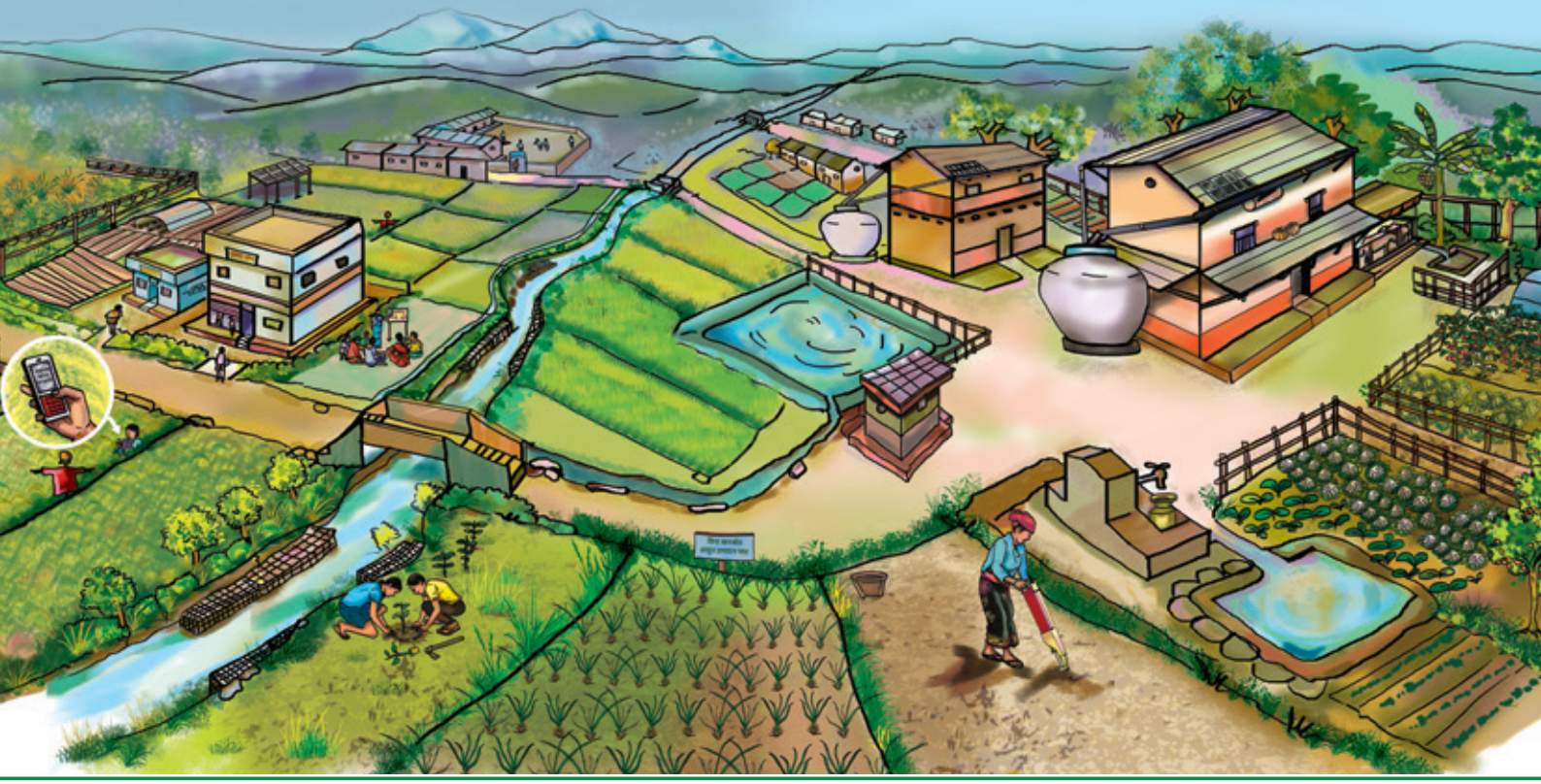

BUILDING CAPACITIES FOR SCALING-UP CLIMATE SMART VILLAGE IN NEPAL

TRAINING MANUAL

CGIAR RESEARCH PROGRAM ON Climate Change, Agriculture and Food Security CCAFS

LI-BIRD

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BUILDING CAPACITIES FOR SCALING-UP CLIMATE SMART VILLAGE IN NEPAL

TRAINING MANUAL

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About the Training Manual

Globally there has been enormous effort made by thousands of organizations to promote Climate Smart Agriculture (CSA) technologies for the sake of building resilience in agriculture and farmers' livelihood. However, the progress so far is not satisfactory. Based on the past learnings CCAFS has conceptualized the idea of Climate Smart Village (CSV) which has CSA as the major component, along with other political and socio-economic dimensions. Looking at the successful piloting of CSV, the Government of Nepal has endorsed this approach in its program. However, a mechanism to share the idea of CSV to the development bodies is lacking. Similarly, the extension workers and other staffs of local governments do not have enough procedural understanding. Therefore, to scale-up CSV approach in Nepal, capacity building of government staffs and local leaders, especially at local and provincial level, is an absolute necessity. A guide book could be the means to facilitate the process of such capacity building. Hence this manual is developed as a guide book for organizing capacity building trainings to the government and non-government development professionals. It will also serve as a resource book to help development workers from local and provincial governments, local leaders, policy makers, researchers, and academicians to understand more about the idea and approach of CSV. Ultimately, this publication is expected to contribute to the mission of scaling-up the CSV approach for the enhanced resilience of farming communities in Nepal and around the world.

Audience

This manual is helpful for government staffs at municipal, provincial and federal level whose role is to design and implement development programs especially in agriculture and livelihoods. Through this manual they can build understanding about the idea of CSV and learn the process of its integration into the regular/annual programs of the local governments.
Another group who can benefit from this manual is policy makers and political leaders at municipal, provincial and federal level. Individuals from this group can use it as a resource book to understand the concept and the approach. It will help them to realize the benefits as well as the viability of its integration into the development process.

Extension workers from non-government organizations working in various projects, especially agriculture and livelihoods, can be trained on CSA and CSV using this manual. They can also use this as a knowledge book to understand more about the concept and the process of CSV.

As a training manual this book can be used to train resource farmers and leaders of farmer groups/cooperatives. Those individuals can inform other farmers about the relevance of CSV and also lead in the planning and implementation of CSV from their end.

Finally, this manual can be used as a knowledge product by researchers and academicians to understand more about CSV.

Purpose of the Manual

Broadly this manual helps to scale-up the idea of a 'Climate Smart Village' through integrating the concept in government development plans and projects which ultimately contributes to the resilient and sustainable livelihood development of farming communities.

Specifically the manual helps the audience to:

» understand about the concept and relevance of Climate Smart Village;

» learn about the components of Climate Smart Village and its significance, and

» learn about the general steps of implementing/scaling-up CSV at local level

How to Use the Manual

Depending on the type of audience the manual has different modes of use

Type of Audience	Mode of use	Facilitator
Extension workers and development practitioners from GOs/NGOs	Use the manual as a training guide. A full package of training could be delivered in 3 days, taking all the modules into consideration.	TOT by LI-BIRD or another expert organization and subsequent trainings to other staffs by the trained individuals
Policy makers and political leaders – local, provincial and federal level	Use the manual as a resource book. Focus on Module 1, 7, 8 and 9 to help the audience learn about the CSV concept and the steps of its integration into the local development process. In this case the training could be abridged into a single day, organized in a 'travelling seminar' fashion.	LI-BIRD or another expert organization
Farmers' institutions (groups/ cooperatives) and leader farmers	Use the manual as a training guide. Modules 8 and 9 could be delivered separately, splitting the training into two.	TOT by LI-BIRD or another expert organization and subsequent trainings by the trained individuals

Acronyms

CCAFS	CGIAR Research Program on Climate Change, Agriculture and Food Security
CGIAR	Consultative Group for International Agricultural Research
CSA	Climate Smart Agriculture
CSO	Civil Society Organization
CSV	Climate Smart Village
DSR	Direct Seeded Rice
ICT	Information Communication Technology
IPCC	Intergovernmental Panel on Climate Change
FGD	Focus Group Discussion
FYM	Farm Yard Manure
HH	Household
LCC	Leaf Colour Chart
NARC	Nepal Agricultural Research Council
NGO	Non Governmental Organization
PPT	Power Point Presentation
SRI	System of Rice Intensification
TOT	Training of Trainers
UNFCCC	United Nations Framework Convention on Climate Change

Training Outline

Training Outline			
Time	**Day 1**	**Day 2**	**DAY 3**
0830 hrs to 1000 hrs	Session 1: Introduction of the participants and training objectives	Session 1: Climate information service and insurance [Module 3] Session 2: Role of public and private institutions in scaling-up CSA technologies and practices [Module 4]	Session1: Field visit to CSV resource site [Module 9]
1030 hrs to 1200 hrs	Session 2: Concepts of Climate Smart Agriculture (CSA) and Climate Smart Village [Module 1]	Session 3: Financing, leveraging and mobilization of institutions for scaling-up CSV approach [Module 5] Session 4: Blending indigenous knowledge and climate science to maximize impact or benefits [Module 6]	Continue from previous session [Module 9]
1300 hrs to 1430 hrs	Session 3: Climate Smart agriculture for food security, adaptation and mitigation [Module 2]	Session 5: Integrating CSA into national and sub-national plans and policies [Module 7] Session 6: Steps of implementing CSV [Module 8]	Session 2: Reflection in groups and preparation of CSV scaling-up plan by the participants [Module 10] Session 3: Plenary presentation and discussion [Module 10]
1500 hrs to 1700 hrs	Continue from previous session [Module 2]	Continue from previous session [Module 8] Group exercise on risk-based planning	Session 4: Feedback, training evaluation Session 5: Closing

Table of Contents

Introduction of Participants and Training Objectives

Objective: To set a learning environment and inform participants about the purpose of the training
Duration: 1 Hour

Session Plan

Components	Duration	Objective	Learning method
Introduction of individuals	10 min	Participants get to know each other	-
Expectation collection	20 min	Participants understand what they can expect to learn from the training	-
Training objectives	15 min	Participants know what they are going to learn	PPT presentation
Participants experience mapping	15 min	Participants know each others' background and experience	Group exercise

Introduction of individuals

Each participant is asked to introduce herself/himself. It can be done in an interesting way by asking them to share some interesting fact about their name, or where they are from, or personal strengths/ weakness etc.

Expectation collection

Participants are provided with a marker and metacards (color cards) and asked to write down their expectations about the training. The facilitator collects the cards and reads them out loud. Looking at the nature of expectations, grouping can be done based on common interests shown by individual participants. If someone's expectation is out with the capacity of the training, the facilitator should explain this to the participant straight away.

Training objectives

The facilitator informs participants about the objectives of the training using a power point presentation or chart paper. A quick discussion round could be helpful to clarify participants confusion, if any.

