making demo Backyard Poultry Vermicomposting Area covered under Integrated Farming Systems/organic farming Tank silt replication Demo plot on minor millet Herbal garden Cattle tank/ travis	1 seed bank 2 nos of Silage making demo 68 units of of backyard poultry 1693 no of vermicompost and organic farming unit 50 units of Integrated Farming Systems/ 897 ha covered under tank silt application 300 soil test kits 191 demo plots 5 herbal gardens 17 cattle tank
Output 2.3: Better energy management through adoption of energy efficient systems	Biogas Solar Pumps	73 biogas units 1 Solar pumps
Component 3: Integration of risk mitigation products like crop, weather and market advisory 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	Atleast 50% of farmers in the watershed area obtain crop-weather advisories and crop-water budgeting inputs
Output 3.1: Installation of Automatic Weather Stations (AWS) and	Number of AWS installed Number of farmers covered with crop-weather advisories	5 no. of AWS installed 1000 nos. of farmers covered with crop-weather advisories

generation of agro-advisories		
Output 3.2: Geo-hydrological study and crop-water budgeting	Number of geo-hydrological studies undertaken Number of crop-water budgeting plan prepared	Geo-hydrological study and crop water budgeting undertaken in all the 10 watersheds
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/sensitisation programme conducted	Reading kit/manual on climate proofing are available for wider dissemination Awareness camps/sensitisation programmes conducted for creating better awareness among stakeholders
Output 4.1: Resource materials prepared for dissemination among various stakeholders	Number of reading kit/manual on climate proofing prepared Posters and pamphlets Number of audio-visual (short films) produced	10 no. of reading kit/manual on climate proofing prepared 10 nos of kits 9 nos. of audio-visual (short films) produced
Output 4.2: Community and other stakeholders are sensitised about the programme	Number of sensitisation/awareness camps/capacity building programmes Exposure visits Training on NRM/Climate change IEC activities	39 nos. of sensitisation/awareness camps/capacity building programmes 15 exposure visits 62 training programmes 8 IEC programmes 9 camps 10 programmes

	Veternary camp/silage making/para extension workers Skill training	10 boards
	Informations board	1 Village knowledge centre
	Village knowledge centre	

Presentation 2 – Implementation, Monitoring and Evaluation

i. 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.

ii. Role of Executing Entities

Executing Entities shall ensure that the works are executed in accordance with the sanctioned project document and other conditions stipulated at the time of sanction and ensure the community participation. 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.

The VWC shall review the progress of work at least once every month in a formal meeting convened for that purpose. The VWC and the EE shall be jointly responsible for maintenance of all records relating to the watershed development project. 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. The EEs will also be responsible for submission of the following reports to NABARD (NIE) -

- Quarterly and Half yearly reports
- Annual progress Report
- Annual Audit reports

iii. Initiatives taken by PFAs to familiarize the community on the project –

The PFAs have explained to the community the objectives of the Climate Proofing Project being implemented, Result Framework, Expected Outcomes, Effects of Climate Change

on agriculture and allied activities, Climate proofing activities and implementation process.

- i. ASSEFA (PFA) conducted meetings in Chinnapoolampatti Watershed on 25.8.16, 11.9.16 and 17.9.16 in 3 villages.
- ii. Sakthi Trust (SWEET) has conducted meetings in Ayyampalayam Watershed on 28.2.2016 and 3.9.16.
- iii. CIRHEP (PFA) has conducted meeting in Srirampuram Malvarpatti watershed on 15.2.2016 (Resolution enclosed)

4.2 Pre Inception Workshop Meetings at Tamil Nadu–

1. Stakeholders Workshop on 19 May 2014 and 25, 26 July 2014 –

A Stakeholders workshop was conducted on 19 May 2014 wherein the NGOs were explained the project details and were told to complete the PRA exercise with community participation. Thereafter another Stake Holders Workshop was held on 25 and 26 July 2014 wherein all the Executing Entities were explained about the project objectives and were guided in preparation of Climate Matrix etc., based on the PRA exercise completed by them.



2. Workshop on 12 September 2014 –

A field visit was undertaken by the NABARD Head Office team to 2 watersheds viz., Sriramapuram Malvarpatti and Anjukulipatti in Dindigul District to interact with the watershed community members regarding the climate proofing activities and workshop was held on 12 September 2014 for the Executing Entities to discuss the project activities in detail. Dr Geethalakshmi, Climate Expert from TNAU also participated.



3. **Various meetings organized by the NGOs –**

Several NGOs have conducted meetings with the community people at every stage to explain and make them understand the objectives of the project to ensure their participation.



5. Annexures

5.1. Annexures to the Inception workshop at Tamil Nadu–

5.1.1 – Agenda

5.1.2 – Photographs

5.1.3 – Resolutions passed by various VWCs

5.1.4 – List of Participants in the Inception Workshop

5.1.5- Presentations made by NABARD

5.1.1 AGENDA

Climate Proofing of Watershed Projects in Tamil Nadu

INCEPTION WORKSHOP

Place: DINDIGUL

Date - 01 September 2016

10.00 AM	Welcome address by Shri W.Nagarajan, DGM, Project Monitoring unit, NABARD, Madurai
10.10 AM	Key Note address by Shri S N A Jinnah, Chief General Manager, NABARD
10.30 AM	Brief presentation on the scheme by Shri V Mashar, DGM, NABARD
10.45 AM	Inauguration of the workshop / Launching of Climate Proofing Project by S N A Jinnah, Chief General Manager, NABARD
11.15 – 11.30 Tea Break	
11.30 AM to 1.30 PM	Detailed presentation on AFB Climate Proofing Projects – Expectations from the Executing Entities by Shri V Mashar, DGM, NABARD
1.30 PM TO 2.30 PM – Lunch	
2.30 to 4.00 PM	Detailed presentation on AFB Climate Proofing Projects – Contd...
4.00.PM to 5.00 PM	Interaction with stakeholders
5.00 PM	Vote of thanks

5.1.2 Photographs of the inception workshop



Annexure 5.1.4 – List of Participants in the Inception Workshop

AFB Climate Proofing Projects – Inception Workshop
 Hotel P V K Grand, Thadicombu Road, Dindigul – 01 September 2016

List of Participants

Sl. No.	Name S/Shri/Smt.	Designation	Organisation	Mobile No.	Signature
1.	S Nagoor Ali Jinnah	CSM NABARD	NABARD		
2.	M. Thangaj Saamy	Joint Director Agriculture Govt. of Tamil Nadu	Govt. of Tamil Nadu		
3.	V. Mashar	DGM, RO	NABARD	976986339	
4.	W Nagarajan	DGM, PMU, Madurai	NABARD	9760149608	
5.	DR. K Mahesh	AGM (DD), Madurai	NABARD	9486480946	KS. Mahesh
6.	Ramalingam	AGM (DD), Tirunelveli	NABARD	9443380625	
7.	L. Sanjivi	AGM (DD), Dindigul	NABARD	9443380613	
8.	Nazreen	AGM (DD), Krishnagiri	NABARD		
9.	A M G Smilin	AGM, RO	NABARD		
10.	Jayaraj	Deputy Director	TANDEVA		

Sl. No.	Name S/Shri/Smt.	Designation	Organisation	Mobile No.	Signature
11.	K.A. Chandra	Secretary	CIRHEP	9976411919	
12.	A. Saha Hanef.	Project Co-ordinator	"	8925157960	A.S.H.
13.	P. Jayakumar	Project Manager	CIRHEP	9976918986	
14.	P. Rajkumar	Project Manager	"	9150449614	P. Rajkumar
15.	S. P. JONJ	President	Sri saloni Truet	9865281618	
16.	A. Prema	Accerker	Sri Sathya Truet	8526750228	A.P.
17.	S. Rajendran	Proj. Manager	VOICE	7806877347	
18.	M. Kalicappan	Agonomist/ Field coordinator	VOICE	8675619657	M. Kalicappan
19.	S. Manivannan	Field Coordinator MYRADA, HOSUR	MYRADA HOSUR	8903902838	
20.	P. Mohan Kumar	Project Engineer	MYRADA	9655566309	
21.	T. Rajesh Kumar	Accounts officer	MYRADA	9952348063	

Sl. No.	Name S/Shri/Smt.	Designation	Organisation	Mobile No.	Signature
22	Anant Kumar P	Sms Engineer	MYKADA-	9843395747	Anant P.
23	S.V. BAUVANESHA	Project Manager	Sri Sakthi Trust	9952115525	S.V. Bauvan
24	V. RAJA	Project Engineer	Sri Saithe Trust	9659504218	V. Raja
25	J. JUSTIN PIOUS	Secretary	CHESS	9566519874	J. Justin Pious
26	N. CHINNAKAMAN	Project manager	ASSEFA	9787964754	N. Chinna
27	T. Deepak Raju	Astronomist	ASSEFA	9524666317	T. Deepak
28	P. Bala Sunda Pandi	Project manager	ASSEFA	9751832004	P. Bala Sunda
29	R. KANNAN	Engineering Consultant PMU, Madurai		9789300049	R. Kannan
30	C. Raja	Program manager	SPACE	7667222926	C. Raja
31	S. RAMESH	CHAIRPERSON	SPACE	8940229722	S. Ramesh
32	V. John Joseph Xavier	Program CO-ordinator	SPACE	9688106884	V. John

Sl. No.	Name S/Shri/Smt.	Designation	Organisation	Mobile No.	Signature
33	R. Seenivasan	Senior Scientist	M.S.R.F. Kannivadi	9943880140	
34	N. Nandhakumar	Chief Executive Officer	KULUMBI MILLE PROCESS COMPANY	97916714774	N. Nandu
35	Nelson John Sethi	Lead Bank Manager	Canara Bank		
36					
37					
38					
39					
40					

Annexure 5.1.5- Presentations made by NABARD

- i. Presentation on Climate Proofing on Watersheds



Climate Proofing of Watersheds

V.Mashar
Deputy General Manager

**National Bank for Agriculture and Rural Development
(NABARD)
INDIA
www.nabard.org**

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Why climate proofing?



- Are investments threatened by Climate Change/Variability?
- Planning / projects:
 - Goals achievable considering changing climate?
 - Need for adjustments considering predicted climate effects?
- How to integrate adaptation to climate change into development processes at different levels?
 - National, provincial, local, sectoral

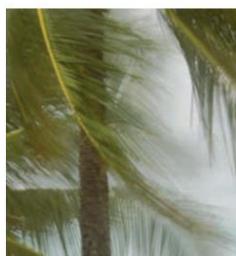
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Definition of adaptation to climate change



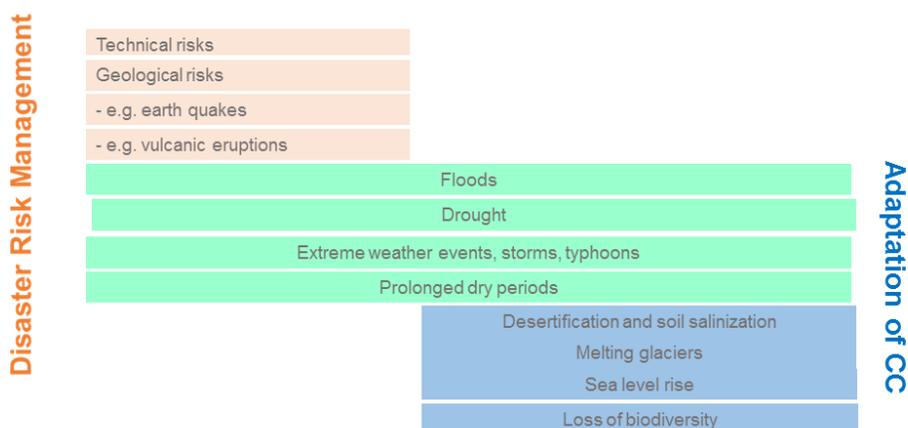
- Adjustments in human and natural systems, in response to actual or expected climate stimuli or their effects, that moderate harm or exploit beneficial opportunities (IPCC 2001).



