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Establishing Climate-Smart Villages in the ASEAN Region to Improve Food Security and Resiliency in Local Communities

NARRATIVE REPORT

9-13 July 2019 | SEARCA Headquarters, Los Baños, Laguna

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Implementing Partners

The **Southeast Asian Regional Center for Graduate Study and Research in Agriculture** (SEARCA) is one of the 26 specialist institutions of the Southeast Asian Ministers of Education Organization (SEAMEO). Established in 1966, SEARCA is mandated to strengthen institutional capacities in agricultural and rural development in Southeast Asia through graduate scholarship, research and development, and knowledge management. It serves the 11 SEAMEO member countries, namely, Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Timor-Leste, and Vietnam. SEARCA is hosted by the Government of the Philippines on the campus of the University of the Philippines Los Baños (UPLB) in Laguna, Philippines. It is supported by donations from SEAMEO members and associate member states, other governments, and various international donor agencies.

The **CGIAR Research Program on Climate Change, Agriculture and Food Security** (CCAFS) seeks to address the increasing challenge of global warming and declining food security on agricultural practices, policies and measures through strategic, broad-based global partnerships. Led by the International Center for Tropical Agriculture (CIAT), CCAFS is a collaboration among all 15 CGIAR Research Centers and coordinates with the other CGIAR research programs. All CGIAR Centers have a stake in CCAFS, and numerous Centers have considerable climate change expertise and activities. CCAFS brings together some of the world's best researchers in agricultural science, climate science, environmental and social sciences to identify and address the most important interactions, synergies and trade-offs between climate change and agriculture. The program is carried out with funding support from governments and aid agencies, both through the CGIAR Trust Fund and bilaterally. CCAFS aims to define and implement a uniquely innovative and transformative research program that addresses agriculture in the context of climate variability, climate change and uncertainty about future climate conditions. Learn more about how we work.

The **International Institute of Rural Reconstruction** (IIRR) is a research, educational and community development organization focused on empowerment, innovation and transformation to address rural poverty. IIRR currently operates in eight developing countries: Cambodia, Ethiopia, Kenya, Myanmar, Philippines, South Sudan, Uganda and Zimbabwe. Each year through training, study programs, south-south exchange, technical support, coaching and projects partnership, IIRR influences over 100,000 people to become agents of learning and advocates for change in their communities. IIRR fosters the social advancement of the poor through sustainable development practices by learning from communities and helping them develop long-term solutions and methods for those solutions. IIRR focuses on food security, improving access to quality education, and building resilience in the face of human made and natural disasters and climate change.

Establishing Climate-Smart Villages (CSVs) in the ASEAN Region to Improve Food Security and Resiliency in Local Communities

Narrative Report

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ACRONYMS

AMIA	Adaptation and Mitigation Initiative in Agriculture
BARMM	Bangsamoro Autonomous Region in Muslim Mindanao
AROMA	Asosasyon ng Responsable at Organikong Magkakape
ASEAN-CRN	ASEAN Climate Resilience Network
BFAR	Bureau of Fisheries and Aquatic Resources
CBA	community-based adaptation cost-benefit analysis
CCA	climate change adaptation
CFNR	College of Forestry and Natural Resources
CFV	Conservation Farming Villages
CCAFS SEA	CGIAR Research Program on Climate Change, Agriculture and Food Security in Southeast Asia
CIAT	International Center for Tropical Agriculture
CoMSCA	Community Managed Savings and Credit Association
CRVA	Climate Risk Vulnerability Assessment
CSA	climate-smart agriculture
CSO	civil society organization
CSV	Climate-Smart Village
DENR	Department of Environment and Natural Resources
DoA	Department of Agriculture-Thailand
ENFOR	Environmental Forestry Program
FANTA	Food and Nutrition Technical Assistance
FAO	Food and Agriculture Organization
FFS	farmer field school
FITS	Farmer's Information and Technology Services
FLG	Farmer Learning Group
GIS	Geographic Information System
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GWD	Guinayangan Water District
HFIAS	Household Food Insecurity and Access Scores
IAERI	Indonesian Agricultural Environment Research Institute
ICRAF	World Agroforestry Centre
IIRR	International Institute of Rural Reconstruction
ISARD	Inclusive and Sustainable Agricultural and Rural Development
KAP	knowledge, attitude, and practices
LGU	local government unit
MEMC	Municipal Ecosystem Management Council
MOE	Ministry of Education and Sports-Lao PDR