Participants' experience mapping

It is important for the facilitators to know the background and level of knowledge/experience of participants before starting the sessions. This is because the level of information and the style of facilitation should match the participants' learning need. By sharing individual experiences among the group, participants also start figuring out the chances of cross-learning.

Experience mapping can be more effective if we run a simple group exercise. For example, ask participants to arrange themselves in a line according to number of years they have worked in a particular sector. Then each participant will briefly share their previous work experiences.

MODULE 1

Concepts of Climate Smart Agriculture (CSA) and Climate Smart Village (CSV)

Session Plan

1 hr 30 min

Objective: To assist participants to understand CSA, its relevance and the idea of CSV as a CSA scaling-up approach

Plan

Components	Duration	Objective	Learning method
Basics of climate change and its impact on agriculture	30 min	Participants understand the phenomenon of climate change, its cause and effect.	PPT presentation
Idea of CSA and its connection with CC resilience	30 min	Participants learn the idea of CSA.	PPT presentation and interactive discussion
Concept of CSV as a model for scaling-up CSA	30 min	Participants learn about the concept of CSV and its components.	PPT presentation, interactive discussion

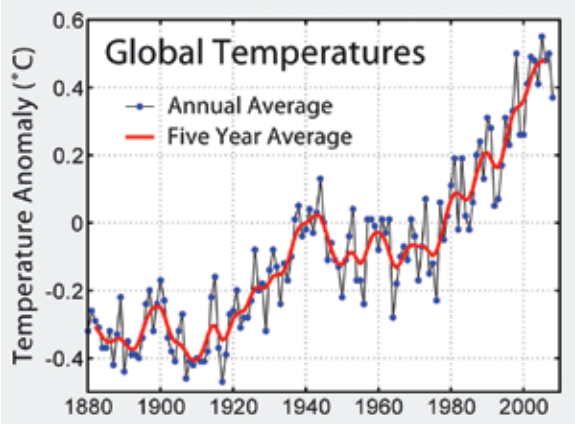
Basics of climate change and its impact on agriculture

Weather: Weather is the condition of the atmosphere at a particular place over a short period of time. Weather can change within a very short time. For instance, it may rain for an hour in Pokhara and then become sunny and clear. Weather includes daily changes in precipitation, temperature, humidity, cloud cover, wind, sunlight, and atmospheric pressure. For example, a very hot day, or a very cloudy day.

Climate: Climate is the behavior of the atmosphere in a relatively longer period of time. Generally it is considered to take 30 years to see changes in climatic conditions. The changes are reported such as, 'now we are experiencing relatively lesser winter rain compared to 30 years ago'. In other words, climate is the average of weather over time and space.

Global warming: Over the past years, the average global temperature has increased at the fastest recorded rate. This increment in global temperature is referred to as global warming.

The Earth is heating up as shown by recording the Earth's global surface temperature (yearly average since1880) from four pioneer organizations, namely, the National Aeronautics and Space Administration (NASA), NOAA (National Oceanic and Atmospheric Administration), HadCRUT (Hadley Centre/ Climate Research Unit in the U.K.), and Berkeley Earth. The average temperature of land has risen by two and half degrees Fahrenheit over the past 250 years, including an increase of one and a half degrees over the most recent 50 years. According to the IPCC report, the earth could warm by 3°C by 2100. Even if countries reduce their greenhouse gas emissions, the earth will continue to warm. Predictions range from a minimum of



Pattern showing change in average yearly temperature over years
Source: Global Warming Art via www.newscientist.com

1.8°C to as much as 4°C rise in global average temperatures by 2100.
Simple understanding of climate change is that it's an increase/decrease in the earth temperature. The Earth's temperature is increasing day by day because of human emissions of greenhouse gases. Rising burning of fossil fuel due to increased industrialization and vehicles has increased quantities of greenhouse gases emissions. These greenhouse gases include carbon dioxide (CO2), methane (CH4), nitrogen dioxide (N2O), etc. A rise in these gases in the atmosphere prevents the heat from radiating from earth into space. Such increases in heat has led to the greenhouse gas effect, resulting in climate change. The main characteristics of climate change are an increase in the average global temperature; changes in cloud cover, precipitation, melting of ice caps, and glaciers; a reduced snow cover, and increase in ocean temperature.

IPCC Definition of Climate Change: A change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity (IPCC).

Negative impact of climate change in agriculture

Climate change and agriculture are highly interrelated. Climate change affects agriculture in a number of ways, including through changes in average temperatures, rainfall and climate extremes (e.g. heat waves), changes in atmospheric carbon dioxide, ground-level ozone concentrations, and changes in sea levels. The effects of climate change are unevenly distributed across the world depending on geological, climatic and human settings. Agriculture is heavily influenced by local climates. For example an increase in temperature, prolonged drought, more variable rainfall and extreme climate events such as heatwave, flood and drought have caused detrimental effects in agriculture resulting in low production. This has contributed to amplified food insecurity and vulnerability of poor communities, especially farmers.

In Nepal, climate change is a growing issue in the present context. Increased unpredictability of weather patterns has caused serious distress in agriculture systems. Nepalese households whose livelihood are primarily based on agriculture are hard-hit by such distress in agriculture caused by climate change. There is an urgent need to identify and promote agriculture technologies and practices that provides options for smallholder farmers to adapt to climatic variability. Major impacts experienced by Nepalese farmers are erratic rainfall resulting in droughts, flood and inundation. The major impacts are reduced crop yield and loss of agriculture land.

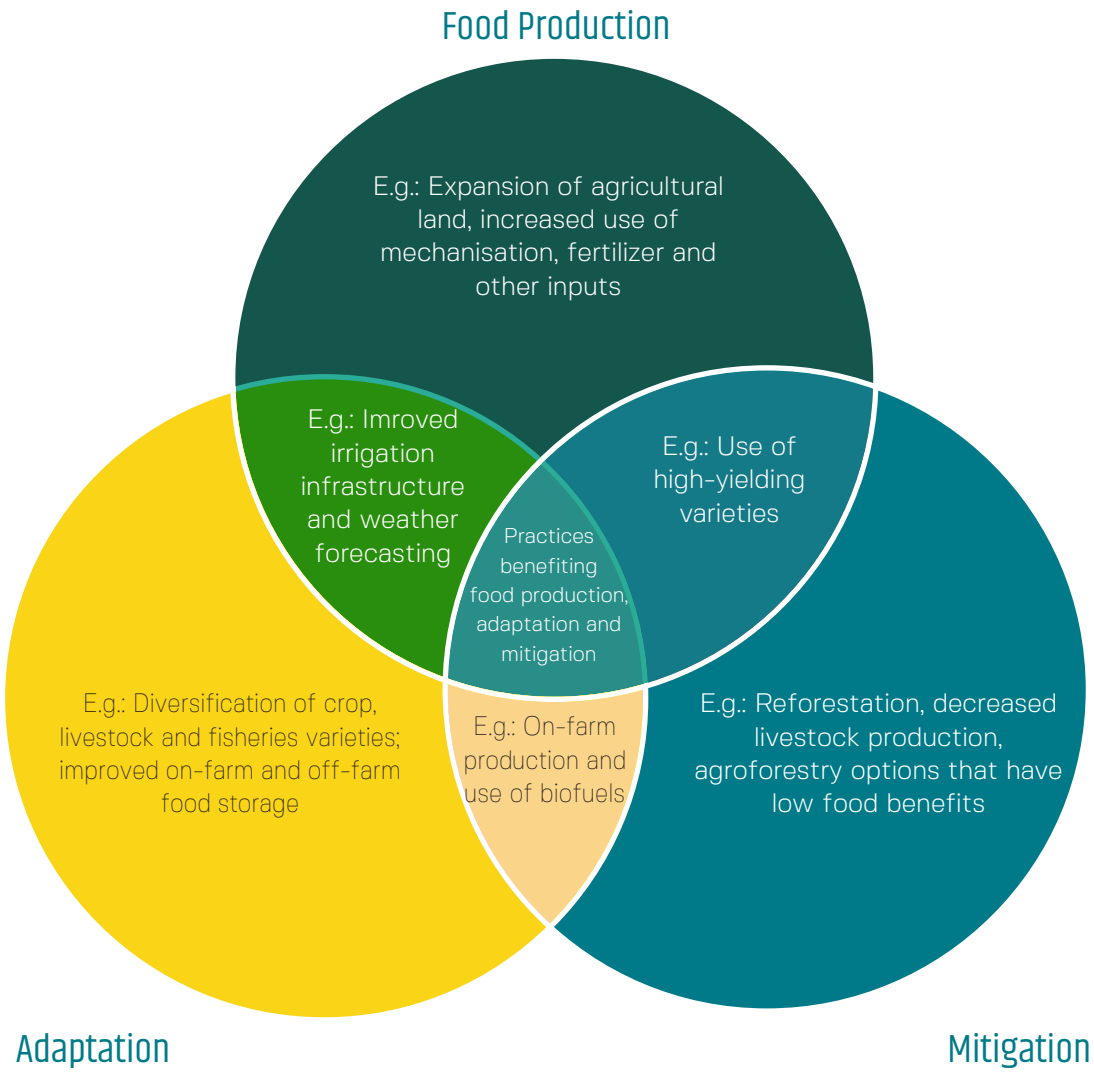
Climate Smart Agriculture

Climate-smart agriculture (CSA) is generally defined as an approach for transforming and reorienting agricultural development under the new realities of climate change. The Food and Agricultural Organization of the United Nations (FAO) has defined CSA as 'agriculture that sustainably increases productivity, enhances resilience (adaptation), reduces/removes GHGs (mitigation) where possible, and enhances achievement of national food security and development goals'.