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Focus of DRM and Adaptation to CC



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Approach to Integrate Adaptation



“Entry points”

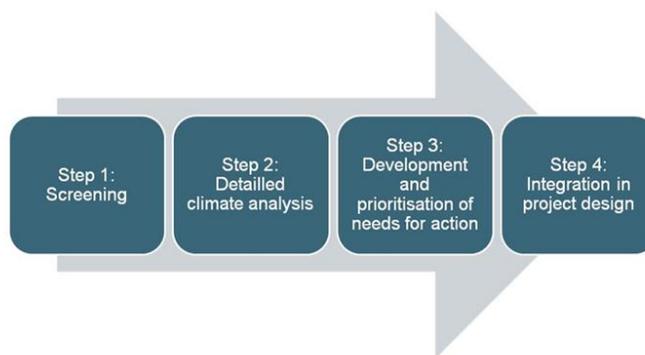
Stages during the policy or programme cycle when considerations of climate change adaptation could be incorporated.

Applying a “climate lens”

The extent to which:

1. a measure could be **vulnerable** to climate risks
2. climate change risks **have been considered** in formulating the measure
3. the measure could lead to **increased vulnerability** or **maladaptation**
4. **opportunities** arising from climate change are made use of
5. pre-existing strategies and policies being revised need to be **amended** in order to address climate risks

Climate Proofing for Development



Step 1: Screening



Key questions	Examples
How has the climate in our commune/region/country already changed ? What are the prognoses on climate change for our country/region/province?	Increasing temperature Changing precipitation Reduced water availability
Does the planning refer to elements which are particularly affected by climate change (exposure unit)? If yes, specify.	Agriculture Rural/urban development Health Forests/Forestry
Is the strategy/measure/action/project located in geographic regions particularly affected by the impacts of climate change (exposure unit)? If yes, specify.	Costal zones Flooding areas Mountain regions

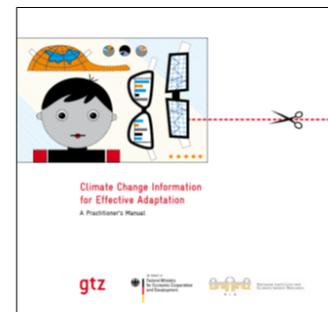
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Step 2: Detailed climate analysis



- Pre-structured steps of analysis
- Climate proofing can be done superficially or in a lot of detail
- Participation of different stakeholders possible (project staff, target group, scientists, etc.)
- In workshop- or interview format
- Sector support material / guidance provided
 - Describing „Patterns of change“ for different sectors (about 2 pages each)
 - Manual on climate change information
 - (with PIK)



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Approach to Integrate Adaptation



A: Exposure unit	B: Climate stimuli	C: Direct impact	D: Indirect impact
<ul style="list-style-type: none"> Agriculture 	<ul style="list-style-type: none"> Temperature rise Prolonged dry season More concentrated precipitation 	<ul style="list-style-type: none"> Lower yields / fewer foodstuffs After floods higher yields 	<ul style="list-style-type: none"> Insecurity about seasonal food insecurity Migration into cities Conflict: human/animals
<ul style="list-style-type: none"> Infrastructure 	<ul style="list-style-type: none"> Concentrated rainfall Increased frequency and intensity of cyclones 	<ul style="list-style-type: none"> Floods 	<ul style="list-style-type: none"> Loss of investments Destroyed roads, further disadvantage to remote areas
E: Link to goal of measure		F: Probability of impact	G: Adaptation Options
<ul style="list-style-type: none"> Goal of component 1 (direct link) 		<ul style="list-style-type: none"> High (temperatures are rising) 	<ul style="list-style-type: none"> Diversification of crops Erosion control Water cisterns Small-scale irrigation
<ul style="list-style-type: none"> Component 2: cyclone and flood resistant buildings, goal are early warning systems (indirect) 		<ul style="list-style-type: none"> High (already more frequent and intense storms, climate models correlate) 	<ul style="list-style-type: none"> Collect local weather data

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Approach to Integrate Adaptation



Climate Stimuli	Direct Impact	Indirect Impact	Options	Concrete adaptation
Change in vegetation period	Reduction of productivity in rainfed and irrigation based agriculture and pasture; Increase of productivity in some regions especially northern latitudes	Reduction of income; in the medium term: shift of production zones: shift of trade flows	Protection of existing production systems	<ul style="list-style-type: none"> Weather based insurances Early warning systems & crop advisory Build up climate change expertise in extension services Measures to protect agro-biodiversity and support of gene banks
			Support of diversification of production patterns	<ul style="list-style-type: none"> Support agriculture policy Breeding new varieties and protection of agro-biodiversity Support of diversified crop rotation Support of climate sensitive land use planning
			Diversification of income options	<ul style="list-style-type: none"> Market and potential analyses Support of income-generating off-farm activities and vocational training Social protection systems

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Step 3: Prioritisation of adaptation options



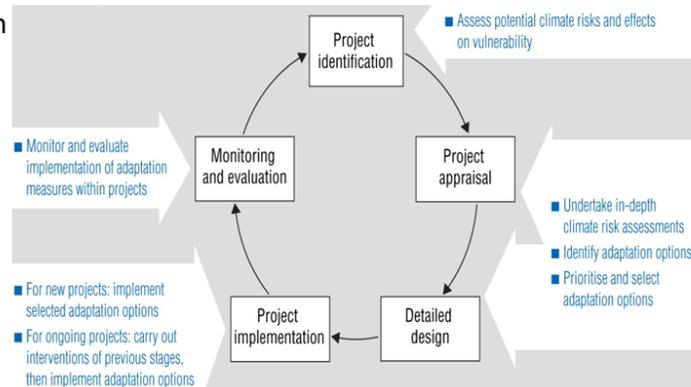
- Prioritisation with criteria like e.g.
 - Adaptation benefit
 - Cost-benefit approximation
 - Political feasibility
 - Co-benefits
 - No-/low-regret
 - Flexibility in case of uncertainty
 - Do no harm (biodiversity, etc.)
 - Technical feasibility
 - Etc.
- => No formal guidelines



Step 4: Integration into programme / project



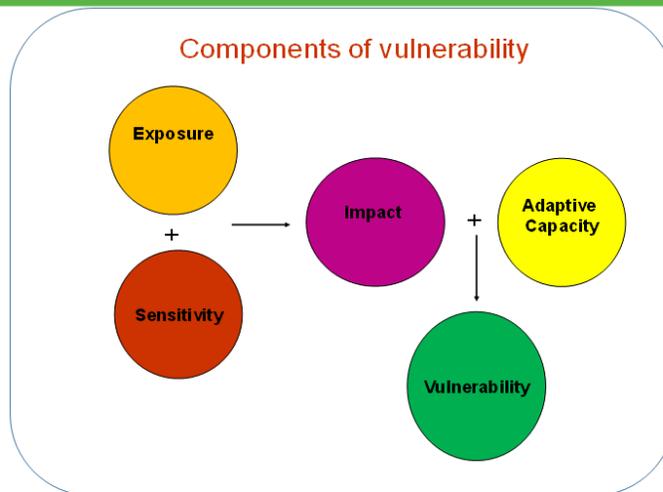
- Integrate results at important entry points of cycle:
 - Project proposals, formulation of indicators
 - Impact chain, operational planning and implementation
 - Monitoring and evaluation
- => increase binding character



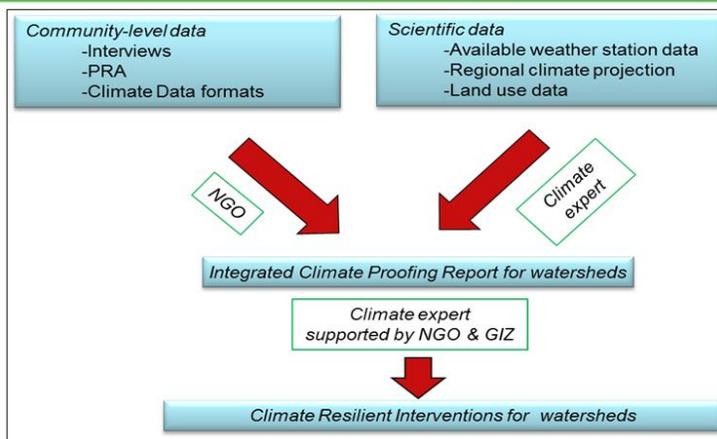
Climate Proofing – Level of application



Vulnerability



Stages in Climate Proofing



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Approach to Integrate Adaptation



The diagram illustrates the approach to integrate adaptation. It begins with **PRA, Timeline Analysis, Socio-Economic Data Collection: Adaptive Capacity and Sensitivity**, shown with images of community meetings. This leads to **Exposure: Secondary Data Collection, Model Outputs: GCM, RCM**, which includes a **Weekly weather Normal (1969 – 2005)** graph and a **Timeline** table. The timeline table shows expected maximum temperature, deviation, expected maximum temperature, deviation, expected changes in rainfall, and expected CO2 level from 2010 to 2100. This data feeds into **IMPACT ANALYSIS** using **SWAT** (Soil Water Assessment Tool) for **Hydrologic Balance**. The SWAT model diagram shows processes like **Evaporation and Transpiration**, **Precipitation**, **Surface Runoff**, **Lateral Flow**, **Return Flow**, **Infiltration**, **Percolation to shallow aquifer**, **Percolation to deep aquifer**, **Flow out of watershed**, and **Recharge to deep aquifer**. The final output is **Adaptation Options**.

Timeline	Expected Maximum Temp	Deviation	Expected Maximum Temp	Deviation	Expected changes in Rainfall	Expected CO2 level
2010	29.97	0	19.13	0	0	370
2020	30.36	0.39	19.48	0.35	- 5 %	385
2030	30.45	0.48	19.73	0.60	0	420
2040	30.62	0.65	20.12	0.99	+ 5 %	470
2050	30.87	0.90	20.65	1.52	+ 7 %	500
2060	31.33	1.36	21.12	1.99	+ 8 %	520
2070	31.75	1.78	21.59	2.46	+ 8 %	535
2080	32.13	2.16	22.00	2.87	+ 10 %	550
2090	32.75	2.78	22.64	3.51	+ 14 %	565
2100	33.57	3.60	23.19	4.06	+ 15 %	588

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Learnings from the Projects:



- Goals and methods in development and adaptation are strongly linked and complementary.
- Conceptual clarity in development-adaptation essential before designing and planning measures.
- Interventions in climate adaptation need to be robust against broad spectrum of future scenarios.
- Vulnerability assessment needs to be holistic, interventions need to be specific.
- Water and food security have emerged as major challenges in adaptation.
- Participatory approaches, involving the vulnerable communities are essential
- Diversification of vulnerable livelihoods away from climate sensitive sectors essential.
- Information and communication have played a crucial role in promoting adaptive capacities.
- Generation of awareness and capacities at all levels

Project Processes & Components



- Primary weather data collection (long-term data) for the watershed area
- Participatory vulnerability analysis
- Climate analysis by climate expert
- Finalization of adaptation options through community participation and climate expert / subject matter specialist interactions
- Project initiation workshop (after sanction)

Major components under the project implementation



- Complementary Soil and Water Conservation Component
- Climate Resilient Livelihoods Systems
- Risk Mitigation
- Knowledge Management
- Project Management

Climate Resilience can be described as the capacity of systems, communities, households or individuals to prevent, mitigate or cope with climate risk and recover from shocks.

Project - Component-wise cost



SI No.	Component	Amount per watershed (Rs.)
1	Climate Change Vulnerability Assessment.	110000
2	Capacity Building of Vulnerable Communities and implementing agency	50000
3	Complementary Soil and Water Conservation Component	800000
4	Risk Mitigation	500000
5	Climate Resilient Livelihoods Systems	2500000
6	Knowledge Management	200000
	Project Measures (subtotal)	4160000
7	Project Management (for implementing agencies)@ 20%	832000
	Total Cost (Rs.)	4992000
		say 5000000
	Amount (Rs. M)	5
	Amount (Euro '000)	62.5

CLIMATE PROOFING OF WATERSHED DEVELOPMENT PROJECTS IN THE STATES OF TAMIL NADU AND RAJASTHAN

Vulnerability Assessment

Vulnerabilities identified	Proposed activities to address vulnerabilities
<ul style="list-style-type: none"> • Dependency on rain-fed farming • High poverty levels • Soil erosion • Degradation of irrigated lands • Water pollution • Over exploitation of forest stocks • Declining water table • Input intensive agriculture with mono-cropping • Climate variability and projected changes 	<ul style="list-style-type: none"> • Soil and water conservation structures • Improved farming practices: Deep tillage, application of tank silt, nutrient management, change of cropping patterns and integrated farming systems • Agro-forestry and agro-horticulture • Micro-irrigation, energy efficient devices • Agro-meteorological observatory and crop insurance

Project Objectives



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**”

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.