MOU	memorandum of understanding
MPI	Ministry of Planning and Investment-Lao PDR
MSPL	Maulawin Spring Protected Landscape
MUZ	Multiple Use Zone
NAFRI	National Agriculture and Forestry Research Institute
NDRRMC	National Disaster Risk Reduction Management Council
NGA	national government agencies
NGO	non-government organization
NSPRDC	National Swine and Poultry Research and Development Center
OMA	Office of the Municipal Agriculturist
OTOP	One Town, One Product
PCVRA	Participatory Climate Vulnerability and Risk Assessment
PDAFF	Provincial Department of Agriculture, Forestry, and Fisheries
PES	Payment for Ecosystem Services
PhilRice	Philippine Rice Research Institute
PSIWRM	Philippine Strategy for Improved Watershed Resources Management
REAP	Re-entry Action Plan
SARAI	Smarter Approaches to Reinvigorate Agriculture as an Industry in the Philippines
SDG	Sustainable Development Goal
SEARCA	Southeast Asian Regional Center for Graduate Study and Research in Agriculture
SPZ	Strict Protection Zone
SRI	System of Rice Intensification
STIARC	Southern Tagalog Integrated Agricultural Research Center
UPLB	University of the Philippines Los Baños
USAID	United States Agency for International Development
WASH	water, sanitation, and hygiene

EXECUTIVE SUMMARY

The Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), in partnership with the International Institute of Rural Reconstruction (IIRR) and the CGIAR Research Program on Climate Change, Agriculture, and Food Security (CCAFS), organized a workshop titled ***Establishing Climate-Smart Villages (CSVs) in the ASEAN Region to Improve Food Security and Resiliency in Local Communities*** on 9-13 July 2019 to demonstrate the principles and processes behind the application of climate-smart agriculture in communities vulnerable to the worsening impacts of climate change. The workshop consisted of two components, namely: lectures and re-entry action planning activities, which were held at SEARCA Headquarters in Los Baños, Laguna, and a roving workshop that showcased the different CSVs established in the municipality of Guinayangan in Quezon Province, Philippines.

Representatives from the ASEAN Climate Resilience Network (ASEAN-CRN), particularly from Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, and Thailand participated in this workshop to increase their appreciation and knowledge of the CSV and its potential in significantly improving food security in local communities amid heightened risks to agriculture-based livelihood posed by the changing climate.

CCAFS developed the CSV approach to provide context-specific solutions to climate risks at the level of the community or the villages. It is specifically designed to capacitate farmers, especially smallholders, in facing the challenges posed by climate change through experiential learning; and to enable them to establish their own CSVs in the future. Model CSV sites have already been initiated in Cambodia, Laos, Myanmar, the Philippines, and Vietnam, which serve as platforms for climate-smart agriculture (CSA) learning and community-based participatory action demonstrations.

In his welcome remarks, SEARCA Director Dr. Glenn B. Gregorio emphasized the close interconnection between climate and food security issues, wherein the changing climatic conditions pose greater risks over the agriculture sector and threaten food security. Localized interventions, according to Dr. Gregorio, assume a critical role in the battle against climate change, underlining the importance of climate-smart initiatives at the grassroots.

Emphasizing the crucial role of the village, the basic political unit of society, in national development, Dr. Leocadio S. Sebastian, Regional Program Leader of CCAFS in Southeast (SEA) said that it takes a village to scale climate-smart agriculture, in the same way that it takes a village to raise a child. Dr. Sebastian furthered that the village is the "nucleus of social action," where the real action toward climate change mitigation and adaptation, particularly community mobilization through CSV, begins.

To provide the history and context of the Guinayangan CSV, Ms. Emilita Monville-Oro, Country Director and Acting Asia Regional Director of IIRR, shared the lessons learned from CSV implementation in the municipality. A salient point in Ms. Oro's presentation was on increased Guinayangan local government's investment on interventions that address climate change impacts. Moreover, scaling up CSA initiatives would necessarily entail building the capacities of communities and local government units.