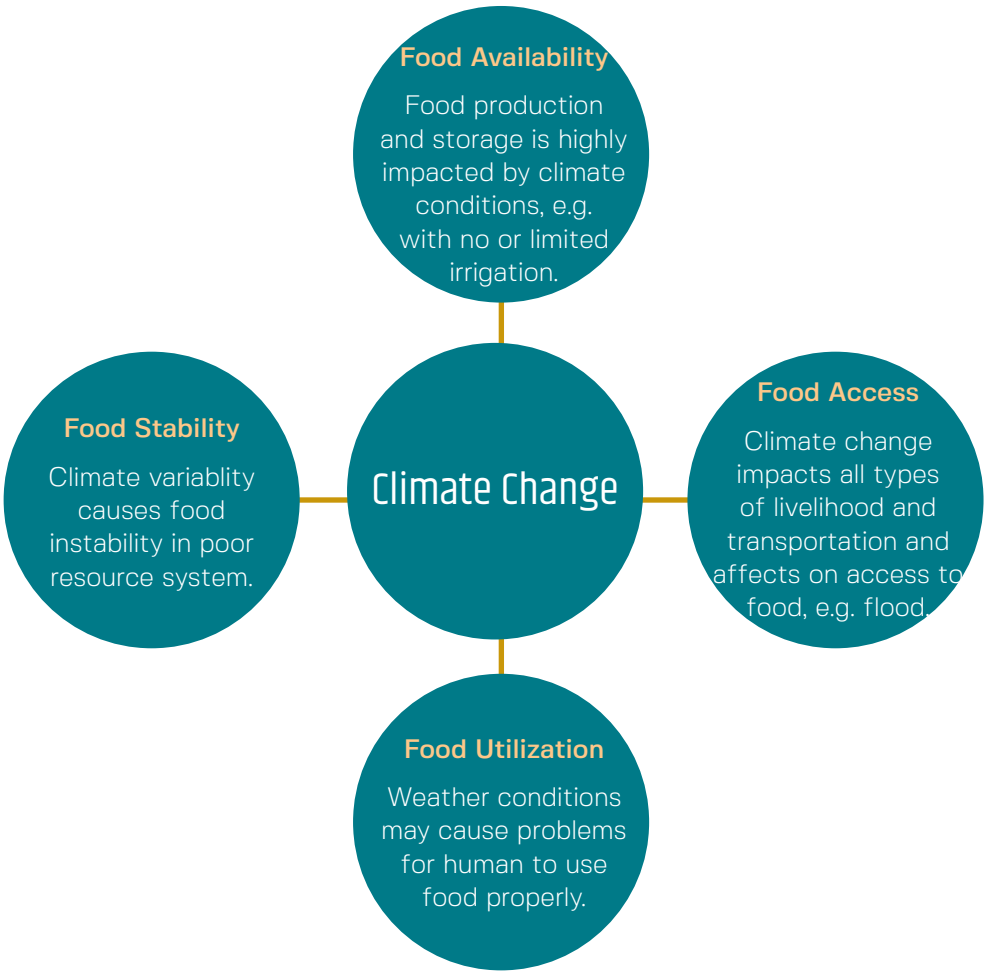
Adopting CSA technologies is a strategy to cope with negative impacts of climate change in agriculture. CSA basically has three components or objectives: i)sustainably increasing agricultural productivity to support equitable increases in income and food security, ii) adapting and building resilience to climate change from the farm to national levels, and iii) reducing or removing greenhouse gases emission where possible.

Food Security

Food security was defined in the World Food Summit (1996) as: 'Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life'. It has four dimensions: food availability, food access, food utilization, and food stability. All four components of food security are directly and indirectly affected by climate change.



Pillars of Climate-Smart Agriculture



Effects of climate change on the components of food security | Source : FAO (2012)

Adaptation

The literal meaning of adaptation is to make or become suitable for a new use or purpose. Climate change adaptation is adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. In agriculture, adaptation could be changing practices to minimize losses. For example using diversity in crops, protecting agriculture land from floods, growing stress tolerant crops etc. Not limited to practices, adaptation also includes other arrangements like insurance mechanisms, institutional development, income diversification, or networking.

Mitigation

Mitigation refers the action of reducing the severity, seriousness or painfulness of something. Climate change mitigation consists of actions that limit the magnitude or rate of long-term climate change. Climate change mitigation generally involves reductions in human (anthropogenic) emissions of greenhouse gases (GHGs).Examples of mitigation include reducing energy demand by increasing energy efficiency, phasing out fossil fuels by switching to low-carbon energy sources, and removing carbon dioxide from the Earth's atmosphere such as through improved building insulation or trapping carbon in soil by modifying agricultural practices.

CSA and Climate Resilience

Climate resilience is basically the capacity for a system (social or ecological) to absorb stresses and maintain function in the face of external stresses imposed upon it by climate change and to adapt, reorganize, and evolve into more desirable configurations that improve the sustainability of the system, leaving it better prepared for future climate change impacts. Currently climate resilience is trying to be achieved through social, economic and political efforts so that the vulnerability of climate-affected communities, states, and countries can be minimized.

Hence CSA and resilience have overlapping adaptation component. Also the rebuilding and preparedness part of resilience is connected with food security and mitigation components of the CSA concept. Therefore the objectives of CSA fully contributes to the idea of community resilience on climate change.

Climate Smart Village

The concept of Climate Smart Village (CSV) put forth by the Climate Change Agriculture and Food Security (CCAFS) program of CGIAR envisions CSV as a community which has sustainable ways to make itself less vulnerable, and having enough capacity to rebuild and grow. To achieve the abovementioned goal, CSV considers CSA promotion as a means. Hence CSV is basically an approach that helps to promote or scale-up CSA technologies effectively, efficiently and sustainability.

There are six major components of CSV viz. i) promoting climate smart agriculture technologies, ii) establishing a mechanism for climate information insurance services, iii) integrating CSA/CSV in national and sub-national policies, iv) considering farmers knowledge and capacity during technology promotion, v) set mechanisms for climate and agriculture development financing at local level, and vi) build partnership among local and national level public and private institutions. The framework of CSV is illustrated below.

Components of AR4D approach of climate smart village

MODULE 2

Climate Smart Agriculture (CSA) for Food Security, Adaptation and Mitigation

Session Plan

3 hr 30 min

Objective: To assist participants learn about different types of CSA technologies and their role in climate resilience

Plan

Components	Duration	Objective	Learning method
Discussion about CSA and the criteria of CSA with examples	2 hr 30 min	Help participants understand the different criteria that makes a technology a CSA and also learn about their adaptation and mitigation potentials. Also, for participants' information share the list of champion CSAs and the idea of bundling.	PPT presentation
Listing of appropriate CSAs relevant to the participants context, and discussions about their smartness	1 hr	Encourage participants to think and bring up relevant CSAs to be implemented in their locations.	Group exercise

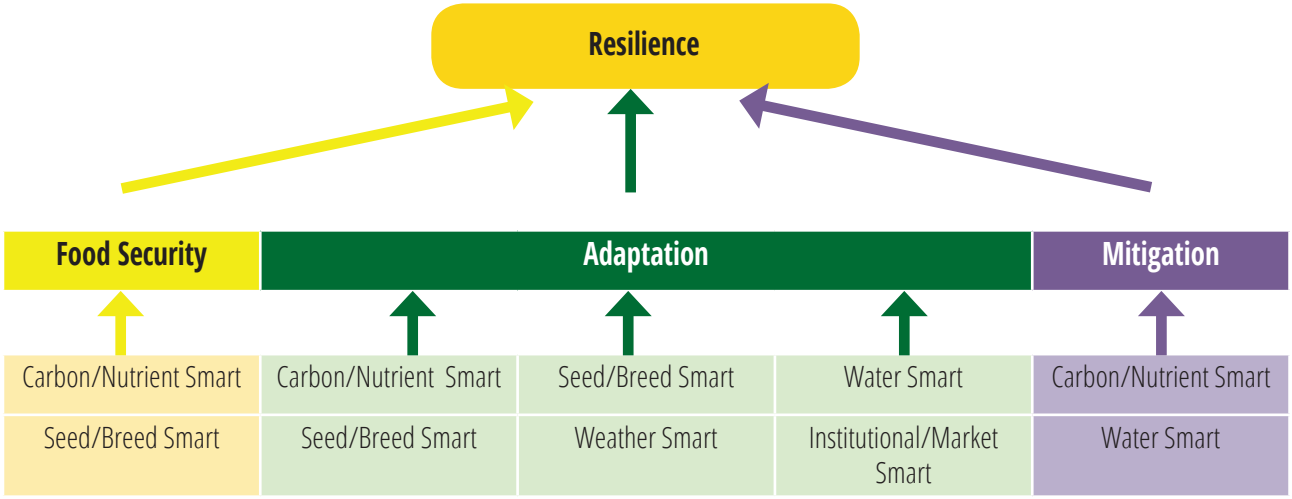
What is different in CSA?

As discussed in the earlier chapter, CSA focuses on food security, adaptation and mitigation. To elaborate more, unlike other technologies, CSA gives special attention to climatic risks that are happening more rapidly and intensely than in the past. Increasingly it is felt that new agricultural management requires changes in technologies and approaches to improve the lives of vulnerable communities. Therefore the CSA approach asks for greater investment in:
1. Managing climate risks;
2. Planning for adaptive transitions needed for new farming systems and livelihoods, and
3. Exploiting opportunities for reducing greenhouse gas emissions.

As suggested by CCAFS, a technology can be considered as climate smart technology if it contributes to one or more of five criteria: i) water smart: saving water use/requiring less water, ii) weather smart: helping farmers to minimize loss due to extreme weather, iii) carbon/nutrient smart: reducing carbon emissions and increasing soil nutrient use, iv) Seed/breed smart: helping farmers to use adapted crop varieties and animal breeds, v) Institutional and market smart: helping farmers in accessing resources, information, market, and also addressing gender issues.

Types of Climate Smart Options				
Weather Smart	Water Smart	Seed/Breed Smart	Carbon/Nutrient Smart	Institutional/ Market Smart
				

All these options ultimately contribute to the three pillars of CSA as illustrated in the figure below:



Climate smart options

1. Weather Smart

In recent years weather patterns have shown inconsistencies indicating the seasonal drift for agricultural practices and urgency for operational adjustments. To make such adjustments for loss minimization, timely availability of weather information is important. Any means to help farmers in making weather information available in advance to help them minimize loss or get compensation is termed as weather-smart technology. For example weather forecast systems, agro-advisories, weather insurance, or climate analogue tools, etc.

In Nepal, 72 hours weather forecasting is possible. The Government as well as the private sector is providing such services. Private companies are also available which can provide customized services for a targeted population on a paid basis. For instance, in 2016-17, a private company named ICT for Agriculture (IFA). provided mobile phone-based weekly weather forecast for farmers in Nawalparasi.

2. Water Smart

Technologies that improve water use efficiency are water smart. Erratic rainfall and long dry spells are causing agricultural practice problems. To adapt to these climatic conditions, technologies such as rainwater harvesting, drip irrigation, solar pumps, cover (short duration) crops, mulching, flood/drought tolerant varieties, direct seeded rice, alternated wetting and drying etc. are helpful.

Table: Examples of water smart technologies

Technology	Potential		
	Adaptation	Mitigation	Food security
Rainwater harvesting	Increases water availability for crop production during water scarcities.	Reduces GHG emissions due to reduced fuel required for pumping and/or carrying water.	Increases in yield, income and household nutrition by enabling vegetable growing in extremely dry areas.
Drip irrigation	Increases availability of water. Minimizes water use per unit of production, increasing water use efficiency.	Reduces energy required for irrigation.	Increases in yield due to appropriate water management.
Drainage management	Removal of excess water (flood) through water control structures.		
Cover crops method	Reduces evaporation loss of soil water (also adds nutrients into the soil).	Adds organic matter in soil.	
Drought/flood tolerant variety	Varieties that are tolerant to cold, heat, flood and drought stress.		The maintained productivity contributes to food security.
SRI	50% reduction in water utilization.	Less methane emission compared to continuous water logging farming.	More than 40% increment in productivity compared to conventional practice.
Direct seeded rice	Timely rice establishment, and no delay in transplanting because of a delayed monsoon.	Less methane emission compared to transplanting in water logging cultivation. Promoting carbon sequestration in soil.	It avoids crop failure and low productivity from delayed transplanting.

