

**TRAINING MANUAL
ON
CLIMATE CHANGE, ITS IMPACTS, ADAPTATION STRATEGY
AND BEST PRACTICES**



**APN Project on Building Capacity to Enhance Farmer's Capabilities to
Address the Challenges of Climate Change Using Climate Smart
Agriculture Strategies**

Implemented by:

Amity University Uttar Pradesh, Noida, India
In collaboration with University of Western Australia, Australia, Kernel
Foundation, Bangladesh and Kabul University, Afghanistan

PREFACE

In South Asia where agriculture is the largest sector of the economy, agricultural production is under pressure from increasing demands for food. At the same time, people and communities who are dependent on agriculture for their livelihoods are more threatened by and vulnerable to widespread changes in rainfall and temperature patterns. The climate change expected to aggravate the situation further by causing more frequent and intense droughts, floods and increasing temperatures. Experts predict that the impact of changes in temperature and precipitation patterns on crop production and food security will get worse in South Asia.

Climate change effects can be tackled by increasing the adaptive capacity and resilience of agriculture as well as increasing resource use efficiency in agricultural production systems. Experts suggest that the best way to achieve this through adopting farming principles that adhere to the Climate Smart Agriculture (CSA) approach which aims at transforming and reorienting all forms of agricultural systems (crops, livestock and fisheries) to support food security in the context of a changing climate

Within this context, the Asia-Pacific Network for Global Change Research (APN) is funding a project on “Building capacity to enhance farmer's capabilities to address the challenges of climate change using Climate Smart Agriculture strategies”. The project is being implemented by the Amity University Uttar Pradesh, Noida, India in collaboration with the University of Western Australia, Australia; Kernel Foundation, Bangladesh; and Kabul University, Afghanistan. The aims of the project are to learn climate change based challenges in agriculture and to disseminate CSA technologies to the end users for sustainable agricultural development in Afghanistan, Bangladesh and India.

This manual presents a comprehensive package of general and practical illustrations of climate change and its impact on agriculture with a set of CSA technologies targeting both the smallholder farmers as well as grass root level Agricultural Extension Agents.

We expect that the information on climate change and suggested technologies in this manual, when implemented will influence wide spread adoption of the CSA technologies to enhance greater access and understanding of CSA practices by the majority of smallholder farmers, community lead farmers and front-line extension agents across the country.

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INDIA SUCCESS STORIES**Error! Bookmark not defined.**
BANGLADESH SYSTEMS**Error! Bookmark not defined.**
AFGANISTAN**Error! Bookmark not defined.**

ACRONYMS

APN	Asia Pacific Network
AICC	Agriculture information and communication centre
AIL	Adaptation, Institutions and Livelihoods
ARIA	Agricultural Research Institute of Afghanistan
AWD	Alternate wetting and drying
BARC	Bangladesh Agricultural Research Council
BARI	Bangladesh Agriculture Research Institute
BCAS	Bangladesh Centre for Advanced Studies
BIRRI	Bangladesh Rice Research Institute
CA	Conservation Agriculture
CBA	Community-based adaptation
CO	Carbon monoxide
CO ₂	Carbon dioxide
CSA	Climate Smart Agriculture
CIMMYT	Maize and Wheat Improvement Center
DAM	Department of Agricultural Marketing
FAO	Food and Agriculture Organisation
GHG	Greenhouse Gas
GIS	Geographic Information System
GMB	Ganga Brahmaputra Meghna
GMCC's	Green Manure/Cover Crops
HTW	Hand Tube Wells
IA	Irrigation Association
IAA	integrated agriculture–aquaculture
ICAR	Indian Council of Agricultural Research
ICT	Information and Communication Technology