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Project Outcomes



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

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

Outcome 3: Integration of risk mitigation products like weather advisory/insurance and other financial products for the farmers

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

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Project Component and Budget



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	Outcome 1: Soil and water regime improved and crop productivity enhanced	170,588
	Output 1.2: Increased water availability through farm pond, catch pit, well recharge pit and other water harvesting structures		
Component 2: Increased adaptation to climate change through climate resilient farming system approach and diversification of livelihoods	Output 2.1: Increased availability of fodder/fuel through afforestation & pasture land development	Outcome 2: Improved climate resilient farming system and increased livelihood security	673,670
	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		
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	Outcome 3: Reduced climate change vulnerability with improved risk mitigation measures	195,917
	Output 3.2: Geo-hydrological study and crop-water budgeting		

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Project Component and Budget



Project / Programme Component	Expected Concrete Outputs	Expected Outcomes	Amount (US\$)
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	Outcome 3: Reduced climate change vulnerability with improved risk mitigation measures	195,917
	Output 3.2: Geo-hydrological study and crop-water budgeting		
Component 4: Creation of knowledge management system for climate proofing of watershed project and livelihoods	Output 4.1: Government takes up certain prescriptions and project learning for large scale implementation.	Outcome 4: Project learning and created knowledge base benefitted similar projects implemented in other States.	109,283
	Output 4.2: Cross learning and replication of practices and lesson learnt with improved knowledge and understanding by stakeholders		
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

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List of Watersheds and EEs

S. No.	Name of the watershed	District	Name of Executing Entities
Projects In Rajasthan			
1	Dhuvala	Bhilwara	Foundation for Ecological Security (FES)
2	Nayagaon-I	Jhalawar	ITC – Rural Development Trust (ITC-RDT)
3	Nayagaon-II	Jhalawar	ITC – Rural Development Trust (ITC-RDT)
4	Balua	Udaipur	Rajasthan Rural Institute of Development Management (RRIDMA)
5	Vagda	Udaipur	Alert Sansthan
6	Jhabla	Udaipur	Seva mandir
7	Malvi	Dungarpur	Mahan Seva Sansthan
8	Mandli	Udaipur	Gayatri Seva Sansthan
9	Chainpuria	Chittorgarh	Watershed Consultants Organisation (WASCO)
10	Khad	Udaipur	Rajasthan Rural Institute of Development Management (RRIDMA)
Projects in Tamil Nadu			
1	Bettamugilalam	Krishnagiri	Mysore Resettlement Development Agency (MYRADA)
2	Chithalai	Madurai	Association of Serva Seva Farms (ASSEFA)
3	Thally kothanur	Krishnagiri	Mysore Resettlement Development Agency (MYRADA)
4	Salivaram	Krishnagiri	Mysore Resettlement Development Agency (MYRADA)
5	Anjukulipatty	Dindigul	Society for Peoples Action for Change and Education (SPACE)
6	Chinnapoolampatti	Madurai	Association of Serva Seva Farms (ASSEFA)
7	Peikulam	Madurai	Association of Serva Seva Farms (ASSEFA)
8	Srirampuram – Malvarpatty	Dindigul	Centre for Improved Rural Health and Environmental Protection (CIRHEP)
9	Ayampallayam	Dindigul	Sri Sakthi Social Economical & Educational Welfare Trust (SWEET)
10	Vannikonendal & Kurkulpatti	Tirunelveli	Voluntary Organisation for Integration of Community & Environment (VOICE)



Thank you !

ii. **Presentation on Climate Proofing on Implementation, Monitoring and Evaluation**



Implementation, Monitoring and Evaluation

Climate Proofing of Watershed Projects in Tamilnadu



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Climate Risks in Project Area



Risk	Probability	Risk Category
Drought	Once in 2-3 Years	High
Intermittent dry spell	Almost every year	High
Delayed onset of monsoon	Frequent	High
Extreme temperature	Frequent	High
Excess rainfall	Once in 5 years	Medium
Unseasonal rainfall	Once in 3-4 years	Medium

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Vulnerability Assessment



Vulnerabilities identified	Proposed activities to address vulnerabilities
<ul style="list-style-type: none"> • Dependency on rain-fed farming • High poverty levels • Soil erosion • Degradation of irrigated lands • Water pollution • Over exploitation of forest stocks • Declining water table • Input intensive agriculture with mono-cropping • Climate variability and projected changes 	<ul style="list-style-type: none"> • Soil and water conservation structures • Improved farming practices: Deep tillage, application of tank silt, nutrient management, change of cropping patterns and integrated farming systems • Agro-forestry and agro-horticulture • Micro-irrigation, energy efficient devices • Agro-meteorological observatory and crop insurance

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Project Objectives



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

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.

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Project Outcomes



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

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

Outcome 3: Integration of risk mitigation products like weather advisory/insurance and other financial products for the farmers

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

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Project Component and Budget



Project / Programme Component	Expected Concrete Outputs	Expected Outcomes	Amount (Rs.lakh)
Component 1: Improved soil and water regime for better crop productivity	Output 1.1: Soil health improved through summer / deep ploughing	Outcome 1: Soil and water regime improved and crop productivity enhanced	65.29
	Output 1.2: Increased water availability through farm pond, catch pit, well recharge pit and other water harvesting structures		
Component 2: Increased adaptation to climate change through climate resilient farming system approach and diversification of livelihoods	Output 2.1: Increased availability of fodder/fuel through afforestation & pasture land development	Outcome 2: Improved climate resilient farming system and increased livelihood security	196.37
	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		

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Project Component and Budget



Project / Programme Component	Expected Concrete Outputs	Expected Outcomes	Amount (US\$)
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	58.40
Component 4: Creation of knowledge management system for climate proofing of watershed project and livelihoods	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 benefited similar projects implemented in other States.	26.57
5. Project / Programme Execution Cost			
6. Total Project / Programme Cost			

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List of Watersheds and EEs

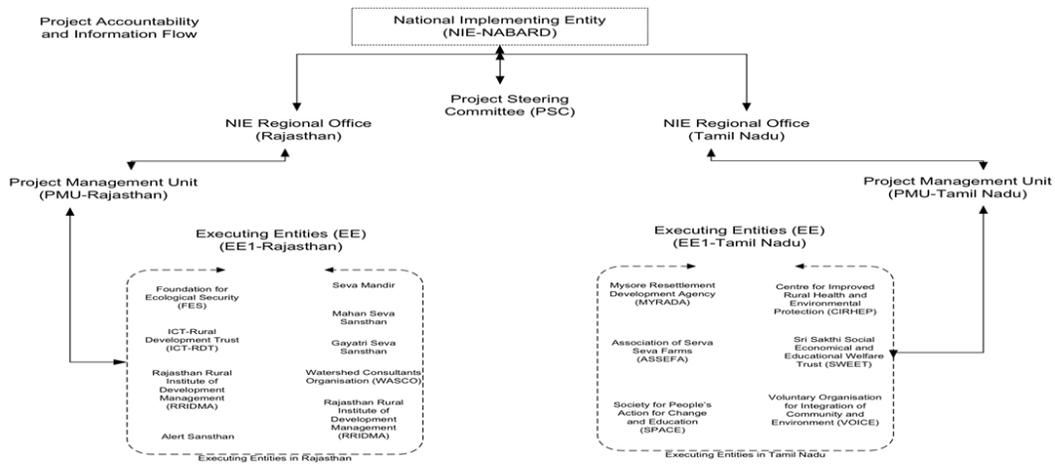
S. No.	Name of the watershed	District	Name of Executing Entities
1	Bettamugilalam	Krishnagiri	Mysore Resettlement Development Agency (MYRADA)
2	Chithalai	Madurai	Association of Serva Seva Farms (ASSEFA)
3	Thally kothanur	Krishnagiri	Mysore Resettlement Development Agency (MYRADA)
4	Salivaram	Krishnagiri	Mysore Resettlement Development Agency (MYRADA)
5	Anjukulipatty	Dindigul	Society for Peoples Action for Change and Education (SPACE)
6	Chinnapoolampatti	Madurai	Association of Serva Seva Farms (ASSEFA)
7	Peikulam	Madurai	Association of Serva Seva Farms (ASSEFA)
8	Srirampuram – Malvarpatty	Dindigul	Centre for Improved Rural Health and Environmental Protection (CIRHEP)
9	Ayampallayam	Dindigul	Sri Sakthi Social Economical & Educational Welfare Trust (SWEET)
10	Vannikonendal & Kurkulpatti	Tirunelveli	Voluntary Organisation for Integration of Community & Environment (VOICE)

Project Calender



Milestones	Target date
Start of the Project Implementation	June 2015
Project/Programme Closing	June 2018
Terminal Evaluation	January 2019

Project Stakeholders



Role of Executing Entities



- Works are executed in accordance with the sanctioned project document and other conditions of sanction
- VWC and the EE shall be jointly responsible for satisfactory work execution.
- EEs shall maintain competent technical staff for project implementation.
- 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.
- VWC shall review the progress of work at least once every month in a meeting convened for that purpose.
- 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.
- VWC and the EE shall be jointly responsible for maintenance of all records relating to the watershed development project.
- 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.

Role of NABARD



- On-site detailed round of monitoring would be done on a quarterly basis by Programme Monitoring Units (PMUs), located at Madurai.
- In addition, six monthly basis monitoring would be done by NABARD Regional Office.
- Frequency of monitoring would be increased if considered necessary
- Project Sanctioning Committee (PSC) would function as State Level Review Committee (SLRC) for guidance and review of implementation of projects at State Level and would convene meetings on half-yearly basis.
- Quarterly report submission formats would be designed for submission by executing entities for desk appraisal of progress.
- Progress reporting would be done to AFB each half year or more frequently as per the requirement of AFB

Role of Line Departments



- Departments like AH, Agriculture, Forest, etc. are involved at local level for convergence of activities like Animal health camps, seed distribution, saplings, afforestation, etc.
- Panchayath Raj institutions are also involved in convergence of different developmental schemes like MGNREGA for land development.
- Tamilnadu Watershed Development Agency (TAWDEVA), would provide technical inputs during implementation stage and are involved in regular monitoring and review.
- Krishi Vigyan Kendra (KVK), Agriculture University, College of Veterinary and Animal sciences, etc. would be involved in technology transfer, training and extension activities.
- Involvement of private sector with the project beneficiaries will mostly be limited as supplier of goods and services such as fertilisers, seeds, seedlings, etc.
- Technical Service Provider like RML will be involved in analysis of the weather data and provision of crop-weather advisories to the community in the project area.

Fund Flow under the Project



- First installment release by NABARD based on half yearly action plan
- Subsequent transfer of Grant funds to the Executing Entity, shall be transferred only after NABARD receives the fund from AFB, based on the Annual Project performance Reports (PPR) submitted by Executing Entity and approved by NABARD/AFB.
- EEs shall use the disbursed grant funds in accordance with standard practices and procedures adopted by NABARD.

Books of Accounts



- Separate books of accounts for receiving and utilizing the grant
 - Documentary evidence - bills, receipts, vouchers, etc.
 - Expenditure incurred as per the sanction heads
 - NIE to have right to inspect the book of accounts and documents and to monitor the progress in project work
- The Executing Entity shall carry out all its obligations under this Sanction in accordance with:
 - AF Operational Policies and Guidelines effective October 2015;
 - Agreement entered between the Implementing Entity (NABARD) and AFB and
 - Standard practices and procedures of Implementing Entity (NABARD).