Community pond

System of rice intensification (SRI).
Photo: Aastha Bhusal

3. Carbon/Nutrient Smart

The burning of various fossil fuels and many conventional/traditional agricultural practices such as residue burning, tillage, free grazing etc., contribute to the emission of greenhouse gases especially carbon. So, it is important to increase carbon sequestration and make the agriculture environment smart. Certain modification in agricultural practices can hold more carbon into the soil system. For example less tillage to expose less soil results in less carbon emitted to the atmosphere. Similar technologies like conservation tillage, residue management, agro-forestry, solar based irrigation etc. are referred as carbon smart technologies.

Indiscriminate use of chemical fertilizer has increased the emission of greenhouse gases and raised the cost of crop production. Optimum use of chemical fertilizers, especially nitrogenous fertilizers (urea and ammonium sulfate), helps increase crop production and productivity. There are also some practices and technologies identified as nutrient smart such as integration of legume with cereal crops, site specific nutrient management, use of leaf colour chart (LCC) and Green Seeker. These technologies save the excess use of chemical fertilizers and promotes nutrient smart practices.

Table: Examples of some carbon smart agriculture technologies

	Potential		
Technology	**Adaptation**	**Mitigation potential**	**Food security**
Agro-forestry	In agroforestry there are more than one species cultivated, so if one crop fails due to adverse climatic effects, production from another crop compensates.	Promote carbon sequestration including sustainable land use management.	Helps ensure diversified options of food from various sources.
Zero tillage/ minimum tillage	Allows seed sowing even under water scarcity conditions. Allows early sowing, helping to escape terminal heat.	Protects soil structure and organic carbon reserves. Promotes fuel and energy saving due to reduced tillage.	Promotes higher yield due to escaping from terminal heat. Reduces production costs, increasing profit.
Mulching	This ensures moisture retention in soil and is linked with optimum utilization of water during dry periods.	Reduces exposure of soil thereby reducing the carbon emission from the soil.	This enhances moisture retention in the soil linked with increased crop production.
Improved livestock management	This helps farmers to protect animals from adverse weather situations and reduces disease risks.	Helps avoid carbon emission due to free animal defecation.	Crop production increases with the use of quality farm yard manure.
Integrated nutrient management	Helps strengthen the farming system with the addition of crop diversity and maintains soil health. Economic benefit also supports farmers' livelihoods.	Helps minimizing emissions of GHG which resulted due to the use of chemical fertilizers.	Increases crop production with better use of fertilizers (type of fertilizer, timing, amount etc.)
Solar based water pump	Helps farmers to face the dry seasons.	Reduces fossil fuel burning required by diesel motors to pump underground water.	Increases crop production and income with the ensured and increased irrigation water.

Farmers sowing zero tillage garlic

Solar-based irrigation

Use of leaf color chart

Intercropping

4. Seed/ Breed smart

The use of different crops or varieties that can produce more or tolerate adverse weather situations are termed as seed smart options. Similarly using better performing or resilient types of animal breeds are also in the same category. In addition, approaches like community seed banks or participatory varietal selection/crop improvement are also the examples of seed smart technology. These are highly associated with farmers' knowledge or their capacity to take decisions. Therefore, while implementing such ideas, information exchange among farmers themselves and also between farmers and researchers should be promoted simultaneously.

Use of productive varieties/ breeds helps not only to increase production and income of farmers but also enhances their adaptive capacity. For example 'Sukkha 3' is a rice variety which is preferred by farmers in Nepal both for its yield potential and drought tolerance qualities. Similarly a community seed bank can help farmers to safeguard their seeds during any emergency and also help generate income for farmers who can earn money through this seed business.

5. Institutional/ Market Smart

To facilitate the whole process of technology adoption, certain mechanisms need to be in place. Some examples are:- coordination among different sectors; engagement of local government and other institutions; gender equity/equality; resource generation and leverage; market structure and information, etc. Such instruments help farmer to have better access to financial, technical or marketing facilities which ultimately contribute to their adaptive capacity and resilience.

In Nawalpur District of Nepal, there are four solar based irrigation system installed in different communities in coordination with local governments (Municipalities). In the process the cost was shared among the project, the Municipality, and the local community. Implementation was carried out by all the three parties. The local government has tried to ensure social inclusion and governance. As a result, the whole community has benefited from the increased availability of irrigation water. This has helped farmers to produce different crops, such as vegetables instead of rice/maize, with higher income potentials. Once there are marketable products available, the local government and the private sector will engage to establish a market system.

For more examples of CSA technologies relevant to Nepalese context please see Annex 1.

MODULE 3

Climate Information Service and Insurance

Session Plan

45 min

Objective: To assist participants to learn about the idea of a climate information system and insurance and their linkage with climate resilience and livelihood

Plan

Components	Duration	Objective	Learning method
Introduction to the idea of a climate information service along with examples, and its significance in CC resilience.	20 min	Help participants to understand climate information services and learn about their role in climate resilience and livelihood.	PPT presentation, interactive discussion
Introduction of the idea of insurance along with examples/cases and its significance in CC resilience.	15 min	Help participants to understand insurance and learn about its potential to contribute to resilience and livelihood.	PPT presentation, interactive discussion
Group exercise	10 min	Make participants think about the uses of climate information and insurance.	Brainstorming exercise

Climate information services

Considering climate information in decision making related to agriculture is one of the main differences between conventional agricultural and climate smart agriculture. Therefore, the CSV approach considers the idea of 'climate information services' as a component. In CSV farmers are provided with updated weather information using real-time weather forecasts and value-added ICT based agro-advisories. It helps them in making the right decision in regards to field operations as well as accessing good quality inputs and technologies for attaining water/nutrient/energy use efficiencies.

For facilitating the availability of the climate information at local level, researchers should first conduct a participatory climate-risk and impact analysis in each potential CSV. Based on the risks identified through the analysis it is then decided what type of information is required by the community that

Use of climate information services through mobile phone

can help them to minimize the potential loses. Various interventions can be implemented to avail climate information at the farmers' level. CSV piloting in Nepal uses mobile SMS based weather forecasts and agro-advisory services provided to lead farmers. Farmers' groups are encouraged to disseminate the agro-advisory received through mobile SMS to other farmers through a farmer-to-farmer dissemination process. CSV researchers also look at the opportunities to link farmers to climate information services provided by other institutions. For example the 'Green SIM Card' initiatives started by the Government of Nepal also provides similar information to farmers. Farmers in CSVs are encouraged to utilize that support. Similarly, farmers in CSVs are also encouraged to use the mobile-based online applications of various institutions like 'Krishighar', 'Krishi Guru', and 'Smart Krishi' to get weather, market related, and other agriculture related information.

Insurance

In CSV, insurance is one of the important activities, packaged under the same group of 'Climate Information' because this helps to reduce/transfer climate risks. With the help of insurance farmers can avoid financial risk due to of economic loss, which can happen any time due to adverse weather or other causes.

Agricultural insurance is at a very primitive stage in Nepal. The current insurance schemes are not widely adopted by farmers. One of the reasons for the low adoption of insurance is lack of information about the insurance schemes available for different crops/animals. Therefore, orienting farmers about insurance packages is considered as an integral part of CSV in Nepal. In addition, facilitation of the process by helping farmers to meet and interact with insurance service providers, local government and other stakeholders is also an important intervention required at local level.

EXERCISE

» Ask participants to discuss in groups the benefits of climate information and insurance in real life.

MODULE 4

Role of Public and Private Institutions in Scaling-Up CSA Technologies and Practices

Session Plan

45 min

Objective: To assist participants to learn about the idea of a climate information system and insurance and their linkage with climate resilience and livelihood

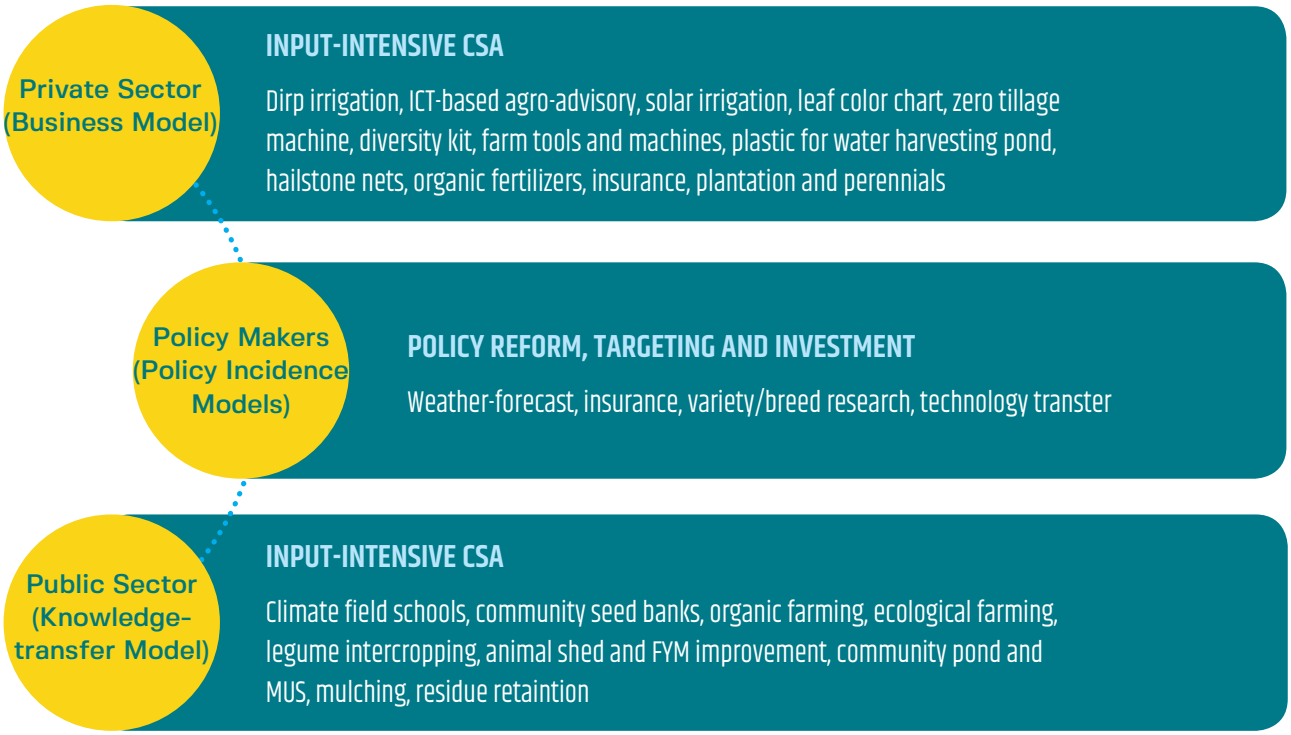
Plan

Components	Duration	Objective	Learning method
Examples of public and private institutions and their role in climate smart agriculture promotion.	20 min	Guide participants to learn about the linkage of public and private institutions with climate change adaptation/mitigation.	PPT presentation, interactive discussion
Process of engaging public and private sector in a resilience building process.	25 min	Help participants to think about and suggest ideas to include public and private sectors in the process of developing CSV.	PPT presentation and sharing of examples

Why it is important to work with different sectors?