IPCC	Intergovernmental Panel on Climate Chang
IPCC	Intergovernmental Panel for Climate Change
IPM	Integrated pest management
IRRI	International Rice Research Institute
IWMI	International Water Management Institute
KAP	Knowledge Attitude and Practice
NO _x	Nitrogen Oxide
NGO	Non-Government Organization
OA	Organic Agriculture
SALT	Sloping Agriculture Land Technology
SEBA	Society for Economic and Basic Advancement
SOM	Soil Organic Matter
SRI	System of Rice Intensification
STW	Shallow Tube Wells
UNFCCC	United Nations Framework Convention on Climate Change
USA	United States of America
VAF	Vegetable-Agroforestry
WA	West Australia
WHO	World Health Organization
IFPRI	International Food Policy Research Institute
TNAU	Tamil Nadu Agricultural University
ICAAP	Centre for Advancement in Agricultural Practice
IKP	ICICI Knowledge Park
GPCIC	Grameenphone has set up a Community Information Centre

CHAPTER-1: INTRODUCTION TO THE MANUAL

1.1 Introduction

Climate is a natural phenomenon and a continuous process. It is the gradual change in temperature, pattern of rainfall, wind, air and sea currents, tree covers, etc. of an area. During the recent centuries the change accelerated due to human activities for development. It is affecting millions of people across the globe irrespective of developed and developing countries. Under developed and developing countries are the innocent victims of climate change impacts. Though fossil fuel utilization and various gas emission from the industries are primarily responsible agricultural practices throughout world is also contributing in climate change through GHGs emission. Climate change exerts in the form of increased variability of climate both in monsoon and winter rainfall pattern; increase in average temperature with warmer winters; increased salinity in coastal areas, as a result of rising sea level and reduced discharge from major rivers; weakening ecosystems; the recession of glaciers in the Himalayas; and increased frequency and/or severity of extreme weather events (floods, cyclones, droughts).

The South Asian countries namely Afghanistan, Bangladesh and India are particularly vulnerable to climate change owing to high population density, concerted poverty, and existing climate variability. The people of these countries are heavily dependent on agriculture and fisheries. Climate change impacts on livelihood thus become a challenge of development under most adversarial changes in dynamics of nature.

Climate change has the potential to compound the prevailing development problems and increase pressure on key resources needed to sustain growth. Climate change is predicted to have severe consequences in the day to come on agriculture and the rural poor of the said countries. In the changing scenario to keep pace with the demand of growing population for food and nutrition and enhance sustainable development it is utmost important to adapt with the changing climate and where possible to mitigate the shocks induced by climatic impacts.

With the above view the experts of climate, agriculture and other relevant fields came together to identify climate resilient technologies and practices that farmers can adopt in their fields to keep the productivity trends upward despite climate induced hazards.

To adapt with climate change and to overcome the climatic hazards it not sufficient to develop climate resilient technologies and identify the farmers practices to withstand in climatic variabilities, but to disseminate knowledge and skills to the farmers who will use those for their cause and to scale up the resilient indigenous practices to other vulnerable areas. In addition to

revised extension services farmers' knowledge and skill development is crucial. Training is the one of the popular techniques to develop capacity of the farming communities.

1.2 The Training Manual

The manual has been developed as guide for of the Master Trainers/Training Facilitators for organizing farmer's training on climate change variability, climatic hazards and adaptation & mitigation options of the target countries of the project on "Building Capacity to Enhance Farmer's Capabilities to Address the Challenges of Climate Change Using Climate Smart Agriculture Strategies" funded by the Asia Pacific Network on Global Research (APN) and implemented by the Amity UniversityUttar Pradesh, India in collaboration with the University of Western Australia, Kernel Foundation, Dhaka, Bangladesh and the Kabul University, Afghanistan. The manual has been developed based on the learnings from the week long training workshop on "Building capacity to enhance farmer's capabilities to address the challenge of climate change using climate smart agriculture strategies" held at Amity University during 09 to 15 February 2020.

1.2.1 Purpose of the Manual

The Manual is intended to guide the Master Trainers to develop training program on "Climate change, its impacts, adaptation strategy and best practices" for the farmers of Afghanistan, Bangladesh and India which will be customized by respective countries in their own language and help them to develop course content and training materials in the context of country specific situations for conducting the training.