In his keynote address, Dr. Rex Victor O. Cruz, Professor and Director of the Environmental Forestry Programme of the College of Forestry and Natural Resources, University of the Philippines Los Baños, discussed the challenges, needs, and priorities in the ASEAN Region in the context of the current climate change scenario. Dr. Cruz related his experiences working with conservation farmers and emphasized that empowerment involves both unlearning and learning processes. He added that establishing CSVs necessitates climate-smart technical services, science and technologies, social relations, and governance.

The workshop was organized into four modules.

To provide participants with the fundamental principles and elements of CSV, Module 1 focused on its nature as an agricultural research for development approach in addressing climate change, food and nutrition security, and livelihood development. Furthermore, participatory tools employed in the Department of Agriculture's Adaptation and Mitigation Initiative in Agriculture (DA-AMIA) villages and the Guinayangan CSV were presented. Experiences in establishing the context of CSV in communities were also discussed.

Module 2 of the workshop featured a panel discussion on the emerging lessons from CSVs in Southeast Asia. The panel was composed of Dr. Sebastian; Ms. Perla G. Baltazar, Senior Technical Officer of the DA Systems-wide Climate Change Office; and Dr. Julian Gonsalves, Senior Adviser and CCAFS Project Leader, IIRR. This was followed by a presentation on scaling considerations in CSV, which was delivered by Ms. Jana Patricia Koerner, CCAFS SEA Scaling Officer.

Module 3 featured the best practices in climate-smart agriculture through a roving workshop in Guinayangan, Quezon. Participants of the workshop first visited Barangay Cabong Norte, where they learned about intercropping and other interventions in an upland agricultural system, with emphasis on corn production. This was followed by a field visit to Barangay Capuluan Tulon, where pig raisers employ small-scale, low-external input, low-carbon footprint methods of raising resilient but improved native pig breed as an alternative livelihood source for smallholder farmers. Meanwhile, the fishery and coastal agriculture site in Barangay Capuluan Central showcased the initial work done on coastal reforestation and diversification of livelihoods of coastal fishing families.

Guinayangan's success story regarding the establishment of the Green Fund (payment for ecosystem services) and water resource management was the subject of the field visit to the Maulawin Spring Protected Landscape (MSPL). Guinayangan Mayor Cesar J. Isaac III related the efforts done by the local government to ensure protection and sustainable utilization of resources within the protected landscape, particularly the establishment of the Municipal Ecosystem Management Council (MEMC) and the Green Fund. This was followed by a site visit to the agroforestry and crop diversification farm in Barangay Sta. Cruz, where farmers managed to establish linkages with the private sector to expand the market for the chili peppers they produce. The demo farm and eco-park managed by the Office of the Municipal Agriculturist (OMA) of Guinayangan served as the final site of the roving workshop, which featured organic vegetable and seedling house, coconut nursery, and dragon fruit demo farm, among others. The group also made quick stops at the National Swine and Poultry Research and Development Center and the Quezon Agricultural Research and Experiment Station to learn the different initiatives and milestones achieved by the DA-AMIA Program, particularly with regard to the adaptation strategies and interventions implemented in the AMIA village in San Francisco, Quezon.

Module 4 consisted of a reflection and synthesis session wherein participants shared the best practices in CSA-related work being applied in their respective countries. During the session, participants learned about the initiatives related to the establishment of the National Climate-Smart Agriculture Center in Myanmar; rice crop management practices, including dry direct seeding, in Lao PDR; CSA demonstration actions in Cambodia; CSA practices to adapt to the prolonged dry season in Malaysia; buffer stocking and indigenous adaptation knowledge of farmers in the Philippines; the Agriculture 4.0 program for low-input, high-output agricultural production in Thailand; climate-smart paddy rice cultivation in Indonesia; and the efforts done by the World Food Programme to integrate CSA components for food security and nutrition.

The last module also enabled participants to share their experiences and present their re-entry action plans (REAP) in a plenary session. With this activity, participants proposed projects that aim to strengthen the capacity of upland farmers in Lao PDR; launch a workshop on establishing CSV in Myanmar; address monocropping and soil degradation in Thailand; establish a CSV in Pailin Province, Cambodia; improving yield quality and reducing yield losses of farmers in Malaysia; implement community-driven climate change adaptation and mitigation practices in the Philippines; and establish strategic irrigation for sustainable crop production in Indonesia.