Working with multiple stakeholders is crucial for developing synergy and combining efforts. Multi-stakeholder partnerships and collaborations are also helpful to bring cost-effectiveness and efficiency while scaling-up CSA technologies.
The entry point for working with public and private institutions is identification of the existing public and private institutions at various levels and assessing the capacity of the institutions for integrating climate actions at different levels. For Nepal, it is important to identify and work with local institutions like cooperatives, farmers' groups, agro-vet dealers, output buyers (traders), agro-machinery suppliers, insurance service providers, agro-advisory service providers, and other relevant stakeholders as per need.

Based on the analysis of scaling-up strategies developed on the basis of national policies, and plans and strategies for various CSA technologies and practices in Nepal, there are clear indications that certain types of CSA technologies have potential to be scaled-up through commercial/private sectors through strong business models. Particularly, input-intensive CSAs can be scaled-up through private sector engagement. Many CSA practices like drip irrigation, poly house (polythene green house), solar-based irrigation, zero/minimum tillage, farm tools and small equipment, ICT based agro-advisory, and agriculture insurance schemes can be scaled-up through the private sector, as a tangible product which can be sold to farmers by the private sector. The role of government institutions should be facilitation, market regulation, quality control, and providing subsidies through market mechanisms (wherever needed).



Multi-stakeholder approach for scaling-up CSAs

The private sector might be unwilling to invest in knowledge-intensive CSA technologies like legume intercropping, intensification of terraces, organic/ecological farming, animal shed/ farm yard manure improvement, community pond and water harvesting, climate-field schools, mulching, residue retention, community seed banks, etc. Because such technologies are basically knowledge, not products, the private sector may not see a way to make a financial profit from these technologies. Therefore, public institutions should have a greater role in promoting these technologies in CSV. Greater collaboration with public extension agencies is warranted to access opportunities for trainings, exposure visits, demonstrations, and access to financial support for farmers and farmers' groups to adopt these technologies.

Certain types of CSA practices also need greater policy awareness and policy support. For example, index-based crop insurance is an important risk-transfer mechanisms in CSV but it is not possible without supportive government policy. Similarly, weather forecasting also requires a strong national database where greater investment from the government is necessary. Otherwise, no local actions can be planned in CSVs. Similar is the case of developing climate resilient crop varieties and livestock breeds. In piloting new technologies and helping with demonstrations, the role of research institutions, academic institutions and NGOs is equally important.

MODULE 5

Financing, Leveraging and Mobilization of Institutions for Scaling-Up CSV Approach

Session Plan

45 min

Objective: To assist participants to understand different ideas on financing for establishing, functioning and sustaining CSVs

Plan

Components	Duration	Objective	Learning method
Importance of joint financing.	20 min	Assist participants to understand the benefits of collective financing in CSA/CSV.	PPT presentation, interactive discussion
Identifying institutions and potential areas of financing CSV.	25 min	Guide participants to explore agencies and the areas where different financers can contribute.	PPT presentation and group discussion

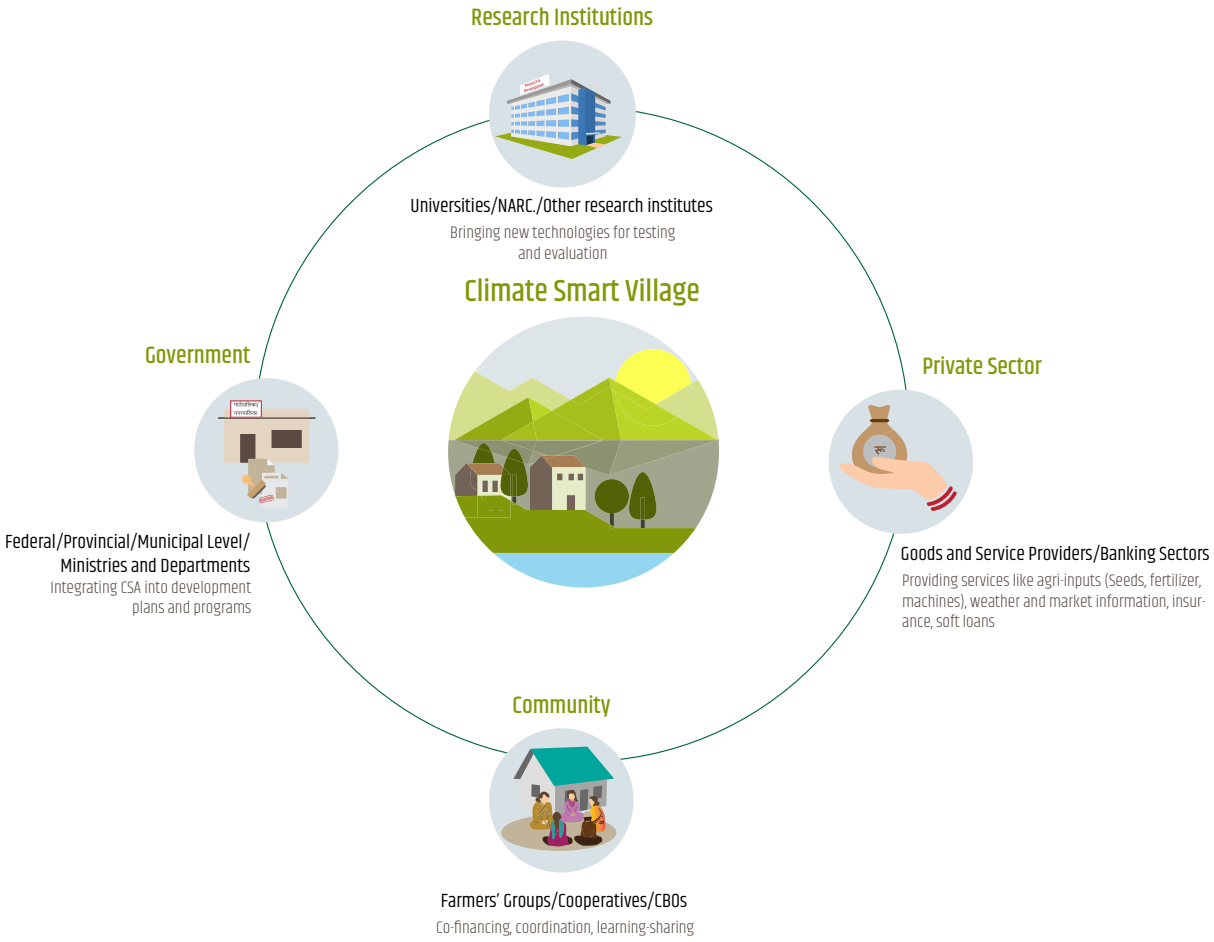
How to finance CSV

The CSV approach is fully guided by the principle of joint financing. Engagement of more than one institution as investors not only divides the budget load but also creates strong ownership among the stakeholders.

The CSV approach in Nepal has strong focus on local financing for local climate-actions, because the opportunity to tap national and international finance is limited for the CSV communities. In this regard, firstly, communities are empowered for developing a financial plan for local level climate change actions and provided with a small 'match-fund'. Then at the second stage they take action on their own to generate a significant amount of the local resources to top up the seed fund and continue implementing climate change actions at the local level.

Role of different institutions

Multi-stakeholder support and multiple sources of finance is important for developing CSVs. The figure below shows the potential financing institutions at grassroots level along with the areas that they can finance while developing CSVs in Nepal. Often direct monitory support may be not possible but there might be potential for leveraging resources in-kind. For example, support from DHM for weather information, social mobilization support from CSOs, subsidies for clean energy from AEPC, subsidies for agriculture technologies from agriculture extension agencies, engagement of the universities and research institutions in related research, and private sector investments on various business opportunities could be equally as important as cash contribution.



Joint financing to implement CSV
Infographic: GrowInnova

EXERCISE

» Ask participants to discuss in groups the potential financers and the areas of financing for a specific case/location. Participants can consider one or two key CSA interventions that are relevant for that location.

MODULE 6

Blending Indigenous Knowledge and Climate Science to Maximize Benefits

Session Plan

45 min

Objective: To assist participants to understand the value of farmers' knowledge in climate resilience

Plan

Components	Duration	Objective	Learning method
Rationale of including farmers' knowledge in CSV.	25 min	Help participants to understand the value of farmers' knowledge and its connection with CSV.	PPT presentation, interactive discussion
Farmers' capacity building	20 min	Help participants to understand the methods (examples) of capacity building activities.	PPT presentation, interactive discussion

Utilizing farmers' knowledge in CSV

A baseline study of a CSV project conducted by LI-BIRD in 2015 indicates that there is a strong presence of farmers' institutions (e.g. groups, cooperatives) in Nepal. They are rich in local knowledge and practices. However, they have very limited capacity in terms of understanding climate change issues and adaptation needs. Therefore in CSV approach, farmers' traditional knowledge and practices that are helpful in adaptation or mitigation are also considered as CSA practice. Such practices are included in the list of recommended solutions/technologies which complement the existing system leading to high chances of adoption and sustainability.

For example, zero-tillage garlic is an indigenous technology for farmers in the Western-Terai Region of Nepal. This practice helps utilize soil moisture and also avoiding the cost of tillage operations, resulting in increased economic returns as well as reduced emission. Similarly, maize-legume intercropping, cultivating yams on sacks on terraces are other examples.
In the process, documentation and validation of the farmers' local knowledge, technologies and practices are firstly conducted. Among the explored local knowledge based practices those which can meet the criteria of CSA are included in the list of potential CSA technologies and considered for testing and scaling-up.

When we talk about sustainable development, it is important for farmers to become capable of evaluating technologies on their own. Therefore participatory testing of CSAs adds significant value to the process of increasing farmers' experiences with the new technologies and helps them become capable of analyzing both the negative and positive aspects associated with it. In this way farmers also know how to evaluate a technology and take decisions whether to adopt or discard the same.