Fund Utilisation



- Fund to be utilised for sanctioned activities as per Sanction Order
- Unutilised fund to be refunded to NABARD
- Material inconsistency to be notified to NIE
- Material change means change that involves 10% or more of the total budget.
- Any material change to the approved budget allocation to be communicated to NIE for approval by AFB

Records and Reporting



- An inception report not later than 15 days after the inception workshop
- The start date of the Project is considered the date of the inception workshop
- Annual Project Performance Reports (PPR) on the status of the Project implementation, including the disbursements made during the relevant period
- Mid-term evaluation report to be submitted within 5 months of implementation
- Project completion report within 5 months after Project completion
- Final evaluation report to be submitted within 8 months after Project completion.
- Final audited financial statement by an independent auditor, within 5 months of project completion



THANK YOU

4.3 Proceedings of the workshop at Rajasthan held on 22 August 2016

An Inception Workshop on Climate proofing of watershed development projects in Rajasthan with Adaptation Fund was conducted at Udaipur on 22nd August 2016.

Venue	Vaidya Bhawna Polytechnic College, Udaipur
Participants	Partner NGO personnel & VWC members (21) Sh. A.L. Ahuja, AGM, NABARD Rajasthan RO, Jaipur Ms. Pragya Saxena, Executive Engineer, Zila Parishad, Udaipur DDMs, NABARD, Chittorgarh, Dungarpur, Udaipur and Bhilwara districts AGM (SKS) & Consultants (4), NABARD IGWDP-Rajasthan PMU, Udaipur

2. Environmentalist Dr. Anil Mehta, Principal, Vidya Bhawan Polytechnic College, Udaipur inaugurated the workshop. In his inaugural address, Dr. Mehta emphasized that it is the need of the hour to go for climate proofing of watershed projects so that livelihood of community becomes less vulnerable to weather variability; nurturing of *jal, jungle, jameen, janwar va jan* (water, forest, land, animals and human beings) should go hand in hand towards this endeavor.

3. Sh. A. L. Ahuja, AGM, NABARD-Rajasthan RO chaired the workshop sessions and guided the proceedings. During his interaction, he highlighted the significance of active community involvement in success of the climate change adaptation initiative.

4. Ms. Pragya Saxena, Executive Engineer, Zila Parishad, Udaipur interacted with the house on different initiatives taken under MGNREGA in Udaipur and other districts; she assured all support under MGNREGA for holistic development of the watersheds.

It was decided that PFAs (under IGWDP-Rajasthan) would prepare physical treatment plan for the areas left out, on account of inadequate project grant to meet payment at higher-than-sanctioned rate in line with extant wage rates, for execution under MGNREGA.
Action: PFAs

5. The workshop witnessed sharing of Project Components, agreed concrete outputs, sustainability development criteria, technical standards to be followed for project interventions, knowledge management system, project management arrangements, role of NABARD as NIE, role of Executing Entities, execution cost for EEs, measures for financial and project/programme risk management, environment & social risk screening & management, Adaptation Fund Core Indicators, Project Result Framework of activities, etc.

6. The following **recommendations/ action points emerged** from the workshop:

<i>S#</i>	<i>Theme</i>	<i>Action Point</i>	<i>Responsibility</i>
1	NIE Nodal point	NABARD will identify the nodal officer/s for programme monitoring and coordination with EEs.	NABARD
2	Access and equity	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 livelihood profile, vulnerability mapping/	EES

<i>S#</i>	<i>Theme</i>	<i>Action Point</i>	<i>Responsibility</i>
		assessment, housing index and need assessment. The project would ensure access to three types of vulnerable populations, i.e. Small and Marginal Farmers, Landless, Women, Scheduled Caste, Scheduled Tribe households and this aspect would be monitored regularly.	
3		In order to address any issues related to access and equity in terms of selection of sites for creation of structure during implements, the selection of sites would be done through VWC sub-committee on Environment.	EES/ VWC
4		Ground water recharge and harvested rainwater would be managed through water user groups to address any equity issues that may arise. It will also ensure that maximum coverage of the families living in the recharge zone and benefitting from this activity.	EES/ VWCs
5	Environmental and Social Management Plan (ESMP)	Any pollution due to plastic bags used for carrying saplings, components of micro irrigation system, and waste from LDPE etc. would be addressed and safe disposal mechanism would be created during project implementation. The house recommended segregated collection of non-biodegradable waste and its disposal at nearest demarcated collection points (generally in urban areas) for possible recycling or reuse.	EES/ VWC
6		The representation of women in various committees and project interventions would be monitored through VWC and EE.	EES
7		All the project villages will have display board stating the name of the project and names of NIE and Executing Agency. Name, designation and number of the concerned official of EE to whom the labour and employment related grievances can be addressed shall be displayed.	EES
8		The project interventions would promote biodiversity. The project will not be introducing any exotic or invasive species of crops/ animals in the project area. Selection plantation species, fodder species etc. would be done in technical consultation with Agricultural University (MPUAT) and state government departments concerning agriculture, forestry and horticulture.	EES
9		All grievances received either orally or in written form will be recorded in the Complaint Register maintained in EE office. Each such complaint will be identified by a complaint number and will be followed up and the resolution of the grievance will also be recorded and the same is reported to NIE. Information related to grievance mechanism will	EES

<i>S#</i>	<i>Theme</i>	<i>Action Point</i>	<i>Responsibility</i>
		be provided in the language that is easily understood by the members of the village community.	
10		The Management Plan and Monitoring Plan Formats would be customised for individual climate proofing watershed project ESMP. The same was deliberated upon by the house. FES volunteered to take the lead in customization of the same.	FES/ EEs
11	Project execution	While NABARD component of the co-funded project has already been completed in 3 watersheds under WDF that for other 7 watersheds under IGWDP would be over by Sep/ Dec 2016. The EEs submitted that the Execution cost was very meager and would not be viable unless adequate additional funds are made available for project facilitation. This becomes all the more significant considering the wide array of data that need to be periodically captured besides conventional project records and the required skill of project staff. The house also felt that eligible execution cost should be output linked rather than be based on person-months engaged.	NABARD
12		NABARD will liaise with Reuter Market Light (RML) for analysis of the weather data and provision of crop-weather advisories to the community in the project area. Services of GSS (PFA) could be sought for the purpose if it didn't work.	NABARD
13		The Village Watershed Committee (VWC) and the EE shall be jointly responsible for satisfactory work execution. The VWC and the EE shall be jointly responsible for maintenance of all records relating to the watershed development project. The house suggested for transfer of grant funds for project measures to VWC A/c and that of project management to EEs concerned. This could help the community in owning up the project and could address possible issues with tax liability to the EEs, who, in general, preferred to act as PFA.	NABARD
14		The AF website indicates that the proposal was accepted on 10 Sep 2015 and that the project duration is for 3 years. The sanction letters issued to the EEs indicate that the date of inception workshop would be reckoned as the date of start of the project. Incidentally, works have already been initiated in 7 of the 10 watersheds keeping in view the monsoon season. In view of the above, September 2018 would be reckoned as the	NABARD

<i>S#</i>	<i>Theme</i>	<i>Action Point</i>	<i>Responsibility</i>
		scheduled completion date for the project. Necessary advice shall be issued by NABARD in this regard. The Project Duration at page 120 in the DPR stands corrected as 3 years.	
15	Project monitoring	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. On-site detailed round of monitoring would be done on a quarterly basis by Programme Monitoring Unit (PMU), located at Udaipur (Rajasthan).	NABARD
16		Measurement made by the Work Supervisor will be checked by Agri Engineer attached to Executing Entity and test checked by Consultant attached with PMU of NABARD. The sample size for check/ test check shall be stipulated by NABARD.	EES/ NABARD
17		The VWC shall review the progress of work at least once every month in a formal meeting convened for that purpose. 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 utilization of funds.	EES/ VWCs
18		Quarterly report submission formats would be designed for submission by EEs 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.	NABARD
19		Vulnerable group specific disaggregated data would be collected and reported for each project component. The data formats for the same shall be customized.	NABARD/ EES
20		Data collection, compilation and analysis shall be in such a way that the progress in achievement of target for the outcome/ output indicators can be captured unambiguously.	NABARD/ EES
21	Sustainability	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.	EES/ VWCs

The workshop was facilitated by Sh. Sukanta Sahoo, PMU, Udaipur and team. The workshop ended with vote of thanks by the PMU.

5. 2 Annexures to the inception workshop at Rajasthan

Annexure 5.2.1 - Programme Schedule

Annexure 5.2.2 Invitation Letters

Annexure 5.2.3 Photographs of the workshop

Annexure 5.2.4 Presentation made during workshop

Annexure 5.2.5 Media Coverage

Annexure 5.2.6 List of Participants

Annexure -5.2.1 Programme Schedule



NATIONAL BANK FOR AGRICULTURE & RURAL DEVELOPMENT

Climate proofing of watershed development projects in Rajasthan with Adaptation Fund- Inception Workshop @ Udaipur – 22 August 2016

<i>Venue</i>	Vidya Bhawan Polytechnic College (VBPC), Badgaon Road, Udaipur (Phone: 0294- 245 1309, 245 2997)
<i>Participants</i>	All partner EEs with AFB projects (8*2); VWC members (10) Mr. A. L. Ahuja, AGM, NABARD, RRO Mr. R K Agrawal, SE, WDSC, Udaipur Ms. Pragya Saxena, Ex En, Zila Parishad, Udaipur NABARD DDM, Chittorgarh, Dungarpur, Udaipur, Bhilwara & Jhalawar districts (5) PMU team, Udaipur (5)

PROGRAMME SCHEDULE (tentative)

Session	Topic / Theme	Time (hrs)	Responsibility
1	Registration	10:00~10:30	PMU
2	Welcome Address/ Introduction/ Workshop Orientation	10:30 ~11:00	PMU
3	Inaugural Address	11:00 ~ 11:15	Dr. Anil Mehta, Principal, VBPC
	<i>Tea Break</i>	<i>11:15 ~ 11:30</i>	
4	Project Components; Modalities of project implementation, M &E	11:30 ~ 13:30	PMU, RO
	<i>Lunch Break</i>	<i>13:30~14:15</i>	
5	Assessment of implementation set up with EEs	14:15 ~15:15	RO
6	Chalking out Action Plan at project n programme level	15:15~16:15	PMU, RO
7	Vote of thanks	16:15 ~16:30	PMU
	Closure with Tea Break	16:30 ~16:45	

Annexure 5.2.2 Invitation Letters

सहायक महाप्रबंधक व प्रभारी
AGM & In-charge



by e-mail

Ref. No.NB. /PMU/IGWDP-Raj/ 63 /G-17a/2016-17

17 August 2016

The Superintending Engineer,
DWSC, Pratapnagar,
Udaipur (Raj.)

Dear Sir

Climate proofing of watershed development projects in Rajasthan with Adaptation Fund - Inception Workshop @ Udaipur– 22 August 2016 -Invitation

We propose to conduct an Inception Workshop for the 10 watersheds in Rajasthan supported by Adaptation Fund under the project “Climate Proofing of Watershed Development Projects in the States of Tamilnadu and Rajasthan” at Vidya Bhawan Polytechnic College (VBPC), Badgaon Road, Udaipur (Phone: 0294- 245 1309, 245 2997) on 22 August 2016.

The tentative **programme schedule** is attached herewith for your kind perusal.

2. Around 40 participants are expected in the programme, among whom there would be our NGO partners, Village Watershed Committee (VWC) member from each of the 10 watershed development projects, NABARD DDMs from Udaipur, Dungarpur, Chittorgarh, Bhilwara and Jhalawar districts, representative from DWDU (SLNA) and Zila Parishad, Udaipur. Sh. A. L. Ahuja, AGM from NABARD Regional Office, Jaipur would guide the proceedings.

3. We herewith solicit your kind participation in the workshop. A line of confirmation in this regard would be highly appreciated.

Yours faithfully

(Sukanta Kumar Sahoo)
Asst. General Manager
Encl: as above

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38, साइफन कॉलोनी, बेदला रोड, उदयपुर-313 001. टेली: +91 294 2451754 • फ़ैक्स: +91 294 2451754 • ईमेल: igwdp.raj@gmail.com

Programme Management Unit, Indo German Watershed Development Programme, Rajasthan

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AGM & In-charge



Ref. No.NB. /PMU/IGWDP-Raj/ 64 /G-17a/2016-17

17 August 2016

Ms. Pragya Kewalramani
Ex En, Zila Parishad, Udaipur

Dear Madam

Climate proofing of watershed development projects in Rajasthan with Adaptation Fund - Inception Workshop @ Udaipur– 22 August 2016 -Invitation

We propose to conduct an Inception Workshop for the 10 watersheds in Rajasthan supported by Adaptation Fund under the project “Climate Proofing of Watershed Development Projects in the States of Tamilnadu and Rajasthan” at Vidya Bhawan Polytechnic College (VBPC), Badgaon Road, Udaipur (Phone: 0294- 245 1309, 245 2997) on 22 August 2016.