BACKGROUND AND RATIONALE

Climate-smart agriculture (CSA) recognizes that climatic risks to agriculture-based livelihood are occurring at much greater pace and intensity than before; and in order to address it, context-specific local solutions are needed. To answer this need, the CGIAR Research Program on Climate Change, Agriculture, and Food Security (CCAFS) has developed the Climate-Smart Village (CSV) approach, specifically to address this issue and to allow farmers to learn from the evidences generated at the local level; and enable them to build their own CSVs later on. In Southeast Asia, CSVs have been established in Cambodia, Laos, Myanmar, Philippines and Vietnam, to serve as model sites where CSA learning, as well as community-based participatory action demonstrations, may take place.

The Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) has been advocating for climate change adaptation and mitigation, as well as food security and nutrition security, by providing a venue for high-level discussions that may support policy advocacy and encourage organizations to learn from the best practices of their counterparts from across the Southeast Asian region. SEARCA has drafted the "Umbrella Program on Food Security and Nutrition Security for Southeast Asia 2014-2019" and the "Umbrella Program on Climate Change Adaptation and Mitigation for Southeast Asia."

Along this line, the International Institute of Rural Reconstruction (IIRR) initiated the CSV in Guinayangan, Quezon, through the support of CCAFS in 2014. Since then, various CSA interventions, which initially targeted adoption by 300 farmers, have eventually reached about 1,500 farmers, through farmer-to-farmer scaling. The Guinayangan CSV has also functioned as a "go-to" site for agriculture development workers in learning about technologies, as well as participatory approaches and social learning methodologies for promoting CSA and the CSV approach. The knowledge and experiences generated from the Guinayangan CSV had already been shared to around 285 agricultural researchers, students, extension workers, government officials, and media practitioners representing around 145 institutions including local and national governments, NGO, NARES, media institutions, state universities, and farmers groups from 10 countries through both on-site (roving workshops, trainings, and site visits) and offsite learning events (trainings, forums, round table discussions). Guinayangan CSV has also been recognized and tapped by the Department of Agriculture (DA) as a learning site for capacitating 17 regional field offices and their respective partner local government units in developing AMIA (Adaptation and Mitigation in Agriculture) villages in all 17 regions in the country.

SEARCA and IIRR have a Memorandum of Understanding (MOU) to collaborate on mutual areas of interest, such as school nutrition and climate smart agriculture. Being at the forefront of both CSA and CSV advocacy in the region, SEARCA and IIRR have partnered together to implement this workshop for the ASEAN Climate Resilience Network.

The ASEAN Climate Resilience Network (ASEAN-CRN) was established to ensure that ASEAN member states are capable of adapting to climate change and are able to execute mitigation efforts, in order to maintain food security and climate resiliency in the region. To achieve this, the Network provides a dialogue platform to discuss information, expertise and experiences on CSA. It serves as a link between policymakers and scientific institutions, universities, national research institutions in agriculture, and international organizations. The ASEAN-CRN focuses on advocating the practice and implementation of CSA, as it is already a proven solution to converting and shifting orthodox agricultural systems to support food security under the new conditions posed by climate change. To further enhance its capability in promoting and disseminating CSA work, the Network

thought it best to expose its key members to the experiences and best practices of CSV projects and programs in the ASEAN region, by visiting selected sites and engaging with stakeholders in the Philippines.

Description

The learning event highlighted CCAFS's experiences in establishing and organizing CSVs in Southeast Asia, particularly the Guinayangan CSV. It was designed for ASEAN-CRN member countries, to provide them with experiential knowledge on the principles and practice of CCAFS' CSV approach to facilitating promotion and upscaling of CSA and its potential in enhancing food security in local communities.

Methodologies included plenary sessions, panel discussions, site visits, roving workshops, and reflection sessions. Participants visited selected learning sites in Guinayangan, Quezon, and prepared re-entry action plans as a requirement of the activity.

This learning event featured the various participatory approaches, tools, and strategies utilized by CCAFS, local government, national government, and NGOs, that contributed to the development of CSVs in Southeast Asia.