Farmers setting up an experimental plot. Photo: David Borish

Such skills not only help farmers decide about a technology, they can continue the process of testing new technologies in the longer run. In the process, researchers and scientists might need to guide farmers and the level of effort might depend on the specific technology. In addition to participatory testing of CSA, other capacity building events like hands-on trainings, exposure visits, and knowledge exchange forums are also organized to help farmers learn about new technologies. All such activities provide farmers an opportunity to gain knowledge and skills which contribute to their capacity to adapt and become more resilient.

MODULE 7

Integrating Climate Smart Village Approach in Local, Provincial and Federal Government Policies, Programs and Plans

Session Plan

45 min

Objective: To assist participants to understand the importance and the process of integrating CSV approach in the local, provincial and national level plans and policies

Plan

Components	Duration	Objective	Learning method
Why CSV integration into government's plan/policy is important.	20 min	Enhance the learning of participants on the idea of 'integration' and its significance for the establishment/functioning of CSV.	PPT presentation, interactive discussion
How to integrate CSV in local development plan and policy.	25 min	Help participants to learn about the steps of integrating CSV in local development policy and annual development plan.	PPT presentation and interactive discussion

Why it is important to integrate CSV into government plans and policies?

Once the testing phase is over, there is a list of successful technologies identified. The next step is to disseminate such smart technologies on a wider scale to achieve the intended goal of community resilience at the national level. In the process, the government is the only agency that can lead to take it to the desired scale. For that different plans and programs within agriculture could consider CSA/CSV interventions. Such integration is truly possible because the overall intention of agricultural development is highly aligned with the intention of CSV itself.

Municipal level integration

After the recent revision in the planning process of Nepal, the CSV approach is more relevant to be integrated into the Municipality level development plans and policies. To include CSA in the municipals' budgeted annual plan of action, it should pass through a seven-step process for development planning that occurs in March-July of each year. First of all farmers should put their demand for CSA to a village level meeting. Then to Ward level and to Municipality level meetings, who need to endorse the proposal of CSA integrated with agricultural development.
As a policy support, the Municipality also can include CSA/CSV in its agricultural development strategy/plan. On the basis of such policy, the Municipality can annually allot a budget for a change envisioned by the leaders/public. With regular and sizable funding, the Municipality can take systematic actions to reach a certain goal in terms of improved community resilience.

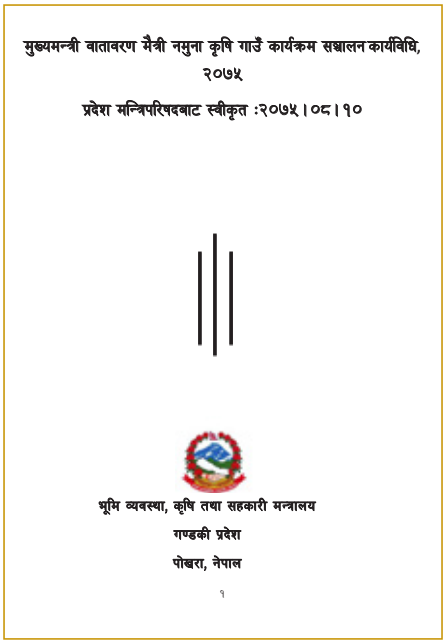
With the technical support of LI-BIRD, BannigadhiJayagadh Rural Municipality of Achham has developed a 5-year agriculture and livestock development strategy which includes CSV as a component intended to contribute to the overall target of agricultural development in the Rural Municipality. A broad level action plan for implementing CSV is also included in the strategy. Hence with their own leadership, BannigadhiJayagadh will be implementing CSV in Achham for the next four years.

Provincial and Federal level integration

In the current development structure of Nepal, Provinces are at the middle of three tiers that bridge municipal and federal (central) level governments. In Nepal, Provincial Governments are also important players for climate change actions as they are responsible to formulate state/province level policies and also special programs. Since Municipalities are supposed to follow the guidelines provided by the Province/Federal Governments, it is important to keep all the tiers aligned in terms of prioritizing CSA/CSV.

Gandaki Province (Province 4) has developed an implementation guideline for a 'Chief Minister Environment Friendly Model Agriculture Village' with the technical support of LI-BIRD. The guideline deals in detail with the process of how to establish a CSV. The project is directly implemented by the Provincial Government but could also be referred by all the Municipal Governments in Gandaki Province.

At federal level, the Ministry of Forest and Environment (MoPE) is the focal ministry for climate change. The Department of Environment under this ministry has been leading a pilot project on CSV since 2016, targeting to establish 170 CSVs across the country. Also a guideline for developing a CSV has been developed and circulated by the Department to guide all the implementing units for CSV implementation. In addition, there are opportunities to integrate CSVs at the federal level planning. Having a clear plan about CSV at federal level could pave the way to integrate CSV and provincial and local levels.



मुख्यमन्त्री वातावरण मैत्री नमुना कृषि गाउँ कार्यक्रम सञ्चालन कार्यविधि, २०७५

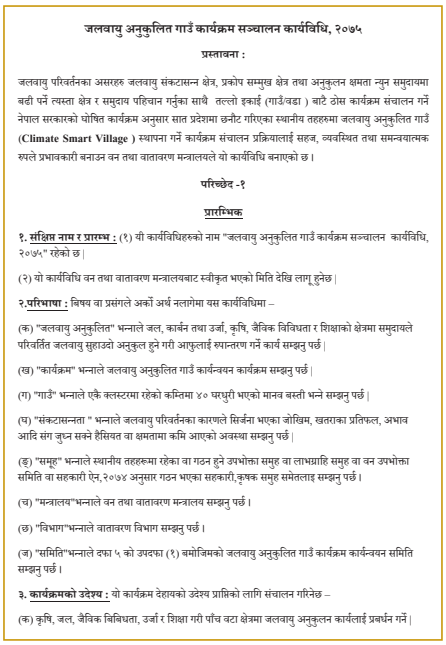
प्रदेश मन्त्रिपरिषदबाट स्वीकृत :२०७५।०८।१०

भूमि व्यवस्था, कृषि तथा सहकारी मन्त्रालय

गण्डकी प्रदेश

पोखरा, नेपाल

१



जलवायु अनुकुलित गाउँ कार्यक्रम सञ्चालन कार्यविधि, २०७५

प्रस्तावना :

जलवायु परिवर्तनका असरहरु जलवायु संकटासन्न क्षेत्र, प्रकोप सम्मुख क्षेत्र तथा अनुकुलन क्षमता न्युन समुदायमा बढी पर्ने त्यस्ता क्षेत्र र समुदाय पहिचान गर्नुका साथै तल्लो इकाई (गाउँवडा) बाटै ठोस कार्यक्रम संचालन गर्ने नेपाल सरकारको घोषित कार्यक्रम अनुसार सात प्रदेशमा छनौट गरिएका स्थानीय तहहरुमा जलवायु अनुकुलित गाउँ (Climate Smart Village) स्थापना गर्ने कार्यक्रम संचालन प्रक्रियालाई सहज, व्यवस्थित तथा समन्वयात्मक रुपले प्रभावकारी बनाउन वन तथा वातावरण मन्त्रालयले यो कार्यविधि बनाएको छ ।

परिच्छेद -१

प्रारम्भिक

१. संक्षिप्त नाम र प्रारम्भ : (१) यी कार्यविधिहरुको नाम "जलवायु अनुकुलित गाउँ कार्यक्रम सञ्चालन कार्यविधि, २०७५" रहेको छ ।

(२) यो कार्यविधि वन तथा वातावरण मन्त्रालयबाट स्वीकृत भएको मिति देखि लागू हुनेछ ।

२.परिभाषा : विषय वा प्रसंगले अर्को अर्थ नलागेमा यस कार्यविधिमा –

(क) "जलवायु अनुकुलित" भन्नाले जल, कार्बन तथा उर्जा, कृषि, जैविक विविधता र शिक्षाको क्षेत्रमा समुदायले परिवर्तित जलवायु सुहाउदो अनुकुल हुने गरी आफुलाई रुपान्तरण गर्ने कार्य सम्झनु पर्छ ।

(ख) "कार्यक्रम" भन्नाले जलवायु अनुकुलित गाउँ कार्यन्वयन कार्यक्रम सम्झनु पर्छ ।

(ग) "गाउँ" भन्नाले एकै क्लस्टरमा रहेको कम्तिमा ४० घरधुरी भएको मानव बस्ती भन्ने सम्झनु पर्छ ।

(घ) "संकटासन्नता " भन्नाले जलवायु परिवर्तनका कारणले सिर्जना भएका जोखिम, खतराका प्रतिफल, अभाव आदि संग जुध्न सक्ने हैसियत वा क्षमतामा कमि आएको अवस्था सम्झनु पर्छ ।

(ङ) "समूह" भन्नाले स्थानीय तहहरुमा रहेका वा गठन हुने उपभोक्ता समुह वा लाभग्राहि समुह वा वन उपभोक्ता समिति वा सहकारी ऐन,२०७४ अनुसार गठन भएका सहकारी,कृषक समुह समेतलाइ सम्झनु पर्छ ।

(च) "मन्त्रालय"भन्नाले वन तथा वातावरण मन्त्रालय सम्झनु पर्छ ।

(छ) "विभाग"भन्नाले वातावरण विभाग सम्झनु पर्छ ।

(ज) "समिति"भन्नाले दफा ५ को उपदफा (१) बमोजिमको जलवायु अनुकुलित गाउँ कार्यक्रम कार्यन्वयन समिति सम्झनु पर्छ ।

३. कार्यक्रमको उद्देश्य : यो कार्यक्रम देहायको उद्देश्य प्राप्तिको लागि संचालन गरिनेछ –

(क) कृषि, जल, जैविक बिबिधता, उर्जा र शिक्षा गरी पाँच वटा क्षेत्रमा जलवायु अनुकुलन कार्यलाई प्रवर्धन गर्ने ।

MODULE 8

Steps to Implement CSV

Session Plan

3 hr 30 min

Objective: To help participants to be clear about the process of CSV implementation at the local level

Plan

Components	Duration	Objective	Learning method
Steps of CSV implementation	1.5 hr	Help participants to understand and gain confidence on the steps of CSV implementation.	PPT presentation and interactive discussion
Group exercise on risk based planning	2 hr	Help participants to refine and upgrade their knowledge on at least one tool of risk based planning.	Group work and presentation