However, it should be noted that agriculture system and its production techniques widely varies from country to country region to region within a country and climate change affecting each area and each farm in a different ways. Climate smart agricultural approaches are specific to country, even site and context and there is no single solution or even a set of solutions that fits all situations. Nonetheless, we can define some principles to follow, and provide some technologies to adapt to suit their particular circumstances.

Specifically, this manual intends to provide a snapshot of the following:

- Concept of climate change and its drivers;
- How climate change impacting lives and livelihoods of farming community;
- Adaptation strategies to combat climate change vulnerability; and
- Climate Smart Agricultural techniques and farmers' innovative practices in Afghanistan, Bangladesh and India.

1.2.2 Overview of the Training Module with Sessions

The manual covers three training modules each addressing a particular aspect and consisting of eleven sessions and is designed for a two-day training course on climate-smart agriculture that would take the learner from the basics of climate science to the impacts of climate change and the linkages among climate, agriculture and food security.

Module–I: Concept of Climate Change and Its Impacts on Agriculture

Overview:

The first module of this manual is an introduction to the science of climate change, what is weather and climate, what is climate change and what are impacts of climate change on agriculture. It aims to increase the participants' understanding and knowledge of climate change and its causes. The module also highlights how climate change affects agro-ecosystems and how agricultural sectors contribute to climate change through greenhouse gas emissions.

Key Questions:

- What is climate and climate change?
- What is the difference between climate change and natural climate variability?
- What are the causes of climate change?
- How does agriculture contribute to climate change?
- What are the impacts of climate change in agriculture

Objectives:

The objectives of the module are to:

- Give comprehensive understanding of climate, weather and climate change;
- Explain the causes of climate change;
- Explain contribution of agriculture practices to climate change;
- Negative impacts of climate change in the dry zone agriculture; and
- Enhance participant's awareness about climate change and its consequences on their lives and livelihoods.
- Form a base to discuss the issue further.

Outcomes:

After completion of the module, participants will be able to:

- State what is climate change, its causes, contribution of agricultural practices in greenhouse gas emission;
- Explain the difference between weather and climate
- Distinguish between climate change and climate variability
- Describe the greenhouse effect and global warming
- List the main causes of climate change
- Describe the likely effects of climate change in agriculture sector
- Explain the effects of climate change on agro-ecosystems: crops, livestock, fisheries and forestry

Duration: 2 hours and 25 minutes

Module–I: Concept of Climate Change and its Impacts on Agriculture

Session-1: Concepts of climate change and its drivers

Session time: 25 Minutes

Session Overview: The session introduces participants to the basics of climate change and distinguishes climate from weather and climate variability. The session will encourage the participants to consider the climate trends and recent weather events in their drought prone areas.

Objectives of the session:

After completion of the session the participant will be able to:

- i) Understand what is climate and climate change;
- ii) Can distinguish weather and climate;
- iii) Participants are fully aware of the causes of climate change; and
- iv) Know about the present and future consequences of climatic system that will affect their lives and livelihoods and food security.

Training Methods/Techniques:

- Power point presentation
- White board/Flip chart
- Open discussions
- Take home notes

Session-2: Climate induced hazards in drought and flood prone areas

Session time: 55 Minutes

Session Overview: The session will give the participants a clear idea about various impacts of climate change in the global economic systems and affecting their lives and livelihoods. The session will give emphasis on climate change impact on agriculture in the drought prone areas of India, Bangladesh and Afghanistan.

This session introduces the importance of understanding the evolution of climatic conditions for agricultural production. It explains the effects of climate change on agricultural sectors – crops, livestock, forestry, fisheries and aquaculture – and livelihoods. It also examines the effects of agriculture on climate change, and it discusses how agriculture plays a role in both releasing emissions and sequestering carbon in soils and biomass. Finally, it examines the different greenhouse gas emissions across agricultural practices.