The tentative **programme schedule** is attached herewith for your kind perusal.

2. Around 40 participants are expected in the programme, among whom there would be our NGO partners, Village Watershed Committee (VWC) member from each of the 10 watershed development projects, NABARD DDMs from Udaipur, Dungarpur, Chittorgarh, Bhilwara and Jhalawar districts, representative from DWDU (SLNA) and Zila Parishad, Udaipur. Sh. A. L. Ahuja, AGM from NABARD Regional Office, Jaipur would guide the proceedings.

3. We herewith solicit your kind participation in the workshop. A line of confirmation in this regard would be highly appreciated.

Yours faithfully

(Sukanta Kumar Sahoo)
Asst. General Manager
Encl: as above

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AGM & In-charge



by e-mail

Ref. No.NB. /PMU/IGWDP-Raj/ 62 /G-17a/2016-17

17 August 2016

<All EEs for Adaptation Fund supported
“Climate proofing of watershed projects”>

Dear Sir

**Climate proofing of watershed development projects in Rajasthan with
Adaptation Fund - Inception Workshop @ Udaipur– 22 August 2016 -Invitation**

We propose to conduct the captioned programme at Vidya Bhawan Polytechnic College (VBPC), Badgaon Road, Udaipur (Phone: 0294- 245 1309, 245 2997) on 22 August 2016.

The tentative **programme schedule** is attached herewith for your kind perusal. We are also forwarding documents related to the project for your kind perusal.

2. Around 40 participants are expected in the programme, among whom there would be our NGO partners, Village Watershed Committee (VWC) member from each of the 10 watershed development projects, NABARD DDMs from Udaipur, Dungarpur, Chittorgarh, Bhilwara and Jhalawar districts, representative from DWDU (SLNA) and Zila Parishad, Udaipur. Sh. A. L. Ahuja, AGM from NABARD Regional Office, Jaipur would guide the proceedings.

3. We herewith request all the Chief Functionaries of the EEs to kindly participate in the workshop along with the identified Project Coordinator and a VWC member from each project. **A budget of Rs.600/- per VWC member towards travel & stay has been allocated.** A **line of confirmation** in this regard would be highly appreciated.

For any further assistance/clarification, please contact Rajesh Sen (+91 7568072417), PMU Consultant.

Yours faithfully

(Sukanta Kumar Sahoo)
Asst. General Manager
Encl: as above

E-mail copy for kind information to:

1. The Chief General Manager, NABARD, Rajasthan Regional Office, Jaipur.
2. The District Development Manager, NABARD, Udaipur, Chittorgarh, Dungarpur, Bhilwara & Jhalawar District with a request to kindly participate in the workshop.

(Sukanta Kumar Sahoo)

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AGM & In-charge



by e-mail NABARD

Ref. No.NB. /PMU/IGWDP-Raj/ 61 /G-17a/2016-17

17 August 2016

The Principal
Vidya Bhawan Polytechnic College
Udaipur (Rajasthan)

Dear Sir

Organizing “Inception Workshop on Climate proofing of watershed development projects in Rajasthan funded by Adaptation Fund” on 22 August 2016 at VBPC

We propose to conduct the captioned programme at your premises on 22 August 2016.

Around 40 participants are expected in the programme, among whom there would be our NGO partners, Village Watershed Committee (VWC) member from each of the 10 watershed projects, NABARD DDMs from Udaipur, Dungarpur, Chittorgarh, Bhilwara and Jhalawar districts, representative from DWDU (SLNA) and Zila Parishad, Udaipur. Sh. A. L. Ahuja, AGM from NABARD Regional Office, Jaipur would guide the proceedings.

We will be glad if you could make it convenient to inaugurate the workshop and address the house on the occasion. We will be shortly sharing the programme schedule.

We herewith request you to kindly confirm.

Yours faithfully

(Sukanta Kumar Sahoo)
Asst. General Manager

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Annexure 8- Photographs of the workshop



Dr. Anil Mehta, Environmentalist addressing the audience



Dr. Anil Mehta, Environmentalist addressing the audience



Discussion of the participants at the workshop



Discussion of the participants at the workshop

Annexure 5.2.4 Presentation made during workshop



Climate Change Impacts on Agriculture and NABARD's Initiatives

IGWDP - Rajasthan PMU, Udaipur

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Climate Change Impact is Global: More for Vulnerable Groups



- **Climate Change Impact:** Real and tangible, affecting people's lives worldwide.
- Major challenge for agriculture, food security and rural livelihoods.
- Poor, marginalized, and rural communities are likely to be hit hardest by climate impacts (*IPCC, 5th AR*)
- **For these vulnerable groups, climate change acts as a “risk multiplier”** worsening existing social, economic, political, and environmental stresses.

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Impact on India Agriculture & Rural Livelihood



- India has seen an increase in temperature of 0.6 degree Centigrade, over the past century
- Increase in temperature by 2.0 to 3.5 deg centigrade and the associated increase in precipitation, can lower agricultural GDP by 9 to 28 per cent (*Source: 12th Five Year Plan, Govt. of India*).
- India is more vulnerable in view of the high population depending on agriculture and high dependence on climatic parameters

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Climate Change and Indian Agriculture



“Changes in climatic parameters due to human activities”

Inter-Governmental Panel of Climate Change (IPCC) Assessment Report– 5, 2014

Predictions for India

- Erratic rain fall
- Overall decrease in rainfall
- Extreme weather events
- Adverse impact on utilization of land / water resources
- Declining crop productivity
- Threat to food security and access to food



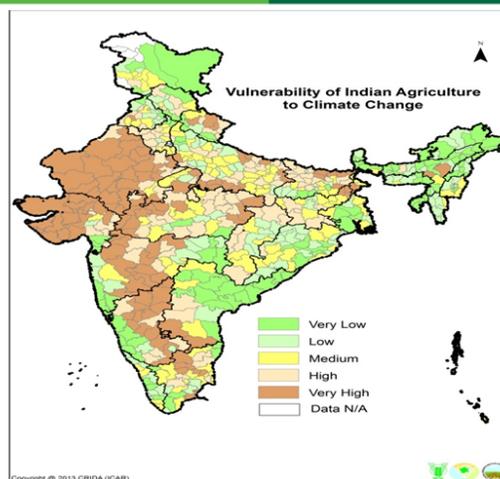
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Impact of Climate Change - India



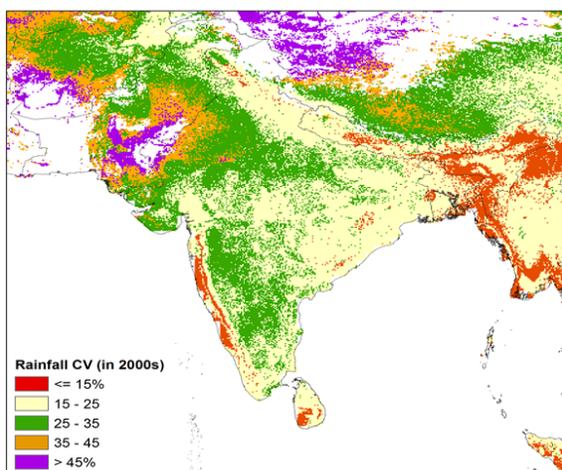
- **Increase in mean temperature** : By 0.60° C in the last 100 years.
- **Negative impact on crop productivity** : Experienced in wheat and paddy due to increased temperature, reduction in rainy days and consequential water stress.
- **Projections (medium-term - 2010-2039)** : Yield reduction by 4.5 to 9% - posing challenge to food security and livelihood
- **Overall impact on agricultural economy**: Cost of climate change estimated at around 1.5% of GDP from Agriculture every year (ICAR –NICRA project)



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Climatic stresses are common in Indian Agriculture



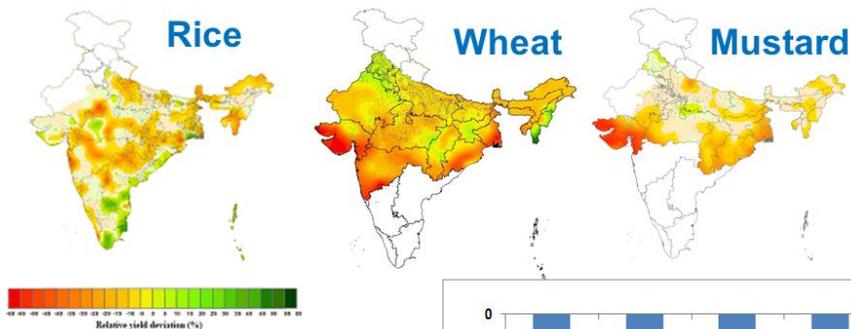
- **70% land drought prone; 12% flood prone and 8% to cyclones**
- **Frost: common in northern regions**
- **Heat: frequent episodes at many places**
- **Frequent floods and cyclones in several regions**

Erickson et al. (2011)

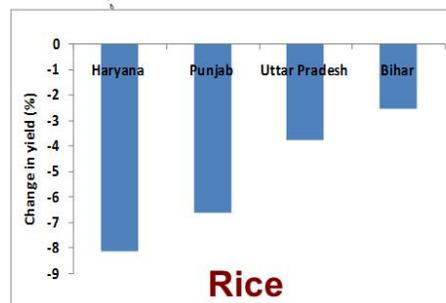
Climate change will aggravate the problems of water scarcity and excess



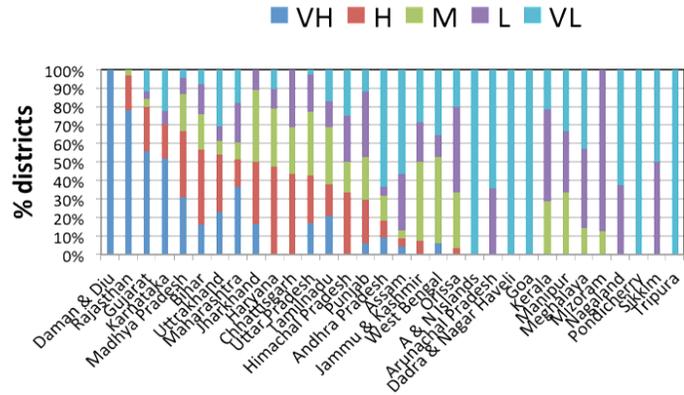
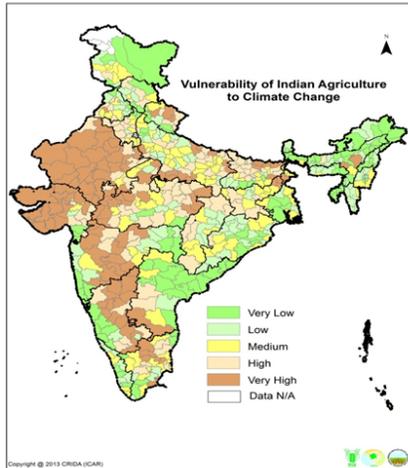
Impacts of climate change in 2020 scenario on various crops



- Irrigated rice, wheat and mustard productions may be reduced by 6%, 4% and 4%, respectively.
- Adaptation strategies can compensate the reductions.