Goal

The main goal of this learning event was to help the participants gain a better understanding of the concept of climate smart villages and its impact in improving food security in local communities.

Learning Objectives

At the end of the learning event, the participants were expected to have an increased appreciation of climate smart villages (CSVs) and their potential to significantly improve food security in local communities.

Specifically, the participants were expected to:

1) Increase knowledge and understanding of the CSV approach to make farming communities climate-smart, utilizing the experience of Guinayangan CSV in the Philippines; and

2) Identify practical strategies and approaches in promoting and scaling CSA practices in their respective areas of work and fields of expertise as well as in contributing to the regional community of practice of CSA.

Pre-workshop Preparation

This is the first roving workshop organized by SEARCA together with the IIRR and CCAFS SEA. A series of consultations and discussions transpired between SEARCA and the IIRR as part of the preparations for the roving workshop. Several meetings were held at the IIRR office to discuss the different modules with the resource persons and facilitators coming from IIRR. Prior to the event, the organizers visited selected CSV learning sites in Guinayangan, Quezon to ensure that what the participants would experience would facilitate the attainment of the learning objectives of the roving workshop. The venue, food, hotel accommodation, and transportation were arranged in the communities with the assistance of the IIRR local staff, the Honorable Mayor and the Municipal Agriculturist of the Local Government Unit of Guinayangan, Quezon. SEARCA sent letters of invitation to the members of the ASEAN-CRN and IIRR coordinated with CSV coordinators or focal persons to share their experience regarding CSA implementation to the participants. The CSV coordinators and

focal persons worked together with IIRR staff to prepare a presentation, which included an introduction to the CSV site, CSA piloting and implementation activities, results, challenges, and recommendations.

PARTICIPANTS AND RESOURCE PERSONS

Participants

Participants of the workshop included members of the ASEAN Climate Change Resilience Network, particularly from Cambodia, Indonesia, Malaysia, Myanmar, Laos, the Philippines, and Thailand; representatives from the World Food Program-Lao PDR; and a PhD candidate from the University of the Philippines Los Baños.

Resource Persons

Resource persons of the workshop included experts from various disciplines, including those who have done research development, and extension work related to agriculture, forestry, climate change studies, rural development, nutrition security, information and communication technology, community organizing, and program development and implementation.

OPENING PROGRAM

Welcome Messages

Keynote Address

OPENING PROGRAM

Welcome Message

Dr. Glenn B. Gregorio
Director
SEARCA

(Message delivered by Dr. Maria Celeste H. Cadiz, Consultant for Operations/OIC, Knowledge Management Department, SEARCA)

In his opening remarks, SEARCA Director Dr. Glenn B. Gregorio emphasized the close interrelation between climate and food security issues, as viewed from the lens of SEARCA's programs to promote Inclusive and Sustainable Agricultural and Rural Development (ISARD). According to Dr. Gregorio, the changing climate exerts greater pressure on the agricultural sector, compromising food security. In turn, agricultural activities along the value chain serve as contributory factors to climate change.

Thus, as part of the collective effort to build the resiliency of the agriculture sector in Southeast Asia, SEARCA developed the **Umbrella Program on Food and Nutrition Security for Southeast Asia** and the **Umbrella Program on Climate Change Adaptation and Mitigation for Southeast Asia**, which serve as platforms for collaborations in research, capacity building, and knowledge management among institutions working on climate change and food and nutrition security.

According to Dr. Gregorio, the battle against climate change is either won or lost at the grassroots level, where localized interventions play a crucial role. This is the key principle behind organizing this roving workshop, which is a joint effort of SEARCA and IIRR that is geared toward improving food security and resiliency of local communities in the ASEAN region. Developed and advocated by CCAFS, and implemented by IIRR together with local governments and ministries of agriculture, CSVs have successfully demonstrated context-specific local solutions to address climatic risks to agriculture-based livelihood.

As a parting message, Dr. Gregorio said that the goal of the workshop was to serve as a platform for participants to share and learn from their counterparts from across the Southeast Asian region as regards CSV projects and programs.