Objectives of the session:

After completion of the session the participants will be able to:

- Understand comprehensively the hazards of their locality due to drought and flood induced by climate change;
- Relate their experiences with hazards

- **Training Methods/Techniques:**

- Power point presentation
- White board/Flip chart
- Open discussions
- Take home notes

Session 3: Climate Change Impacts on Agriculture including Economic Impacts

Session time: 55 Minutes

Session Overview: The session introduces participants to the variabilities and its impacts on agriculture including economic activities. The participants will acquainted with the local resources and choose right options for adaptation and mitigation based on country specific local context.

Objectives of the session:

After completion of the session the participant will be able to:

- Improve their understanding of the impacts of climate change on agriculture Understand what is climate and climate change;

- Increase knowledge on natural resources and socioeconomics and adaptation options
- Select adaptive actions for location specific actions; and
- Share the lesson learned to the farmers of their own country.

Training Methods/Techniques:

- Power point presentation
- White board/Flip chart
- Open discussions
- Take home note

Module–II: Adaptation Strategies in Drought and Flood Prone Areas to Combat Climate Change Impacts

Overview: The module is to provide the facilitators a comprehensive understanding of adaptation strategies to be taken for combating climate change impacts. The aim of the module is to introduce the facilitators with the adaptation strategies for the flood and drought prone areas of India, Bangladesh and Afghanistan, so that on the basis of the learnings they can develop course content and training materials for farmers’ capacity building training on climate smart agriculture in their own geo-physical and socio-economic conditions.

Key Questions:

- What is the climate induced shocks specially due to drought and floods, prevailed in their own country;
- What is the drought and flood prone areas of Afghanistan, Bangladesh and India;
- What are the adaptation techniques to cope with climate change variability;

Objectives: The objectives of the module are to:

- Give comprehensive understanding of climate change shocks in the member countries;
- Identify drought and flood prone areas of the countries under the project;
- Explain the strategic actions required to cope with the shocks of climate variability;
- Change the attitude towards actions to adjust with climate change impacts;

Outcomes: After completion of the module, participants will be able to:

- (a) Clearly understand the adaptation
- (b) State the climatic shocks exerted due to droughts and floods in their area;
- (c) Determine actions to be taken for soil management, timing of plantation and intercultural operations to be taken;
- (d) Know various adaptation techniques for different crops and livestock farming in drought and flood prone areas; and
- (e) Change their attitude and practices towards adaptations of climatic variability for sustainable agriculture.

Duration: 1 hours and 50 minutes

Session- 4: Adaption approaches to cope with climatic variability

Session time: 55 Minutes

Session Overview: The session provides an insight into the climatic variability along with adaptive measures to cope with. It will also give the participants a clear idea about the latest technological advancements to avert the situation. It will help in changing KAP of climate victims to adapt with the climatic shock

Objectives of the session: After completion of the session the participant will be able to:

- i) Understand the adaptive approaches necessary to cope with the climatic variability;
- ii) Know the technological advancement and innovative practices to avert the hazards;
- iii) Change the attitudes and practices in agricultural activities

Training Methods/Techniques:

- Power point presentation
- White board/Flip chart
- Open discussions
- Take home notes

Session 5: Strategic Action for Adaptation and Mitigation

Session time: 55 Minutes

Session Overview: The session is to provide technical guidelines that will facilitate the design implementation of policies and actions aiming at fighting adverse impacts of climate change. The session will help participants to identify a series of action lines on priority basis for each climatic hotspot of the project countries through participation of farmers, extensionist, climate experts and policy makers.

Objectives of the session: After completion of the session the participant will be able to:

- i) Understand and describe the concept of adaptation of and mitigation to climate change impacts;
- ii) Actively facilitate the participatory designing of policy and plans for adaptation cope with the climate change impacts and formulation of mitigation to climate variabilities in different climate hotspot;
- iii) Convince farming communities to participate in determining strategies for action.