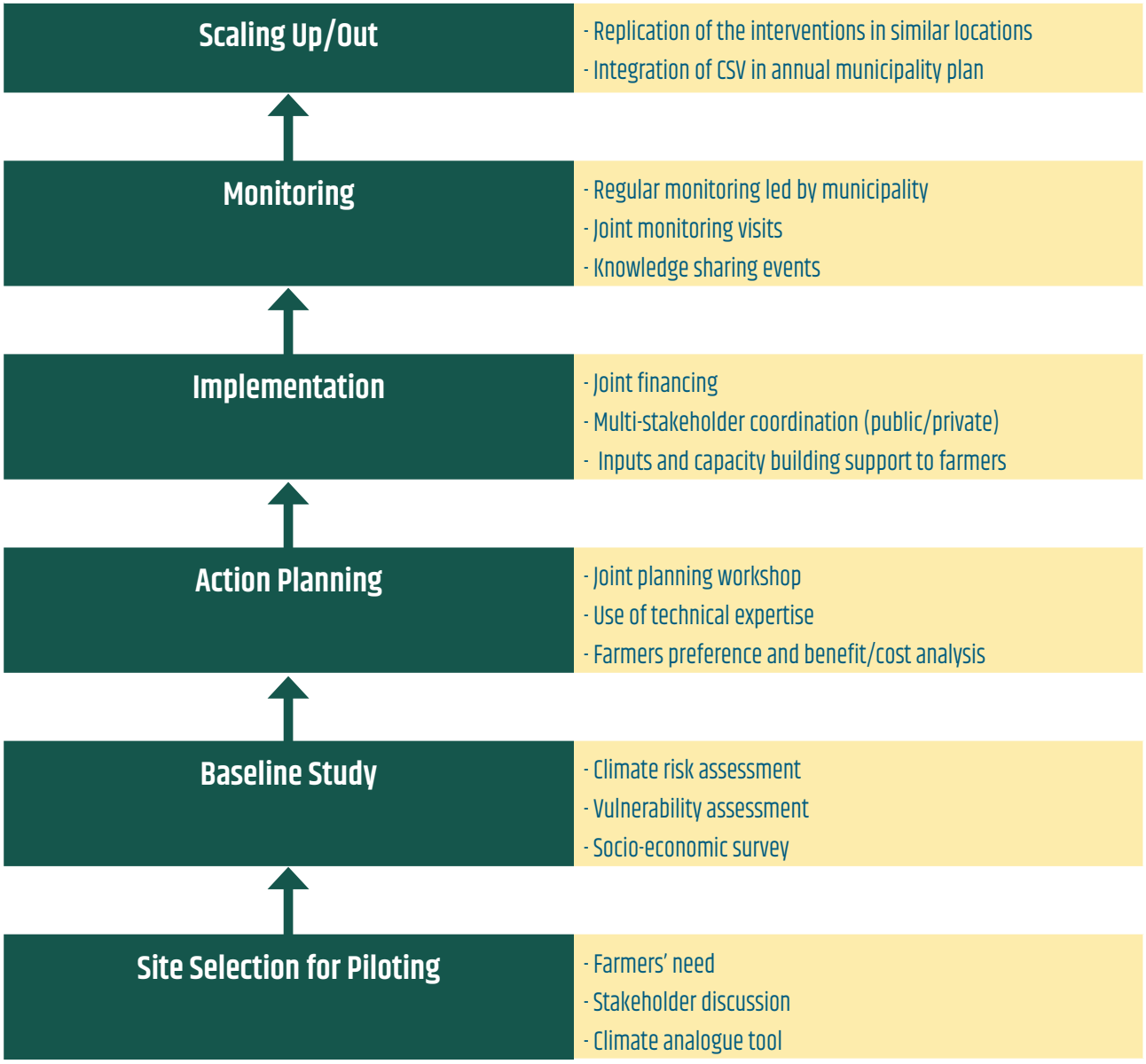
The six general steps of implementing a Climate Smart Village at local level

Site Selection

The village to be developed as the CSV pilot site (agriculture research for development sites) needs to be strategic in terms of access, working environment, and change potentials. This is in order that the learning expected to evolve from the site will then be passed on to other locations. Nationally, the sites for designing CSVs can be selected though advanced modeling tools such as climate-analogue tools. The tools help to identify priority areas based on agro-climatic relevance and also the scope to replicate the learnings. At the same time, looking at socio-economic conditions by analyzing available secondary literature and local experience is important. In this way, a site for pilot CSV is selected where high climatic vulnerability exists along with the opportunities to improve agriculture.

Baseline Study

The first action for designing a CSV is a baseline analysis. The baseline analysis includes the analysis of: agricultural systems, local resources and vulnerability context, historical and current level of climatic variability, and future climate projections, ongoing adaptation strategies, local and traditional knowledge and practices, local institutions, and capacity gaps and review and analysis of the existing policies/plans. Similarly, other dimensions of agriculture like input-output and resource efficiency, measuring emissions, crop productivity, agriculture insurance and agro-advisory situation are analyzed at the beginning of CSV implementation.



Steps of CSV implementation

Vulnerability Assessment

The 'agricultural vulnerability analysis' has been an effective tool for baseline evaluation of climate change exposure, sensitivity and adaptive capacity at CSV level. This tool can be used as a participatory method for historical climate-risk analysis.

Vulnerability of farming communities is measured in terms of their exposure, sensitivity and adaptive capacity which can either be quantitatively measured or qualitatively characterized.

Exposure: It is a measure of the magnitude and extent of exposure to climate change impacts.
Sensitivity: It is a measure how a system is likely to respond when exposed to a climate-induced stress.
Adaptive capacity: It is a measure of the potential, ability or opportunities available to decrease exposure or sensitivity of a system to a climate induced stress.

There are various tools to study the three components of vulnerability. A few widely adopted tools are i) historical timeline, ii) hazard ranking, and iii) seasonal calendar.

Historical Timeline

Under the historical timeline, patterns of climate change from past to present, and climatic hazards and effects are studied. This method helps to gain insight into past and present climatic hazards and identify trends in their nature, intensity and impacts over the last 20 or 30 years. However, farmers may not recall the exact year or month in which events happened. Therefore, recalling climatic hazards can be linked with major events that happened in the community at that time, such as changes in administration and organizations, or changes in major political parties. It can be done on the format of a table or a graphical line as per convenience.

Procedure of creating a historical timeline

- Bear in mind that this is meant for collecting ideas about climate change induced negative impact in the last 30 years. Linking climate change with the timeline must be over a 30 year period.
- Call elderly citizens as FGD participants because they have knowledge about what actually happened in the last 30 years.
- For the purpose of easing the process, the timeline can be broken down in to five year periods.

Information regarding different climatic hazards can be included in the historical time line over the past 30 years as follows:

- In the preparatory phase, list out the major hazards that occurred in the area by KII or secondary information.
- When did any major drought occur? For example, when did a large flash flood or land slide happen?
- Did any other event happen around the same time? Go backwards.
- Finish one type of hazard and move to the others.
- Draw a long line on brown paper and divide the line into different time interval and ask the participants about this time period. Then fill in related questions by using different time frames (e.g. from 2040 B.S. to 2044 B.S., 2045 B.S. to 2049 B.S. and so on).
- The facilitator can write the stories down on a blackboard or large sheets of paper - in chronological order.
- Periodically run back through the events already reported to prompt recall and help the informants fill in gaps. Concentrate on key events.

Table: Sample of a historical timeline

Climate change induced disaster	Time interval and the degree of impact					
	2045-2050 BS	2050-2055 BS	2055-2060 BS	2060-2065 BS	2065-2070 BS	2070-2075 BS
Hailstorm		Heavy hailstorm devastated vegetable in one ha in 2054				
Land Slide			Huge land slide to affect 100 HHs			

Climatic Hazard Ranking

Based on the frequency of hazard occurrence found through the historical timeline and its effect on livelihoods, hazards are prioritized. This prioritization helps in identifying the climatic hazard which most affects the community and helps in the preparation of an adaptation strategy to address the hazard.

Procedure

- Ask participant to name the climatic hazards to which their area is prone. Discussion clarifies which hazards can be said to be probably caused by climate change.
- Arrange climatic hazards in the row and column headings as shown in table below.
- The participants consider every pair of hazards in turn and decide by consensus which is the most critical. They enter this into the box. When the table is complete, the number of times each hazard was chosen is added up. These scores then suggest which hazards are the greatest priority

Table: Sample of pair-wise ranking of climatic hazards

	Flood	Fire	Drought	Storm	Frost	Hailstone	Pests	Total
Flood		Flood	Drought	Flood	Flood	Flood	Flood	5
Fire			Drought	Storm	Frost	Hailstone	Pests	0
Drought				Drought	Drought	Drought	Drought	6
Storm					Frost	Storm	Pests	2
Frost						Frost	Pests	3
Hailstone							Pests	1
Pests								4

Seasonal Calendar

A seasonal calendar provides the past and present reference period in which the community faces climatic hazards such as flood, drought, hailstorm, plant disease, and pests. It also captures information on livelihood resources used by the community to cope with the hazard. This calendar helps in analysis of seasonal change in occurrences of climatic hazards and evaluation of climatic information for adaptation planning. (Be careful to insert data starting from 30 years ago.)

Procedure

- Prepare the suggested format (table below) on brown paper.
- In the first column, write down the major climatic hazards.
- Two rows are allocated for each hazard. In the first row, the occurrence time before the baseline year is shown and in the second row, the occurrence time after the baseline year to the present is shown. Two different colors can be used to represent before and present conditions.
- Periods of food scarcity, the main season effected by climatic hazards, and the time of migration by community members for jobs or labor should also be focused on in the discussion.

» Discuss how livelihood resources are used, the significance of the coping strategy and whether the existing coping strategy or sources have become helpful or the introduction of any other climate smart technologies

For example, if the group identified the main time period for drought in the past and present we can introduce different water efficient technologies. These can be multiple use of water methods, alternate wetting and drying in the case of rice, drip irrigation or sprinkle irrigation in the case of vegetables and so forth. Through the discussion we can also find the status and possibility of introducing drought tolerant crops, e.g. Pegion pea and varieties, and the Sukha series of rice.

Table 5: Format of seasonal calendar

		Baisakh		Jestha		Ashad		Shrawan		Bhadra		Ashoj		Kartik		Mangshir		Poush		Magh		Falgun		Chaitra	
Drought	Before																								
	Now																								
Flood	Before																								
	Now																								
Frost	Before																								
	Now																								
Blight	Before																								
	Now																								
Army worm	Before																								
	Now																								
Hailstone	Before																								
	Now																								

Action Planning

The selection of potential CSA technologies and practices for CSVs can be a combination of bottom-up and top-down approaches. Various technologies that are identified by the farming communities by altering their own management practices can help to address climatic risks. On the other hand, management of climatic risks also requires new technologies which are developed through research. For example, various precision agricultural technologies – such as precision fertilizer management and precision water management - are useful for adaptation and mitigation. The design of the CSA interventions are done in collaboration with the local communities and stakeholders where the researchers provide the options and the selection is done collectively.