Welcome Message

Dr. Leocadio S. Sebastian
Regional Program Leader for CGIAR Program on Climate Change, Agriculture, and Food Security in Southeast Asia
(CCAFS SEA)

Dr. Sebastian prefaced his message by quoting the African proverb, "It takes a village to raise a child," which underscores the significance of the interaction of the entire community in ensuring that a child grows in a safe and healthy environment. According to Dr. Sebastian, the village has played strong social, cultural, and political roles in national development. Studies have shown that the village is crucial in the adoption of modern technologies in rural areas, with the village changing with evolving technologies, consequently giving rise to new institutional arrangements. Dr. Sebastian furthered that, to this day, the village plays an important role in catalyzing social change in Southeast Asia.

According to Dr. Sebastian, the village, as the nucleus of social action, helps identify the use of available resources and utilizing science-based innovations as mechanisms of self-government in the region; the village facilitates the decisions made by the people themselves. At the onset of the CSV initiatives, Dr. Sebastian believed that the project would find a niche in Southeast Asia owing to the structure of the village in the region.

On the part of stakeholders, real action starts at the village, according to Dr. Sebastian. For CCAFS, CSVs are considered the main instrument of community mobilization, where people are motivated to take action toward climate change adaptation and mitigation. It is in the CSVs where evidence is generated at the local scale on what options work best and which serve as basis for support by policymakers, agriculture development practitioners, and investors from the local to the global level. Moreover, CSVs serve as the loci of CCAFS research and development outcomes and impacts.

Dr. Sebastian said that the CSV approach in Southeast Asia is ready for scaling; hence, the workshop was designed for member-countries of the ASEAN-CRN to witness the progress of CSV implementation. The main goal of the workshop, according to Dr. Sebastian, was to help participants gain better understanding of the concept of CSV toward attaining food security in local communities and catalyzing its scaling in Southeast Asia.

To conclude his welcome message, Dr. Sebastian said that it takes a village to scale climate-smart agriculture and enjoined the participants to become part of that village.

Welcome Message

Ms. Emilita Monville Oro
Country Director and Acting Regional Director for Asia
Philippine Reional Center for Asia
International Institure of Rural Reconstruction

Ms. Emilita Monville Oro's discussion centered on the application of the CSV approach in the Philippine setting, particularly on the experiences from the AMIA villages and the Guinayangan CSV. Ms. Oro shared that the IIRR has previously undertaken three roving workshops with DA's Systems-wide Climate Change Office through the AMIA Program. The roving workshop was designed based on the idea that models need to be built in real-life context.

According to Ms. Oro, the Guinayangan CSV is not a showcase area but an example of how the local government unit (LGU) makes an effort toward climate resiliency using existing financial resources. She emphasized that while outsiders can help, it is the local community and the LGU that must do the job to ensure sustainability. Ms. Oro added that the Guinayangan CSV features champion farmers who are doing innovative approaches to adapt to the changing climate. Moreover, it illustrates the process of local engagement, especially since the local government has a more direct reach with the communities.

Ms. Oro related that the IIRR, as a strategic partner of CCAFS, has espoused climate-smart agriculture for over five years, and they have used this to leverage resources to establish CSV programs in in Myanmar. She furthered that the communities and the local government are pivotal to the scaling up of CSVs, and this necessitates efforts to build their capacities in climate change adaptation and mitigation.

Keynote Address

Dr. Rex Victor O. Cruz
Professor and Director
Environmental Forestry Programme
College of Forestry and Natural Resources
University of the Philippines Los Baños

Drawing from his experiences in working with upland conservation farmers in Quezon and Ifugao provinces, Dr. Rex Victor O. Cruz said that empowerment of farmers entails two key processes—the unlearning and learning processes—to be able to transform traditional farmers into conservation farmers and to engage the entire village in this undertaking. The anecdotes related by Dr. Cruz served as a springboard for his discussion on climate change and agriculture in Southeast Asia, which covers climate projections; key impacts of climate change on the agriculture sector; key drivers of vulnerability of the agriculture sector; key barriers to adaptation; and the pillars of climate-smart villages.

According to Dr. Cruz, climate projections based on the Fourth and Fifth Assessment Reports of the United Nations Intergovernmental Panel on Climate Change (IPCC) indicate the similar results, despite efforts from various countries to cut down on greenhouse gas emissions. According to Dr. Cruz, this corroborates previous findings by scientists that imply that climate change is a train already on the loose that is set to run its course. He added that the Fifth Assessment Report of the IPCC predicted a warming trend, more rains in the northern part of the world, stronger seasonal precipitation variability, and stronger monsoon rains. The report also predicted an increase in heavy rainfall events, increase in cyclone intensity, and probable increase in drought risk in areas with decreased amount of rainfall.