Training Methods/Techniques:

- a) Power point presentation
- b) White board/Flip chart
- c) Group performance
- d) Take home notes

Module-III: Climate Resilient Technologies

Overview: The aim of the module is to improve the knowledge, skills and attitudes towards climate resilient technologies in agricultural farming. The module will highlight on the knowledge of technologies and innovations practiced in different regions to combat climate change sways. It will also shade lights on institutional preparation and farmer's capacity building for adoption and practicing climate smart agriculture for productivity and economic improvement of the farming community. Furthermore, emphasis will be given to ICT tools and Agro Advisory services for dissemination of climate smart agriculture and productivity enhancement. Special emphasis will be given to conservative agriculture to reduce the greenhouse gas emission, judiciary use of ever

declining natural resources.

Key Questions:

- What are the climate smart technologies available for adaptation in a changed climatic situation?
- What are the suitable cropping system and practices suitable to adjust with the climate change environment?
- What are the innovative techniques and indigenous practices of the farming communities to adapt with the situation induced by climatic variation?
- What are the policy needed and farmer's preparedness critical to up scaling Climate Smart Agriculture?
- What the interventions required to improve the farming practices and farm income in the climate change era;
- What are the ICT tools to be used in disseminating the technologies for production and marketing of agro-commodities in disaster prone areas and what are the policy issues for ICT use in agriculture;
- What are the techniques of conservative agriculture in drought areas.

Objectives: The objectives of the module are to:

- i) Give comprehensive understanding of climate smart agricultural technologies and local innovative practices to adapt with climate change;
- ii) Enable the participants to explain and demonstrate the climate smart technologies and innovations;
- iii) Provide comprehensive understanding of the policy interventions and farmers' preparedness to harness the resilient technologies and innovations;
- iv) Provide comprehensive understanding on ICT use in agriculture;

Outcomes: After completion of the module, participants will be able to:

- State and demonstrate the climate smart agriculture to combat shocks in crop production, and livestock farming;
- ICT in agriculture and agro-advisory services;
- Detail the conservative agriculture ;
- Conceptualize conservative agriculture and can describe conservation techniques practiced by different countries

Duration: 4 hours and 75 minutes

Session-6 Climate resilient technologies in agriculture

Session time: 55 Minutes

Session Overview: The session will conceptualize the climate resilient approaches and technologies to overcome the climatic hazards in various regions of Afghanistan, Bangladesh and India. It put light on various resilient technologies and practices with view to enhance productivity of agriculture and improving livelihood options for the climate victims.

Objectives of the session: After completion of the session the participant will be able to:

- i) Understand the resiliency against climatic variability;
- ii) Identify climate resilient practices/technologies for different climatic hotspots;
- iii) Describe and demonstrate the climate smart technologies amongst the farmers; and
- iv) Design training module and lesson sheets for the participating farmers of their countries.

Training Methods/Techniques:

- Power point presentation
- White board/Flip chart
- Open discussions

Session 7: ICT Tools and Agro Advisories

Session time: 55 Minutes

Session Overview: The aim of the session is to introduce participants with the ICT Tools and Agro Advisory Service. The session emphasised on the role of ICT in agriculture development; its effectiveness and impacts on agro-advisory services to address the farmers' needs. The session will put light on ICT in information and communication system in agriculture extension, its impacts on climate change adaptation and early warning, constraints of ICT based Agro-Advisory Services and finally ICT experience agri-advisory services in Bangladesh.

Objectives of the session: After completion of the session the participant will be able to:

- Inform about Information communication Technology (ICT) and its role and effectiveness in agro-advisory services.
- Identify challenges and potentials of ICT in future agro-advisory services.
- Effectiveness and efficacy of ICT tools in their own context.

Session 8: Conservation agriculture to combat climate change impacts in drought areas

Session time: 75 Minutes

Session Overview: The session introduces participants to the conservation agriculture, principles, soil health management, sustainable agriculture techniques. Challenges in sustainable agriculture in the drought prone areas.

