



Australian Government  
Department of Foreign Affairs and Trade



REGIONAL TRAINING PROGRAM ON

# CLIMATE-SMART CROP PRODUCTION TECHNOLOGIES AND INNOVATIONS

Cambodia | Lao PDR | Thailand | Vietnam

**November 27 - December 1, 2023**

Mekong Institute, Khon Kaen  
THAILAND



## BACKGROUND

Adopting Climate-Smart Agriculture (CSA) is becoming increasingly significant in the face of mounting global climate change challenges. In the Greater Mekong Subregion, for example, climate vulnerabilities have been a concern for years. As a rule of thumb, every 1° of global warming adds 7% more moisture into the atmosphere which powers up the water cycle (or hydrological cycle) and triggers more and more extreme events. According to the [World Bank's report](#), the common agriculture-related climate risks for Lower Mekong Countries are flood, heat stress and drought. Irregular and unpredictable rainfall patterns leading to prolonged periods of drought, followed by intense periods of rain, lead to flooding. Both drought and flooding are harmful to crops and can lead to substantial yield reductions. An increase in temperature, on the other hand, can also affect the growth of crops as too high (or too low) temperatures during the flowering stage can reduce yield significantly.

Initiatives on CSA have been ongoing in the Subregion, with Cambodia, Lao PDR, Thailand and Vietnam all searching for and testing innovative practices. Whilst many have yielded positive results for smallholder farmers in terms of enhancing farming practices and adapting to climate disruptions, several challenges impede the broader adoption of CSA. These barriers include gaps in the knowledge and skills of agriculture extension officers, limited access to CSA resources and technologies, and the need for more policy support. Notably, there is a pressing need for a regional platform for knowledge exchange, linking research, policies, and practices.

A training program that will address the concerns on capacity gaps and availability of technical support and services is a timely intervention. It will be designed to catalyse CSA adoption in the region by focusing on technologies and innovations in crop production. This will better equip national agencies, agronomic service providers in the private sector, and academic institutions with critical skills, expose them to replicable technologies in the region, and foster cross-pollination of innovative ideas.

Fortifying relevant actors' capacities to support local communities on CSA practices aims to empower them as flag bearers in promoting CSA. The synergy of these stakeholders, combined with the learnings from the training program, is expected to contribute to the broader adoption of CSA practices.

## OBJECTIVES

The five-day training aims to equip national agencies, academic institutions and NGOs with replicable climate-smart crop production technologies and innovations in Lower Mekong Countries. Specifically, it will:

1. Enhance understanding of CSA technologies and innovations among participants, focusing on crop production in the context of Lower Mekong Countries;
2. Equip participants with the skills to better support smallholder farmers in adopting sustainable CSA approaches;
3. Expose participants to successful CSA adoption cases in the region to spur problem-solving and learning; and
4. Provide a platform for participants to share experiences and challenges in implementing CSA, fostering a network of stakeholders committed to CSA adoption.

## EXPECTED OUTCOMES

1. Participants will:
  - a. Gain knowledge on replicable CSA technologies and innovations in crop production, enabling them to more effectively support smallholder farmers in testing and adopting the practices.
  - b. Have clarity on the practical implementation of CSA techniques in their respective areas, promoting sustainability, while being conscious of any potential risks to smallholder farmers.
  - c. Develop action plans for promoting or scaling up appropriate CSA practices in their work, contributing to the overall resilience and sustainability of agriculture in Lower Mekong Countries.
2. An established network of connected and empowered stakeholders better equipped to drive CSA adoption within their respective sectors and locales.
3. Feedback, success stories and cautionary tales documented post-training will act as catalysts for regional adoption of CSA practices.

## PARTICIPANTS

The training will be participated by national agencies, academic institutions and NGOs from Cambodia, Lao PDR, Thailand, and Vietnam tasked to provide technical services in adopting CSA in crop production. There will be seven participants per country.

## TRAINING CONTENT

The training will provide information on the current climate change trends in the crop production of Lower Mekong Countries and will cover some of the replicable CSA technologies in crop production identified during the concluded series of National Consultations on the Implementation and Replicability of CSA Technologies in the Lower Mekong Countries.

### **Module 1. Understanding climate change and its impacts on sustainable crop production in the Lower Mekong region**

This module will provide a thorough exploration of how changes in climate patterns, temperature rise, increased precipitation, and prolonged drought periods impact agriculture, particularly in the Cambodia, Lao PDR, Thailand and Vietnam.

#### **Learning Objectives**

At the end of the module, the participants will be able to:

1. Gain a comprehensive understanding of climate change and its causes; and
2. Analyse the direct and indirect impacts of climate change on agriculture and crop production, with a focus on the Lower Mekong countries.