Vulnerability of Indian Agriculture to Climate Change: A District Level Assessment in 2050



NICRA (2013)

India's commitment to Climate Change



Committed for interventions under UNFCCC and Kyoto Protocol

Aims at reduction in emission intensity by 33 to 35% by 2030 over 2005 level

National, State Action Plans on Climate Change, 8 National Missions

National Adaptation Fund for Climate Change (NAFCC)
(US\$55 million)



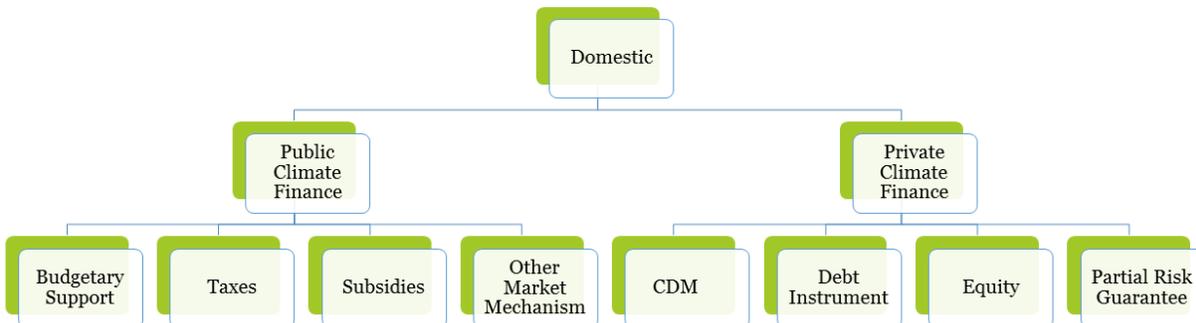
Climate Finance – India’s Requirement INDIA @ COP 21

- India has huge Climate Finance Requirement
- Adaptation – US \$206 billion between 2015 and 2030 (Source: INDC of India)
- Adaptation required in agriculture, forestry, fisheries infrastructure, water resources, and ecosystems
- Mitigation activities for moderate low carbon development - USD 834 billion till 2030 (Source: INDC of India)

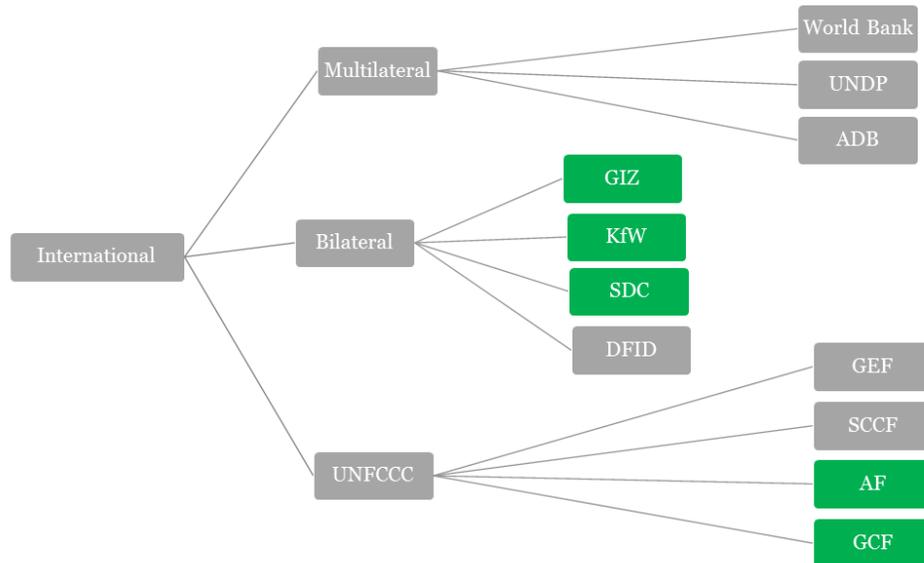
www.justclimateaction.org

Domestic Financing Mechanism

INDIA @ COP 21



www.justclimateaction.org



www.justclimateaction.org

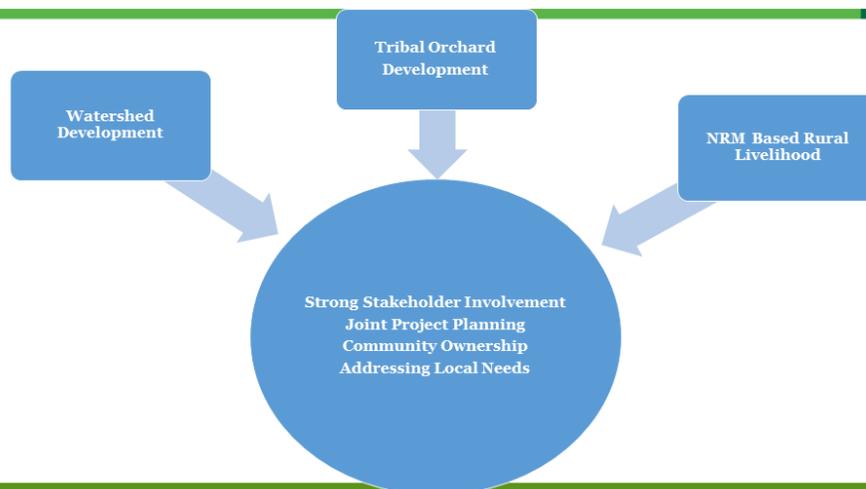
NABARD and Climate Finance



- NABARD supported millions of people of small means.
- 28% of NABARD' s disbursements have link to climate change related areas.
 - Eg: Adaptation - Agriculture, minor/micro irrigation, soil & water conservation, command area development, animal husbandry, fisheries, watershed, wadi etc.
 - Eg: Mitigation – Forestry, captive plantation, rejuvenation of plantation, solar, biogas etc.
- Policy advocacy – Spacing norms for ground water exploitation, eucalyptus plantation, model projects etc.,

NRM: USP of NABARD

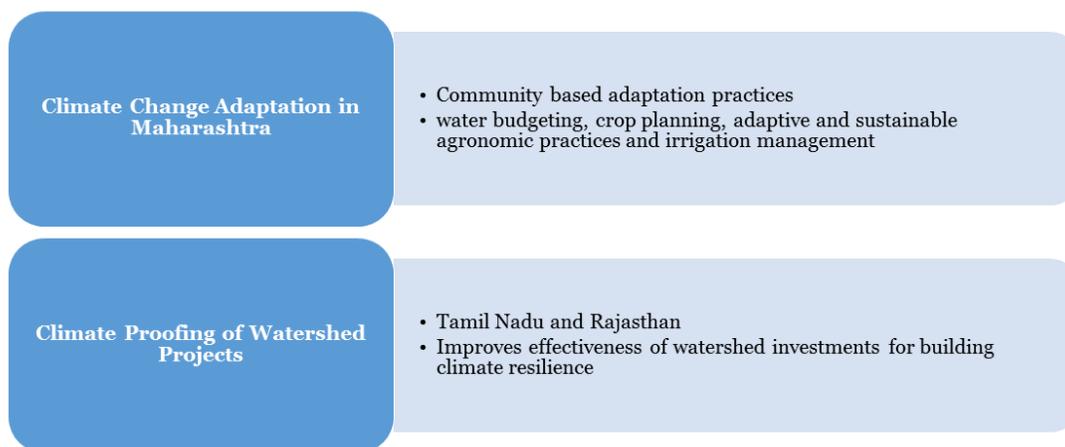
INDIA @ COP 21



www.justclimateaction.org

Pilot Projects on Climate Change

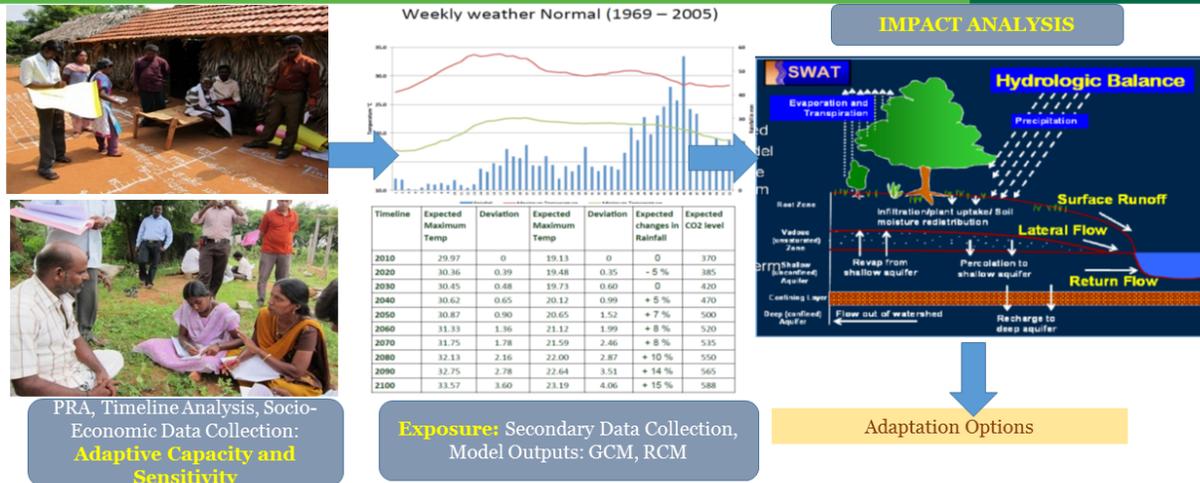
INDIA @ COP 21



www.justclimateaction.org

Integrating Adaptation Options in Project Design

INDIA @ COP 21



www.justclimateaction.org

NABARD as NIE of AFB



- Generated many feasible projects on climate change adaptation.
- Six projects – US\$ 9.8 m posed to AFB.
- AFB sanctioned all the 6 projects



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Projects funded through Adaptation Fund INDIA @ COP 21

- Integrated Mangrove Fish Farming Systems for Coastal Areas against Sea Level Rise
- Enhancing Adaptive Capacity And Increasing Resilience of SF / MF
- Building Adaptive Capacities of Small Inland Fishers for Climate Resilience and Livelihood Security
- Climate Proofing of Watershed Development Projects
- Climate smart actions and strategies in north western Himalayan region for sustainable livelihoods of agriculture-dependent hill communities



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Access to National & International Finance



Adaptation Fund	Green Climate Fund	National Adaptation Fund for CC (GOI)
NIE in July 2012	NIE in July 2015	NIE in July 2015
Sanctioned: 5 projects US\$ 7.3 M	Project Concept Submitted to GCF US \$ 46 million	Sanctioned: 6 projects US\$ 19.67 M
1 Project in pipeline for sanction - US \$ 2.54 M	9 Project Concepts in Pipeline: US \$ 888 M	11 projects in pipeline for sanction : US\$ 25.83M
Total Outlay: US\$ 9.8 M	Total Outlay: US\$ 934 M	Total Outlay: US\$ 45.5M

Total volume of business under above funding: US \$ 990 M

National Adaptation Fund



- Funding concrete adaptation projects/programmes aligned with the relevant Missions under NAPCC and the SAPCCs in agriculture, horticulture, agro-forestry, environment, allied activities, water, forestry, urban, coastal and low-lying system, disaster management, human health, marine system, tourism, habitat sector and other rural livelihood sectors to address climate change related issues.
- Preparing and updating climate scenario, assessing vulnerability and climate impact assessment
- Capacity building of various stakeholders on climate change adaptation and project cycle management and developing knowledge network
- Mainstreaming the approaches/ learnings from project/programme implementation through knowledge Management

Green Climate Fund (GCF)



- The Green Climate Fund has been designated as an operating entity of the financial mechanism of the UNFCCC.
- The fund corpus has been kept at US\$ 100 billion per annum by 2020 and the countries, as of now, have pledged about US\$10.2 billion.
- The Fund will support developing countries in pursuing project-based and programmatic approaches in accordance with climate change strategies and plans, such as low-emission development strategies or plans.
- The Fund will provide for **financing in the form of grants and concessional lending**, and through other modalities, instruments or facilities as may be approved by the Board.

Green Climate Fund (GCF)



- NABARD has been accredited as National Implementing Entity (NIE) for Green Climate Fund in July 2015
- As NIE NABARD would be accessing resources under GCF for India for climate change adaptation / mitigation projects in India
- Financial intermediation through banks is possible for area based programmes for adaptation / mitigation e.g. solar pumps, biogas, biomass energy generation, other renewable energy programmes, climate resilient agriculture, etc.

NABARD-KfW Programme



a. Programme Title:

Innovation of Watershed Development for Rehabilitation of Degraded Soils and Climate Change Adaptation

b. Objectives:

NRM interventions to improve the resource base, minimize risks of climate change and increase productivity and income in rural areas.

c. Programme Goals:

Vulnerability to climate change is reduced by the stabilization, enhancement and sustainable use of soil and water resources in 123 watersheds.

Climate proofing measures so far.....

Crop Cultivation



Field Bunds

Placement

Agricultural land with 3 to 5 % slope.

Outcome

Soil depth increased by 0.1 m.
Per hectare production of maize increased by 4.5 q; wheat by 9 q; fodder grass by 10.13 q.