Objectives of the session: After completion of the session the participant will be able to:

- i) Understand what is conservation agriculture;
- ii) Acquaint with the principles of conservation agriculture
- iii) Describe and demonstrate the techniques of conservation agricultural techniques;
- iv) Describe the challenges of sustainable agriculture.

Training Methods/Techniques:

- Power point presentation

- White board/Flip chart
- Open discussions
- Take home notes.

Session 9: Innovative Practices of the farming community

Session time: 45 Minutes

Session Overview: The ultimate aim of the session is to give insight to the innovative practices for agro-farm management either individually or collectively. The innovative technologies developed either by the research institutes or by local farmers will be described with their efficacy to sustain productivity in agriculture.

Objectives of the session: After completion of the session the participant will be able to:

- Identify the innovative practices for facing the changed situation due to climate change;
- Relate their own experiences with the innovative ideas (including case studies); and
- Practice the techniques in their own field for better management of their farms.

Training Methods/Techniques:

- i) Power point presentation
- ii) White board/Flip chart
- iii) Open discussions
- iv) Take home notes.

Session 10: Community Approach for Better Agro-farm Management

Session time: 45 Minutes

Session Overview: The session will provide comprehensive understanding community approach for climate change adaptation in the area and ways and means of community approach.

Objectives of the session: After completion of the session the participant will be able to:

- i) Realize the need of collective approaches for coping with climate change impacts;
- ii) Relate their own experiences with the innovative ideas; and
- iii) Practice the techniques in their own field for better management of their farms.

After completion of the session the participants will be able to:

- Realize the need of collective approaches for coping with climate change impact practices;
- Relate their own experiences with the innovative ideas;
- Practice the techniques in their own field for better management of their farms.

Training Methods/Techniques:

- Power point presentation
- White board/Flip chart
- Open discussions
- Take home notes.

Session 11: Institutional Support for Community Management

Session time: 30 Minutes

Session Overview: The session introduces participants with concept of institutions, types of institutions and role of institution in community mobilization and need of various institutional supports for community based climate change adaptation in agriculture.

Objectives of the session: After completion of the session the participant will be able to:

- i) Will be able to elucidate the need of institutional support to coping with climate change impacts;
- ii) Recapitulate the existing institutional facilities in their area to cope with the disasters induced by climate change;
- iii) Take advantage of the existing institutional facilities for fighting against climate hazards.

Training Methods/Techniques:

- i) Power point presentation
- ii) White board/Flip chart
- iii) Open discussions
- iv) Take home notes

1.2.3 Outline of the Training Course

This manual is designed for a two-day training course on “Climate change, its impacts, adaptation strategy and best bet practices” that would take the learner from the basics of climate science to the impacts of climate change and the linkages among climate, agriculture and food security.

It contains three modules, each addressing a particular aspect and consisting of 11 sessions (Table 1.1) that are held either in plenary, as one group, or in smaller work groups. The duration of each module is indicative and can be adjusted depending on the needs of the trainers and circumstances of participants.