## **Module 2. Introduction to climate-smart agriculture and the ‘triple wins’ approach to crop production**

This module will offer a brief introduction to Climate-Smart Agriculture (CSA), its emergence and its importance in the modern context of changing climate conditions. It will present CSA's three core principles - increasing agricultural productivity, adapting and building resilience to climate change, and reducing greenhouse gas emissions.

### **Learning Objectives**

At the end of the module, the participants will be able to:

1. Understand the concept of CSA, its principles, and its underlying pillars; and
2. Identify how these principles and pillars can be implemented practically for resilient and productive agricultural systems, particularly in the region.

## **Module 3. Climate-smart production practices and technologies in Lower Mekong countries**

This module will introduce different CSA practices and technologies in the region. It will cover various CSA technologies and practices identified for different agro-ecosystems across the Lower Mekong Countries, which can help farmers adapt to climate change risks and mitigate the risks. The selection and combination of CSA technologies was based on the specific agroecological conditions, local context, and farm scale conditions. It will discuss the following:

- Adaptation strategies for climate-resilient crops
- Soil and nutrient management for sustainable farming
- Sustainable practices in water management
- Pest-smart crop production
- Digital innovations for climate-smart farming
- CSA Cases in CLV
  - Improving climate adaptation through weather information: The case of Lao PDR
  - Empowering smallholder farmers through CSA: The case of Cambodia
  - Experience-based to information driven climate-smart farming: The case of Vietnam

### **Learning Objectives**

At the end of the module, the participants will be able to:

1. Identify appropriate CSA practices and technologies in or for their area; and
2. Demonstrate the applications of various replicable CSA approaches to each other, and thereafter to farmers.

## **Module 4. Planning and management of CSA approaches**

This module will focus on the role and importance of strategic planning in implementing successful CSA initiatives. It will capacitate participants in supporting farmers to determine and adopt the most appropriate CSA technologies for their production system.

At the end of the module, participants will be able to develop a climate-resilient production plan that can be applied by farmers in their respective countries. The participants will be able

to recognise and utilize suitable tools/practices for monitoring and evaluating the impact and effectiveness of implemented CSA practices.

## Module 5. Action planning

To apply the knowledge and skills learned, participants will work on an action plan - something they can work on that is relevant to their work and their organisation. The proposed action plan will be implemented three to six months after returning to their respective countries. These action plans provide opportunities to transfer their learnings and multiply the project impact within their own organisations and to local communities.

Since the participants will come from national agencies and academic institutions that are providing CSA technical services to farmers, their action plan is expected to contribute to ensuring that farmers and food producers are well-supported in adopting these CSA approaches sustainably.

## TRAINING AGENDA

<i>Time</i>	<i>Activity</i>	<i>In-charge</i>
<b>DAY 1 – November 27</b>		
<b>08:30</b>	Registration	
<b>09:00</b>	Opening program <ul style="list-style-type: none"> <li>• Opening remarks by Mekong Institute (MI)</li> <li>• Message from Australia’s Department of Foreign Affairs and Trade</li> <li>• Photo opportunity</li> <li>• MI video</li> </ul> Introduction to the training and MI facilities	
<b>09:30</b>	Getting to know each other	MI Team
<b>09:45</b>	Exploring expectations and setting the norms	MI Team
<b>10:00</b>	Pre-test	
<b>10:15</b>	Break	
<b>10:30</b>	Module 1. Understanding climate change and its impacts on sustainable crop production in the Lower Mekong region	<b>Dr. Farhad Zulfiqar</b> Assistant Professor Asian Institute of Technology
<b>12:00</b>	Lunch	
<b>13:30</b>	Module 2. Introduction to climate-smart agriculture and the ‘triple wins’ approach to crop production	<b>Dr. Farhad Zulfiqar</b>
<b>15:00</b>	Break	
<b>15:15</b>	Module 3. Climate-smart production practices and technologies in Lower Mekong countries <ul style="list-style-type: none"> <li>• Adaptation strategies for climate-resilient crops</li> </ul>	<b>Dr. Farhad Zulfiqar</b>
<b>16:45</b>	Debriefing	MI Team
<b>17:00</b>	End of Day 1	
<b>DAY 2 – November 28</b>		
<b>08:30</b>	Recap	BOD
<b>08:45</b>	Module 3. Climate-smart production practices and technologies in Lower Mekong countries <ul style="list-style-type: none"> <li>• Soil and nutrient management for sustainable farming</li> </ul>	<b>Dr. Natthapol Chittamart</b> Associate Professor Kasetsart University Thailand