Amendment

Compactness to be increased by building mud bonded bunds.

Learning

Field bunds are the important climate proofing measures to increase soil depth in low sloped agricultural lands. The structures can be made more resistant to the climate by packing the stones with mud.



Bund planting of Aduwa, Siras, Castor, Teak, Bamboo as major fodder/timber/livelihood species including fruit species

Placement

On Field Bunds

Outcome

Tress used as fodder. 50 kg castor seeds harvested by 4 farmers in Sinhar and sold at Rs 25 /kg.

Amendment

Not required.

Learning

Indigenous fodder trees plantation on the bunds increases the bund durability and ensures livelihood security.



Waste Weir (Innovations)

Water drainage pipelines to drain excess of water from crop cultivated area. These are the PVC pipelines of 4 inch diameter and 1.5 meter length connecting up lying field to the down lying field.

Placement	Outcome	Amendment	Learning
In Field Bund	Provided durability to the field bund by regulating overflow in 5 days high intensity rainfall in 2015-16. Enhanced production as placed along field bund.	Not required.	To ensure more resistivity and durability of field bund waste weirs/water outlets are to be build in the bunds which flushes out the excess water from the farm, thereby giving more production.



Diversion Drain (DD) in crop cultivated area

The Diversion Drains are the water diversion structures at the sloped edge of the low lying farm fields. The structure absorbed the excess of water during the high intensity rainfall thereby preventing water logging in the fields.

Placement	Outcome	Amendment	Learning
In low lying water logged area.	Per hectare fodder production increased by 24 q.	Needs stone pitching for increasing durability.	Diversion drain is the climate resilient measure which minimizes water logging in the low lying area thereby supporting the production. Durability of the DD can be increased by stone pitching it on inner side.

Afforestation and Pastureland Management



Highly resistant against soil erosion and water flow.

Gully Plug with recharge pits

Placement

In private pastures.

Outcome

Soil erosion reduced.
0.1 m silt deposited in 1 year.
Increase in water absorption/percolation rate.
Well in downstream recharged; level rise by 5 feet in October 2015.

Amendment

Not required.

Learning

Gully plugs with recharge pits are effective in sustaining high water speed and pressure.
Growth of plants of economic importance on the structures makes them durable.



Water Absorption Trench (WAT)

WATs were introduced as exclusive structures to absorb the water flowing down the slopes ranging between 25 to 35 degrees. The WATs are effective in absorbing water coming with high velocity by harvesting it and then percolating slowly in the ground.

Placement

On lower side of the slope.

Outcome

Reduced runoff.
Silt deposited raised vegetation.

Amendment

To be promoted in loose soil.

Learning

WATs are the efficient models to restore water absorption. These need to be promoted in loose soil rather than rocky surface.



Stone-pitched *Thawla* for existing root stock

Thawlas were introduced to up hold the moisture around the root stock of the plants growing on the slopes. *Thawla* is a 1 feet high mound of soil constructed on the slopes around the plants. The mound surrounds the plant from lower side.

Placement

Around the existing root stock.

Outcome

Increased soil moisture around root stock.
Supplemented plant growth.
Increased grass production.

Amendment

To be constructed around trees up to 5 feet in length as they need nourishment.

Learning

Stone pitched thawla retains moisture around the root stocks of the plants in the sloped pastures even where there is no scope of CCT. Thawla around 5 feet trees are beneficial for animal husbandry.



Increases productivity in the sloped agricultural area.

Gradonies

Gradonies were constructed as steeping inward sloppy narrow bench terraces constructed in contours. Usually, gradonies are suitable for afforestation in uniformly steep sloping land. Based on steepness of the slope width of the gradonies is decided. Gradonies help in increasing the vegetative cover by increasing the sloppy surface area.

Placement	Outcome	Amendment	Learning
In pastures and agricultural land.	Land area increased along with water absorption. Farmers grown 9 kg black eyed bean; brinjal, bottle gourd for family consumption. Rs 5,000/- income generated from selling lemons.	Nutrient rich manure to be applied for increasing production. Improved seed varieties of vegetables to be introduced.	Gradonies are important climate resilient structures in sloped agricultural area. Effectivity can be increased by applying manure and improved seeds to ensure sustainable livelihoods.



Cost effective vegetative measure

Direct seeding of khakhra, neem, sitafal, karanj, kher, amaltas, etc.

Direct seeding is the method encompassing the broadcasting /dibbling of seeds directly to the ground area. The method saves the manpower involved in pit digging, after care and gives seed advance time for adapting soil conditions.

Placement	Outcome	Amendment	Learning
Open pasture land.	Seeds of trees germinated.	Seeds to be spread between the bushes of ber and thoor plants. Seeds to be spread before 6 days of onset of monsoon or just after first rain shower	Direct seeding of important fodder tree species to be done timely (before 12 to 15 days of the onset of monsoon or just after first rain shower). To get the desired germination seeds to be spread in the moisture retaining and protected places like inside the bushes.



Trees provide fodder for goats.

Plantation of fodder trees in silvi-pasture land

Branch cutting of trees e.g. *Salar (Boswellia serrata)*, *Handeda (Delonix elata)*, *Sahejan (Moringa oleifera)*, etc. were planted as to develop Forage Forestry Model in the pasture land and upstream catchment of the gully plugs. *Salar* is economically important tree which provide fodder as well has medicinal importance in curing both animal and human diseases.

Placement	Outcome	Amendment	Learning
Salar tree plantation on pasture ridges.	Trees grown on pasture.	Pesticides to be applied for optimum growth. More well adapted trees like Sandeda to be promoted.	To promote silvipasture fast growing fodder species of trees are to be grown. Pest management and organic hormone application to be done for fast growth.

Institution Building



Climatic risk mitigation mechanism

Pasture Group

Pasture group is a institution which provides loan to the beneficiaries for fodder purchase during glut season. The loaning mechanism do not allow the provision of cash as it may be used for other purposes. Only fodder is provided to the beneficiaries against which he or she has to do repayment.

Placement

Rawatpura & Anjeni.

Outcome

58 q fodder distributed among SHG members. Fodder provided to SHG members on loan.

Amendment

Not required.

Learning

Pasture group is an important source of fodder during glut season. Te group is an important institution which must be seen as resource. The beneficiaries must access the fodder rather than loan. This ensures proper utility of the pasture bank.



Need to be promote in all villages as good institutional mechanism for technology testing.

Farmers' Field School (FFS)

A group of 15-25 farmers are engaged in the Farmer Field School to initiate the group-based learning process. The tested results were well disseminated amongst the farmers.

Placement

Rawatpura & Anjeni

Outcome

Models demonstrated and adapted: 4083 wheat, FEM 2 wheat, vermiwash. 25 farmers demonstrated 4083. An increase of 4 q per bigha reported. Vermiwash used as organic manure and in seed treatment. Applied to wheat and vegetables. An increase of 35 % wheat/ha reported.

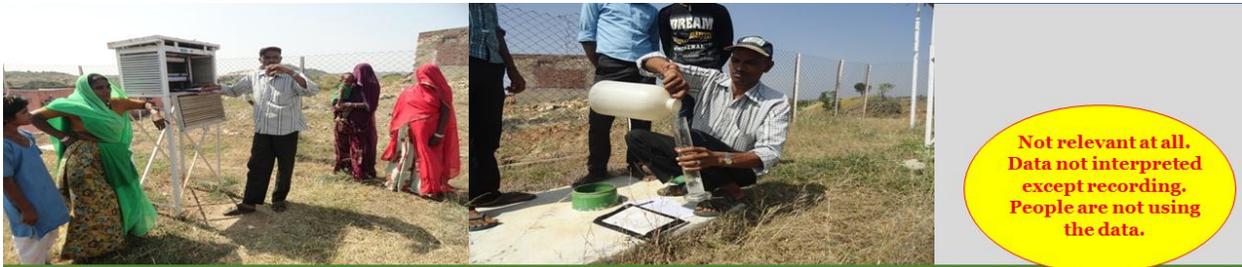
Amendment

There must be regular meetings of the FFS. Models need to be replicated.

Learning

FFS are necessary to be formed in climate proofing watersheds as they give area specific tested results of technology demonstrations.

Weather Forecasting Technology



Not relevant at all. Data not interpreted except recording. People are not using the data.

Mini Agro-met Lab

The Agro-met lab consists of the following weather measuring equipment: dry and wet bulb thermometer for measuring humidity; Max-Min thermometer for measuring maximum and minimum temperatures; Wind wane for observing wind direction; Anemometer for measuring wind velocity; and Rain gauge for measuring rainfall.

Placement

Rawatpura & Anjeni

Outcome

Data collected on minimum maximum temperature, rainfall, humidity, wind velocity and direction.

Amendment

RML service to be hired for proper forecast.

Learning

For broadcasting the weather forecast RML services to require to be hired. The forecast are appropriate which help farmers to prepare their fields. Time to time Weatherman trainings are necessary help them decipher and disseminate data.

Energy Efficient Devices



Improved Cook Stoves

The improved cook stoves were introduced to reduce the pressure on forests for their fuel wood supply. They also brought down the head load of women as they required almost 50 per cent of the fuel wood to the wood required for traditional stoves.

Placement

improved cook stoves introduced in watershed.

Outcome

Saved cooking time and reduced fuel wood consumption by 50 % (~360 kg fuel wood consumed during 6 months which was 720 kg earlier).
Reduced smoke emission.

Amendment

Village demonstration required.
Low cost local technology to be introduced.

Learning

Improved cook stoves reduces consumption of fuel wood. More testing required to be done from FFS.



Suitable for energy efficiency and reduction in head load.

Biogas Units

The biogas units were constructed to produce cooking fuel from the animal excreta thereby reducing the consumption of fuel wood and head load. The biogas also stopped smoke thereby production thereby contributing to the climate change mitigation.

Placement

Biogas units installed in the watershed.

Outcome

Partially replaced the conventional chullha.
 Reduced women head load by 75%.
 4380 kg fuel wood saved during last year from 3 units.
 Reduced smoke emission.

Amendment

Village demonstration required.

Learning

Biogas reduces consumption of fuel wood thereby reducing carbon emission. Hence, provide smokeless environment. More testing required to be done from FFS.

Animal Husbandry & Agriculture



Climate resistant and livelihood practice

Local Cow Management

Placement	Outcome	Amendment	Learning
<p>cow shelters demonstrated in the watershed.</p>	<p>Saved 730 kg fodder from 2 shelters from being wasted. Reduction in diseases. Improved milk production by 0.5 l/day. Supported in cow urine and faeces collection for manure.</p>	<p>Not required.</p>	<p>Integrated models of animal husbandry management support livelihood and environment.</p>



Climate resilient fodder

CO-2 Grass (Hybrid Napier)

The Hybrid Napier was grown as a perennial grass species known for its high protein content. The grass grows well in temperate and sub temperate climatic zones. The roots of the grass binds the top soil fragments and foliage provides important nutrients to the livestock.

Placement	Outcome	Amendment	Learning
<p>Agricultural land</p>	<p>Fed to cattle. Stall feeding introduced. Milk production in cows increased by 0.5 l/day.</p>	<p>Water supply to be ensured for effective growth.</p>	<p>Fodder grass species CO-2 is climate resilient grass. Plantation and propagation of grasses require propagule collection at village level. Hybrid species require demonstration at local level.</p>



Economic livelihood.

Vegetable farming

Placement

Agricultural land

Outcome

Unused area converted into irrigated land. Chillies, brinjal, ridge gourd, bottle gourd sold locally. Introduction of bed cultivation, nurseries. Introduction of trellis for growing vegetables.

Amendment

Vegetable seeds and fruits storage facilities to be introduced. Pest control management. Organic manure.

Learning

Vegetable farming is a low input based livelihood. The livelihood requires proper disease management (like organic lure) along with growing techniques. Direct market linkages will provide good profits.

Insect lure





**Anicuts
Convergence:
CTAE, NICRA,
etc.**



**Sirohi bucks
Convergence:
Animal Husbandry
Department**

Convergence models to be encouraged for sustainability



**4083 wheat
Convergence:
Agriculture
Department**

**Drip Irrigation
Convergence:
Horticulture
Department,
Udaipur**



Number of Watersheds:	123
Number of States:	5
States :	Karnataka, Andhra Pradesh, Telangana, Chhattisgarh, Odisha
No of Districts	32

- A total of 187 watersheds (completed or at advanced stage) in selected states are categorized as having RAPI-Index below 167.
- 123 most priority watersheds would be selected by ROs following the criteria from the feasibility study.