To discuss and decide on the relevant CSA technologies, a joint 'Orientation and Planning Workshop' at local level is an effective tool for designing and prioritizing interventions. In such workshops, farmers and stakeholders are first oriented about the technologies by experts. In this process all the suggested technologies should be mainly based on the analysis of the baseline data. Then the whole team identifies a list of CSA activities that could be implemented in that particular location. The suggested activities are tested for a season or two to generate evidence on economic, social and environmental benefits. Then similar kinds of action planning is required after the CSA piloting when there is need to fix activities for scaling-up. A perception analysis can be applied for a quick assessment.

Implementation

Major components of CSV implementation are: i) input support to farmers, ii) capacity building of farmers, iii) stakeholder coordination, and iv) joint financing to establish CSV.

Inputs support: Especially during the testing phase, farmers need support while dealing with new technologies, for example new seeds/breeds, machines/tools/equipment and other materials. A seed fund at group level is helpful to support farmers in such investments. The fund also inspires farmers to grow commercially. Once farmers experience the benefits of CSA they continue it on their own. Therefore the support is principally for the research/testing and demonstration of new technologies.

Capacity building of farmers: Building local capacity is crucial for developing CSVs and sustainability. Therefore, identification of local institutions, assessment of capacity gaps and building interventions to fulfill the capacity gaps are essential components of the CSV design. In the Nepalese context, establishing climatic and agricultural information services and advisory is important for building local capacity for responding to climate change. Orientation/trainings on specific CSA technologies is required to help farmers learn and adopt the technologies. A strong linkage between the technology generators (e.g. NARC) and farmers' groups also enhances the local capacity to identify and adopt suitable CSA technologies. Capacity building is not only required for farmers and farmers' groups, but it is also required for local institutions, political leaders, CSOs and extension personnel, in terms CSA/CSV implementation. Those groups could be addressed through one-day orientation events or joint field visits.

Stakeholder coordination: The CSV approach gives high emphasis on collaboration and conversion of efforts from various institutions within a single village. Implementing CSV activities with such combined efforts would lead to a climate resilient agricultural system with shared responsibilities as well as benefits. Each partner can complement another to generate higher levels of outputs. In Nepal, if a multi-stakeholder synergy is to be built, it is essential to integrate the CSV plans into local development plans.

Joint financing: CSV is never possible with the investment from a single agency. This is because the six dimensions of the CSV framework require different natures of investments, and more than a single investment. Sometimes the investments become too heavy for a single agency. Since generating enough financing for CSA scaling-up is always a challenge, conversion of local efforts is really crucial for establishing a CSV. For example, installing a solar irrigation requires NPR 1,000,000 which is a significant investment for a Rural Municipality. But if the community contributes, and also the private sector service provider offers a scheme for installing more than three solar units, the investment becomes reasonable for all parties. Such joint investments could be planned while going through the government's local level planning process. Another important element for generating local finance in Nepal is exploration opportunities for private sector business.

Monitoring

Participatory progress monitoring is important for adaptive CSV. Identification of monitoring and evaluation indicators is the first step in progress monitoring. Then, the baseline values for each indicator needs to be established at the beginning .A data collection plan for a minimum dataset should be built on the CSV design. The cost-effectiveness of monitoring progress can be maintained by applying a participatory method of data collection and evaluation. A monitoring team led by the local government could be helpful to conduct scheduled monitoring of CSV establishment.

Scaling-up

Sharing the learnings from the pilots and informing the local and national policy making process is another important component of CSVs as the good practices are meant to be scaled-up. The piloting of CSVs at various locations generates results and evidences that should be communicated to the policy makers for making the necessary changes in policies. The findings can be shared through meetings, conferences and workshops at national, district and local levels. The most effective tool identified so far is joint field visits of the policy makers and political leaders from national, provincial and local level to the resource CSV sites for creating/changing policies.

Before selecting sites for scaling-up CSV, different CSV models should be developed which are suitable for different locations that may have specific agro-climatic and socioeconomic settings. The sites for scaling-up of CSVs can be determined through the analysis of the background context (climate risks, community capacities, resources available etc.) using climate and socio-economic analogue tools. The government can develop a comprehensive scaling-out strategy and implementation plan for CSVs by consolidating the various CSV pilots in Nepal. The bottom line for scaling-out CSVs in Nepal is that it should be implemented through the regular development plans. In addition, the scaling-out of CSVs in Nepal should be led by local government rather than sectorial ministries such as the Ministry of Agriculture and Cooperatives or the Ministry of Forest and Environment. The sectorial ministries should have a strong contribution in the technical aspects of scaling-out CSVs but the overall implementation of the CSV designs should be led by the municipalities. Identification of the right model for scaling-up CSAs (e.g. powered by private sector led business or government led extension system or promotion as a bundle along with other interventions) is important for successful implementation of CSVs.

MODULE 9

Field Visit to Pilot CSV Site

Session Plan

4 hr

Objective: To help participants build up their understanding about Climate Smart Village through direct observation and interaction with the community

Plan

Components	Duration	Objective	Learning method
Field visit and community interaction	4 hrs	Help participants to practically observe and understand CSA and other components of CSV.	Observation and interaction

In this practical session, farmers are divided into groups based on their background (farmers, cooperatives, private sector, local leaders etc.). Each group is asked to visit a site where farmers have adopted climate smart agriculture practices. Along with the field observation, each group can interact with the associated farmers to learn more about the practices they have been implementing. Also they could investigate what mechanisms (other components of CSV) are in function to support the adoption of CSA at community level.

National and international participants during field visit to CSV pilot site in Nawalparasi

MODULE 10

Preparation of an Action Plan by the Participants

Session Plan

2 hr

Objective: To encourage participants to think about their own role in the process of implementing CSV in their own context and add a level of confidence

Plan

Components	Duration	Objective	Learning method
Action planning	2 hrs	To help participants to figure out their role in implementing CSV.	Group work and plenary sharing/discussion

After the field visit, each group is asked to reflect upon the field observations and note down the key points about success and also any gaps in CSA/CSV implementation. Based on these points they can prepare an action plan for their own location. While planning, it is important for the individual group to focus on their background/function in the community.

Feedback, Training Evaluation and Closing

Session Plan

1 hr 30 min

Objective: To pass on knowledge about the success of the trainings and show areas of improvement for the future.

Plan

Components	Duration	Objective	Learning method
Feedback collection	30 min	To learn about the participants feelings	-
Training evaluation	30 min	To learn about the areas of improvement for the future	Evaluation exercise
Certificate and closing	30 min	-	-

This session evaluates the overall training from the participants perspective.

Feedback collection

Feedback collection can be written or verbal. The following guiding questions can be helpful to the facilitator while asking participant for feedback:

- Relevance of the training?
- Level of expectation met?
- Future use of the learning?
- Quality of training delivery and organization?
- Suggestions for future?

Training evaluation

For the training evaluation, the facilitator can organize a pre-test before the training and a post-test after the training. Also an evaluation wheel can be constructed keeping eight indicators in a circle and ask participant to give a rating (See Annex 2).

Closing

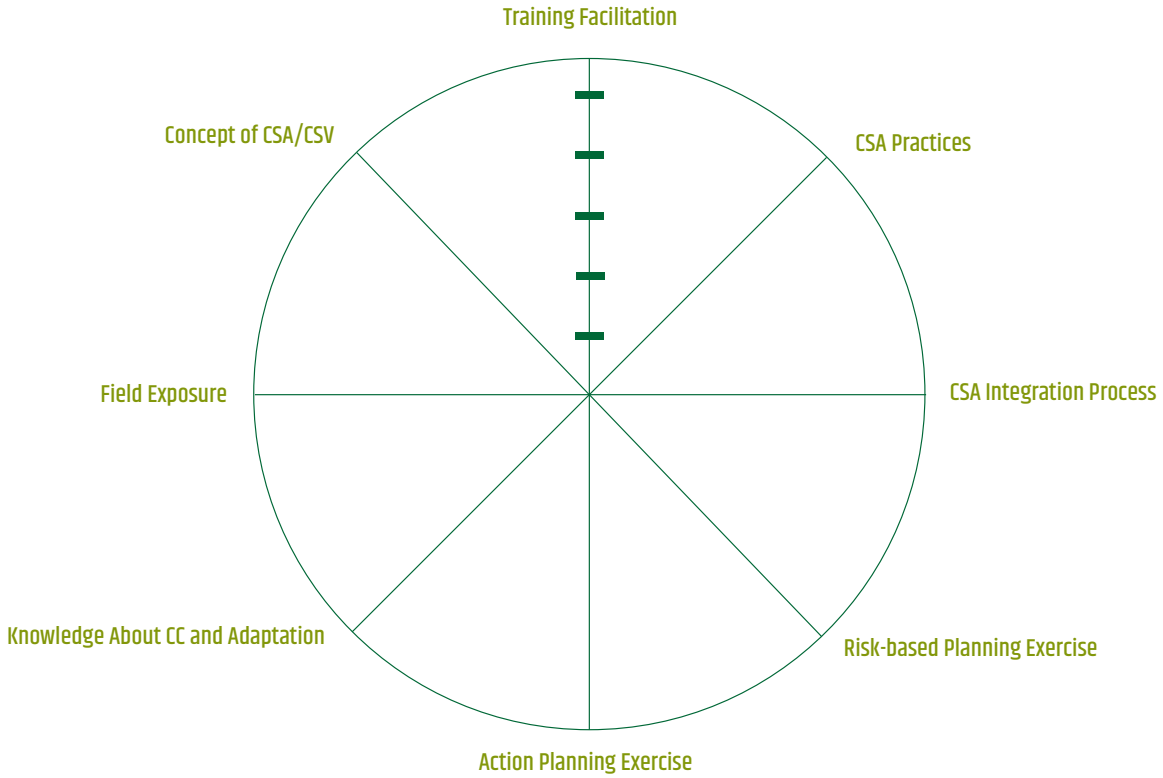
Closing is done by the organizer along with a vote of thanks to the participants.

ANNEXES

Annex 1 List of Champion CSA Technologies for Nepal, Terai

Champion CSA	High hill	Mid Hill	Terai
Solar energy based irrigation			√
Access to resilient crops, seeds, variety, plants etc.	√	√	√
Conservation agriculture (zero tillage, residue retention, legume rotation)			√
Home garden	√	√	√
Water storage(plastic pond, water harvesting pond, community pond)	√	√	
Plastic house	√		
Drip irrigation		√	
FYM improvement	√	√	
Water harvesting , drip ,plastic house, FYM improvement as a bundle	√	√	
Mixed farming (including legume crop)	√	√	√
Community seed bank	√	√	√
System of rice intensification (SRI)			√
Water harvesting, MUS (multiple use of water system) water source protection	√	√	
Agro-forestry , fruit farming	√	√	
Small hand-tools, machines	√	√	√
Crop insurance	√	√	√
Agro-advisory	√	√	√

Annex 2 Training Evaluation Wheel



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