<b>10:15</b>	Break	
<b>10:30</b>	Module 3. Climate-smart production practices and technologies in Lower Mekong countries <ul style="list-style-type: none"> <li>• Pest-smart crop production</li> </ul>	National Science and Technology Development Agency Thailand
<b>12:00</b>	Lunch	
<b>13:30</b>	Module 3. Climate-smart production practices and technologies in Lower Mekong countries <ul style="list-style-type: none"> <li>• Digital innovations for climate-smart farming</li> </ul>	<b>Dr. Noppadon Khiripet</b> Senior Researcher National Electronic and Computer Technology Center National Science and Technology Development Agency Thailand
<b>15:00</b>	Break	
<b>15:15</b>	Module 3. Climate-smart production practices and technologies in Lower Mekong countries <ul style="list-style-type: none"> <li>• Improving climate adaptation through weather information: The case of Lao PDR</li> </ul>	<b>Mr. Khambane Inthipunya</b> National Agro-meteorology Expert FAO Lao PDR
<b>15:45</b>	Module 3. Climate-smart production practices and technologies in Lower Mekong countries <ul style="list-style-type: none"> <li>• Experience-based to information driven climate-smart farming: The case of Vietnam</li> </ul>	<b>Mr. Nguyen Khac Minh Tri</b> CEO MimosaTEK Vietnam
<b>16:15</b>	Module 3. Climate-smart production practices and technologies in Lower Mekong countries Empowering smallholder farmers through CSA: The case of Cambodia	<b>Dr. Kim Hian Seng</b> Agriculture Director iDE Cambodia
<b>16:45</b>	Debriefing	MI Team
<b>17:00</b>	End of Day 2	
<b>DAY 3 – November 29</b>		
<b>08:30</b>	Recap	BOD
<b>08:45</b>	Module 3. Climate-smart production practices and technologies in Lower Mekong countries <ul style="list-style-type: none"> <li>• Sustainable practices in water management</li> </ul>	<b>Dr. Royboon Rassameethes</b> Director Hydro and Agro Informatics Institute
<b>09:45</b>	Introduction to the Learning Visit to Phu Tham Phu Kratae Forest Community	
<b>10:15</b>	Break	
<b>10:30</b>	Departure from MI to Waeng Noi District	
<b>12:00</b>	Arrival and lunch	
<b>13:00</b>	Good practices: The achievement of community resources management	<b>Mr. Thippawong</b> Chairman Water Resources Management Committee Phu Tham Forest Community
<b>13:30</b>	1 <sup>st</sup> station: Water management by overflow-trapped canal (Fah Pratan Chon Canal)	
<b>13:55</b>	2 <sup>nd</sup> station: New-Theory agriculture	<b>Mr. Khammee Bungpho</b>

<b>14:20</b>	3 <sup>rd</sup> station: Nong Fai Ban's Monkey cheeks pond (Surface water supply)	
<b>14:45</b>	4 <sup>th</sup> station: Water storage in agriculture field and water reuse technology	<b>Mr. Khem Dejsri</b>
<b>15:10</b>	Break	
<b>15:25</b>	Learning visit synthesis and Q&A with the Puaen Phu Association	
<b>16:00</b>	Departure from the site	
<b>17:30</b>	End of Day 3	
<b>DAY 4 – November 30</b>		
<b>08:30</b>	Recap	BOD
<b>08:45</b>	Module 4. Planning and management of CSA approaches <ul style="list-style-type: none"> <li>Lecture</li> </ul>	<b>Mr. William Sparks</b> Chief of Party Regional Agriculture Innovation Network (Thai RAIN) Project WinRock International
<b>10:15</b>	Break	
<b>10:30</b>	Module 4. Planning and management of CSA approaches <ul style="list-style-type: none"> <li>Individual exercise and presentation</li> </ul>	Facilitated by <b>Mr. William Sparks</b>
<b>12:00</b>	Lunch	
<b>13:30</b>	Module 5. Action planning <ul style="list-style-type: none"> <li>Workshop</li> </ul>	Participants guided by <b>Mr. William Sparks</b>
<b>15:00</b>	Break	
<b>15:15</b>	Module 5. Action planning <ul style="list-style-type: none"> <li>Workshop (cont.)</li> </ul>	Participants guided by <b>Mr. William Sparks</b>
<b>16:30</b>	Debriefing <ul style="list-style-type: none"> <li>Post test</li> <li>Course Evaluation</li> </ul>	MI Team
<b>17:00</b>	End of Day 4	
<b>DAY 5 – December 1</b>		
<b>08:30</b>	Recap	BOD
<b>08:45</b>	Module 5. Action planning <ul style="list-style-type: none"> <li>Presentation</li> </ul>	Participants
<b>10:15</b>	Break	
<b>10:30</b>	Module 5. Action planning <ul style="list-style-type: none"> <li>Presentation (cont.)</li> </ul>	Participants
<b>12:00</b>	Lunch	
<b>13:30</b>	Closing program <ul style="list-style-type: none"> <li>Course report</li> <li>Awarding of certificates</li> <li>Reflection from the participants</li> <li>Reflection from the resource person</li> <li>Closing remarks by MI</li> <li>Photo opportunity</li> </ul>	
<b>15:00</b>	Break and End of the training	