Table 1: Outline of the training course

Training Session and time	Objectives	Methods
Day-1		
9.00-9.30 Registration	<ul style="list-style-type: none"> -To have details of the participants; - Have their contacts and - Further mode of communication 	Documentation
Opening session		
9.30-10.15 Welcome and Course Introduction	<ul style="list-style-type: none"> - Introduction of the participants - Background to the APN project objectives and expected outcome/benefit - Course introduction, objectives of the training course, methods to be applied, training materials to be used, facilitators and their role during the training, review of the logistical matters, etc. 	<ul style="list-style-type: none"> - Welcome address by the organizer - Self-introduction by the participants - Seeking opinion of the participants
10.15-11.00 Pre-evaluation	Assess knowledge level of the participants on climate change, its impacts on agriculture and climate technologies.	Pre-evaluation using a simple checklist
10:30-1045 Tea break		
Module 1: Concept of Climate Change and its Impacts on Agriculture		
10:45-11:30 Session-1: Concept of climate change and drivers of climate change	After completion of the session the participant will be able to: <ul style="list-style-type: none"> - Understand what is climate and climate change; - Can distinguish weather and climate; - Can identify the drivers of climate change; - Appreciate the present and future consequences of climatic systems that will affect their lives and livelihoods 	<ul style="list-style-type: none"> - Power point presentation -White board/Flip chart -Open discussions - Take home notes
11.30-12.15 Session-2: Climate induced hazards in drought and flood prone areas.	After completion of the session the participants will be able to: <ul style="list-style-type: none"> - Understand comprehensively the hazards of their locality due to drought and flood induced by climate change; - Relate their experiences with the hazards. 	<ul style="list-style-type: none"> -Power point presentation -White board/Flip chart -Open discussions - Take home notes
12.15-13.00 Session-3: Climate change impacts on agriculture including economic impact.	After completion of the session the participants will be able to: <ul style="list-style-type: none"> - Identify the key possible effects of climate change on agriculture; - Describe the relationships between climate change and agriculture; 	<ul style="list-style-type: none"> - Power point presentation - Power point presentation - White board/Flip chart -Open discussions - Take home notes

Training Session and time	Objectives	Methods
	<ul style="list-style-type: none"> - How a changing climate is likely to affect a particular aspect of human activity in their locality/village; - Recognize drought induced vulnerabilities of farmers and measures to address those; - Describe the transmission mechanisms of climate shocks - from their occurrence to the risk of agricultural production. 	
13.00-14.00 Lunch break		
Module II: Adaptation Strategies to Combat Climate Change Impacts in Drought & Flood Prone Areas		
14.00-14.55 Session-4: Adaptation approaches to cope with climatic variability	After completion of the session the participants will be able to: <ul style="list-style-type: none"> - Understand the adaptive approaches necessary to cope with the climatic variability; - Know the technological advancement and innovative practices to avert the hazards; - Change the attitudes and practices in agricultural activities. 	<ul style="list-style-type: none"> -Power point presentation -White board/Flip chart -Open discussions -Videos - Take home notes
14.55-15.50 Session-5: Strategic action for adaptation and mitigation	After completion of the session the participants will be able to: <ul style="list-style-type: none"> - Delineate the strategic actions required to cope with the changed situations; - Develop community plans to minimize climatic disasters. 	<ul style="list-style-type: none"> -Power point presentation -White board/Flip chart -Videos -Open discussions - Take home notes
15.50-16.10 Tea Break		
16.10-17.00 Recapitulation of day one sessions	After the session the participants will be able to: <ul style="list-style-type: none"> - Summarize the day's discussions; - Clarify the difficult topics by sharing with other fellow participants; - Take home the learnings for practice in their own situations. 	Open discussion Summarization of the learnings by the training coordinator/facilitator
Day-2		
Module-III: Climate Resilient Technologies		
10.00-10.45 Session-6: Climate resilient technologies in agriculture	After completion of the session the participants will be able to: <ul style="list-style-type: none"> - Appreciate climate resilient/ smart technologies in agriculture; - Identify climate smart technologies source of their availability; 	Power point presentation <ul style="list-style-type: none"> -White board/Flip chart -Videos -Open discussions - Take home notes