गाँव बढ़े तो देश बढ़े

Taking Rural India >> Forward

Programme Financial Details: Activities at Watershed Level (One Model Watershed)

Activities	Percent	Amount Rs	Euro
Additional SWC measures	15.0%	750,000	10714
Measures to improve soil quality	25.0%	1,250,000	17857
Promotion of sustainable NRM, CCA & farming practices	21.0%	1,050,000	15000
Measures to mitigate CC Risk	5.0%	250,000	3571
Project feasibility study, CC vulnerability and demand analysis	2.5%	125,000	1786
Capacity building and institutional strengthening - additional costs	5.0%	250,000	3571
Watershed level knowledge management	2.5%	125,000	1786
Watershed level Project management (incl. staff cost for capacity building)	24.0%	1,200,000	17143
	Total	5,000,000	71429
For all Watersheds		123	
Investments at watershed level		615,715,696	8795938.51
Beneficiary Contribution (@16%)		74,871,029	1069586.12
Total Cost at Watershed Level		690,586,724	9,865,525

गाँव बढ़े तो देश बढ़े

Taking Rural India >> Forward



THANK YOU

गाँव बढ़े तो देश बढ़े

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Annexure 5.2.5 Media Coverage

प्राकृतिक संसाधनों को बचाने से ही आपदाओं का प्रभावी प्रबंधन

नाबार्ड की क्लाइमेट चेन्ज एडेप्टेशन आमुखीकरण कार्यशाला



उदयपुर। पेड़ों-पहाड़ों के कटने, नदी-नालों को पाटने से उपजाऊ भूमि का कटाव बढ़ा है तथा वर्ष भर के लिए सतही व भूजल की उपलब्धता में कमी आई है। अन्तरराष्ट्रीय जलवायु परिवर्तन (क्लाइमेट चेन्ज) के साथ ही स्थानीय जलवायु में हुए बदलाव से जलग्रहण क्षेत्र को उत्पादकता गिरी है। यह आज के समय की सबसे बड़ी आपदा है। इसके निराकरण के लिए बदलते मौसम व जलवायु के अनुकूल कार्य करने होंगे ताकि जल, जन, जंगल, जमीन, जानवर संरक्षित रहकर अधिक उत्पादक बन सकें।

यह विचार विद्या भवन पॉलीटेक्निक के प्राचार्य डा अनिल मेहता ने सोमवार को राष्ट्रीय कृषि एवं ग्रामीण विकास बैंक (नाबार्ड) की और से विद्या भवन पॉलीटेक्निक में जलग्रहण क्षेत्रों में जलवायु परिवर्तन अनुकूलन (क्लाइमेट चेन्ज

एडेप्टेशन) विषयक आमुखीकरण कार्यशाला में व्यक्त किए। नाबार्ड राजस्थान क्षेत्रीय सहायक महाप्रबंधक ए.के. आहूजा ने क्लाइमेट चेन्ज के लिए आवश्यक अनुकूलन गतिविधियों के टोस एवं व्यावहारिक क्रियान्वयन के लिए ग्रामीण जन समुदाय को निरंतरता व प्रभावी सहभागिता पर जोर दिया।

नाबार्ड पी.एम.यू. उदयपुर क्षेत्र के प्रभारी सुकान्त कुमार साहू ने बताया कि संयुक्त राष्ट्र संघ (यू.एन.) के एडेप्टेशन फंड से राजस्थान व तमिलनाडु के दस-दस वाटर शेड में जहाँ पूर्व में इन्डो-जर्मन जलग्रहण विकास कार्यक्रम चल रहा है, वहाँ पूरक रूप

में तीन वर्षीय जलवायु परिवर्तन अनुकूलन कार्य हंगे। उदयपुर सहित राजस्थान के पांच जिलों में कार्य होंगे।

कार्यशाला में नाबार्ड के उदयपुर डी.डी.एम. विजेन्द्र सिंह, भीलवाड़ा डी.डी.एम. शिवकुमार गुप्ता, चित्तौड़ डी.डी.एम. सचिन कुमार, बांसवाड़ा डी.डी.एम. सुभाष जैन सहित अलर्ट संस्थान, बायफ, एफ.ई.एस, गायत्री सेवा संस्थान, सेवा मंदिर, आई.टी.सी. महान सेवा संस्थान, वास्को संस्थान के प्रतिनिधियों सहित पी.एम.यू. सलाहकारों, जलग्रहण समितियों के अध्यक्ष किसानों ने विचार विमर्श किया। संचालन डा. जी.पी.एस. झालाने किया।

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होगा कार्य

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उदयपुर. पेड़ों, पहाड़ों की कटाई, नदी-नालों को पाटने से उपजाऊ भूमि के कटाव क्षेत्र में बढ़ोतरी हुई है। अंतरराष्ट्रीय जलवायु परिवर्तन (क्लाइमेट चेन्ज) के चलते स्थानीय जलवायु में हुए बदलाव से जलग्रहण क्षेत्र में उत्पादकता गिरी है। प्राकृतिक संसाधनों को बचाने से ही आपदाओं का प्रभावी निराकरण एवं

प्रबंधन हो सकता है।

यह विचार विद्या भवन पॉलीटेक्निक के प्राचार्य अनिल मेहता ने सोमवार को राष्ट्रीय कृषि एवं ग्रामीण विकास बैंक (नाबार्ड) की और से विद्या भवन पॉलीटेक्निक में आयोजित जलग्रहण क्षेत्रों में जलवायु परिवर्तन अनुकूलन विषयक कार्यशाला में व्यक्त किए। नाबार्ड क्षेत्रीय सहायक महाप्रबंधक एके आहूजा, नाबार्ड पीएमयू प्रभारी सुकान्त कुमार साहू ने ने विचार रखे। कार्यशाला में नाबार्ड के डीडीएम वीजेद्रसिंह, भीलवाड़ा डीडीएम शिवकुमार गुप्ता, चित्तौड़गढ़ से सचिन कुमार, बांसवाड़ा से सुभाष जैन मौजूद रहे।

Dainik Navjyoti 23 Aug 2016

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प्राकृतिक संसाधनों को बचाना जरूरी



अंतरराष्ट्रीय जलवायु परिवर्तन (क्लाइमेट चेंज) के साथ ही स्थानीय जलवायु में हुए बदलाव से जलग्रहण क्षेत्र की उत्पादकता गिरी है। यह आज के समय की सबसे बड़ी आपदा है। मिट्टी, पानी, पहाड़, नदी-तालाबों जैसे प्राकृतिक संसाधनों को बचाने से ही आपदाओं का प्रभावी निराकरण व प्रबंधन हो सकता है। यह बात डॉ. अनिल मेहता ने सोमवार को जलग्रहण क्षेत्रों में जलवायु परिवर्तन अनुकूलन विषयक आमुखीकरण कार्यशाला में कहीं। नाबार्ड पी.एम.यू. उदयपुर क्षेत्र के प्रभारी सुकांत कुमार साहू ने बताया कि संयुक्त राष्ट्र संघ (यू.एन.) के अडेप्टेशन फंड से राजस्थान व तमिलनाडु के दस-दस वाटर शेड में जहां पूर्व में इंडो-जर्मन जलग्रहण विकास कार्यक्रम चल रहा है, वहां पूरक रूप में तीन वर्षीय जलवायु परिवर्तन अनुकूलन कार्य होंगे।

Dainik Bhaskar 23 Aug 2016, Page no 9

नाबार्ड की क्लाइमेट चेन्ज एडेप्टेशन आमुखीकरण कार्यशाला

22 Aug, 16

उदयपुर, पेड़ों-पहाड़ों के कटने, नदी-नालों को पाटने से उपजाऊ भूमि का कटाव बढ़ा है तथा वर्ष भर के लिए सतही व भूजल की उपलब्धता में कमी आई है। अन्तराष्ट्रीय जलवायु परिवर्तन क्लाइमेट चेन्ज(के साथ ही स्थानीय जलवायु में हुए बदलाव से जलग्रहण क्षेत्र की उत्पादकता गिरी है। यह आज के समय की सबसे बड़ी आपदा है। इसके निराकरण के लिए बदलते मौसम व जलवायु के अनुकूल कार्य करने होंगे ताकि जल, जन, जंगल, जमीन, जानवर संरक्षित रहकर अधिक उत्पादक बन सके। मिट्टी, पानी, पहाड़, नदी-तालाबों जैसे प्राकृतिक संसाधनों को बचाने से ही आपदाओं का प्रभावी निराकरण व प्रबंधन हो सकता है।



यह

विचार विद्या भवन पॉलीटेक्निक के प्राचार्य डा अनिल मेहता ने सोमवार को राष्ट्रीय कृषि एवं ग्रामीण विकास बैंक) नाबार्ड (की और से विद्या भवन पॉलीटेक्निक में आयोजित एक दिवसीय “जलग्रहण क्षेत्रों में जलवायु परिवर्तन अनुकूलन” (क्लाइमेट चेन्ज एडेप्टेशन (विषयक आमुखीकरण कार्यशाला में व्यक्त किया।

नाबार्ड राजस्थान क्षेत्रीय सहायक महाप्रबंधक ए.के .आहूजा ने क्लाइमेट चेंज के लिए आवश्यक अनुकूलन गतिविधियों के ठोस एवं व्यावहारिक क्रियान्वयन के लिए ग्रामीण जन समुदाय की निरंतरता व प्रभावी सहभागिता पर जोर दिया।

नाबार्ड पी.एम.यू.उदयपुर क्षेत्र के प्रभारी सुकान्त कुमार साहू ने बताया कि संयुक्त राष्ट्र संघ) यू.एन (.के एडेप्टेशन फन्ड से राजस्थान व तमिलनाडू के दस-दस वाटर शेड में जहाँ पूर्व में इन्डो-जर्मन जलग्रहण विकास कार्यक्रम चल रहा है, वहां पूरक रूप में तीन वर्षीय जलवायु परिवर्तन अनुकूलन कार्य होंगे। राजस्थान को इसके तहत नौ करोड़ की सहायता प्राप्त हुई है। इसके तहत उदयपुर सहित राजस्थान के पाँच जिलों में कार्य होंगे। जिसमें चौदह हजार परिवार, सीमांत व लघु कृषक लाभांशित होंगे। कार्यशाला में नाबार्ड के उदयपुर डी.डी.एम .विजेन्द्र सिंह, भीलवाड़ा डी.डी.एम .शिवकुमार गुप्ता, चित्तौड़ डी.डी.एम .सचिन कुमार, बांसवाड़ा डी.डी.एम .सुभाष जैन सहित अलर्ट संस्थान, बायफ, एफ.ई.एस, गायत्री सेवा संस्थान, सेवा मंदिर, आई.टी.सी . महान सेवा संस्थान, वास्को संस्थान के प्रतिनिधियों सहित पी.एम.यू.सलाहकारों , जलग्रहण समितियों के अध्यक्ष किसानों ने दिन भर गहन विचार विमर्श किया। संचालन करते हुये डा .जी.पी.एस .झाला ने जलवायु परिवर्तन एवं इससे उपजी आपदाओं पर प्रकाश डाला।

नाबार्ड की क्लाइमेट चेन्ज एडेप्टेशन आमुखीकरण कार्यशाला Udaipur News::pressnote.in

http://www.pressnote.in/Udaipur-New_321920.html

Annexure 5.2.6 - List of Participants

NATIONAL BANK FOR AGRICULTURE & RURAL DEVELOPMENT					
PMU, IGWDP-Rajasthan, Udaipur					
Attendance Sheet					
Climate proofing of watershed development projects in Rajasthan with Adaptation fund					
Inception workshop					
@ Udaipur- 22 August, 2016					
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6	Devilal meena	VWC Kharal	9686550170		
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12	बाबू चन्द चौधरी - जांबल अध्यक्ष - सेवा मन्दिर	UBR Member & officer IIPD-Jhalawar			

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25	Pyr Chand Donyi	"	9414316522	- do -	[Signature]

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34					