Training Session and time	Objectives	Methods
	- Develop skills in CSA practices.	
10.45-11.30 Session-7: ICT Tools and Argo Advisories	After completion of the session the participants will be able to: - Identify the ICT based tools for managing cop and pests - Relate their own experiences with the innovative ideas (including case studies); - Practice the techniques in the own field for better management of their farms.	-Power point presentation -White board/Flip chart -Videos -Open discussions - Take home notes
11.30-11.45 Tea break		
11.45-13.00 Session-8: Innovative Practices of the Farming Community	After completion of the session the participants will be able to: - Identify the innovative practices for facing the changed situation due to climate change; - Relate their own experiences with the innovative ideas (including case studies); - Practice the techniques in their own field for better management of their farms.	-Power point presentation -White board/Flip chart -Videos -Open discussions - Take home notes
13:00-14:00 Lunch break		
14:00-14:45 Session-9: Conservation Agriculture to Combat Climate Change Impacts	After completion of the session the participants will be able to: - Appreciate conservative agriculture techniques practiced by the farmers in drought prone countries; - Identify problems of adopting resource conservation technologies; - Appreciate Crop-Livestock Interaction in Conservation Agriculture; - Realize potentials of practicing conservation agriculture in their own situation.	- Power point presentation - Video showing - Take home notes
14:45-15:30 Session-10: Community Approach for Better Agro-farm Management	After completion of the session the participants will be able to: - Realize the need of collective approaches for coping with climate change impact practices; - Relate their own experiences with the innovative ideas; - Practice the techniques in their own field for better management of their farms.	-Power point presentation -White board/Flip chart -Open discussions - Take home notes
15:30-16:15	After completion of the session the participants will be able to:	- Power point presentation -White board/Flip chart

Training Session and time	Objectives	Methods
Session-11: Institutional Support for community management	<ul style="list-style-type: none"> - Elucidate the need of institutional support to coping with climate change impacts; - Recapitulate the existing institutional facilities in their area to cope with the disasters induced by climate change; - Take advantage of the existing institutional facilities for fighting against climatic hazards. 	<ul style="list-style-type: none"> - Open discussions - Take home notes
16:15-16:45 Recapitulation of day two sessions	<p>After the session the participants will be able to:</p> <ul style="list-style-type: none"> - Summarize the day's discussions; - Clarify the difficult topics by sharing with other fellow participants; - Individuals identify one or two key areas for action on their farms; and - Take home the learnings for practice in their respective situations. 	<ul style="list-style-type: none"> - Oral presentations - Flip charts preparation on learnings by participants (in group); - Presentation of learnings by group leaders.
16:45-17:15 Post evaluation	<ul style="list-style-type: none"> - Evaluation of participant's perceptions about the training course; - Gain opinions of the participants about training course and delivery of course contents. 	<ul style="list-style-type: none"> - Evaluation using checklist
17:15-17:45 Closing session	<ul style="list-style-type: none"> - Wrap-up the course through participatory interactions & closing; - Certificate awarding, etc 	<ul style="list-style-type: none"> - Participatory discussion/ Feedback;

1.2.4 Structure of the Training Manual

This training manual is organized following a two-tiered approach. The first is to provide a sound theoretical background of information on different aspects of climate and agriculture. The second is to allow participants to apply this knowledge through practical examples, exercises and group work.

This training manual is designed to be flexible, so it can be tailored for context:

- Adapt the content to suit the needs of the participants and the situation in respective region/ country. Where possible, examples should relate to local conditions.
- Invite guest speakers to discuss particular topics. This is particularly useful for Module D, which focuses on farming in your area.
- Add, change or drop exercises. Discuss this within the group before reporting back to the plenary. The allotted time for the exercises is only an estimate. Feel free to adapt the exercises or to create your own and replace the examples with ones that are more relevant to your participants' experiences and circumstances.

- Add modules to deal with topics relating to the immediate situation. For example, you might want to spend more time discussing drought /flood management, or other issues that are particularly important locally and currently.

This training manual will help Facilitators to develop specific instruction on climate change, its impacts, adaptation strategy and best bet practices for practical applications. This means that the examples and exercises should be modified to reflect a country's specific circumstances, because climate change, its impact and climate-smart agriculture is highly specific to place and context. Where sources of data and information have not been provided, the trainer should consult country documents such as National Communications to the United Nations Framework Convention on Climate Change (UNFCCC) and other national and local planning documents, as well as national, regional and local climate-smart agricultural strategies.