Dr. Cruz proceeded to discuss the key impacts of climate change on the agriculture sector, namely: 1.) increased risk of crop failure and reduced crop production that could result in food insecurity; 2.) water shortage; 3.) increased riverine, coastal, and urban flooding; 4.) increased risk of drought-related water and food shortage; 5.) Worsening poverty and inequality and the emergence of new vulnerabilities; and 6.) Coral reef decline. In Southeast Asia, according to Dr. Cruz, there are areas where temperatures are already approaching critical levels, especially during the susceptible stages of the rice planting season. For instance, reduced rice yield has been documented in Southern Indochina, Mekong Delta, Myanmar, the Philippines, Cambodia, and Vietnam.

Vulnerability to climate change are largely driven by socioeconomic factors. According to Dr. Cruz, the major socioeconomic drivers include population growth; overexploitation of land, water, and other natural resources; land use change; and urbanization. He pointed out that most of the drivers

of vulnerability to climate change are pre-existing development problems that society still has to cope with and that vulnerability to climate change is all about the aggravation of existing problematic conditions. To illustrate his point, Dr. Cruz said that the land area owned by farmers in Southeast Asia is too small to benefit from the economy of scale, making smallholder farmers more vulnerable to climate change due to their reduced ability and resources to mitigate its impacts.

Inadequate enabling environment for the agriculture sector in terms of environmental regulation, land rights and access, farm finance, and agricultural infrastructure, research, and development also contribute to climate change vulnerability. Meanwhile, limited research and information on observed and projected impacts of climate change on agriculture is a barrier to adaptation.

According to Dr. Cruz, climate-smart villages require climate-smart technical services, science and technologies, social relations, institutional network, governance, and infrastructures. He emphasized that they key process is empowerment, which is facilitated by unlearning the tradition nal ways that keep farmers non-resilient while learning new methods to adapt to climate change impacts.

Climate-smart technical services include weather and crop advisories, integrated risk assessment, adaptation planning, climate index-based insurance, technical advisories, capacity building programs, and financing. Dr. Cruz provided the example of Project SARAI as teaching farmers adaptation strategies through the provision of crop advisories. In addition, the conservation farming village program (CFV) implemented by the Environmental Forestry Program of the College of Forestry and Natural Resources, UPLB, adopted a holistic village approach to transform traditional upland farming communities into resilient communities. To do this the CFV went beyond building the capacity of upland farmers to practice adaptive farming practices by transforming the mindsets of the farmers from being farm centric to ecosystem focused. In addition CFV nurtured the sense of accountability and responsibility, imagination and creativity, and cooperative spirit of the farmers. Further CFV facilitated the strengthening of the relationship of farming communities with LGUs, concerned national agencies, and academe.

Meanwhile, CSVs also need climate-smart science and technologies through soil and water conservation, biodiversity conservation, precision agriculture, crop-site suitability matching, and long-term research and monitoring. In establishing climate-smart social relations, the elements that should be in place include organizations with legal personality, self-help system, resources pooling and sharing, and farmer-to-farmer learning system. Dr. Cruz emphasized the need to let the farmers make the decision and give them the flexibility to design their farms.

Climate-smart institutional network is also one of the pillars of climate-smart villages. It requires the mainstreaming of CSVs to local, regional, and national development plans and programs, as well as robust link of LGUs with national government agencies (NGAs) and the private sector and partnership of LGUs and local communities with the academe, research institutions, and NGAs. Lastly, climate-smart governance necessitates climate change-informed local executives and leaders, climate change-informed policies and development plans, and institutionalization of incentives for climate-smart practices.

MODULE 1

Principles Involved in Establishing Climate-smart Villages (CSVs)

Session 1

Climate-Smart Villages: An Agricultural Research for Development Approach to Addressing Climate Change and Food and Nutrition Security

The CCAFS CSV Approach: Guiding, Principles and Key Components

Building Resilience, Increasing Adaptive Capacities and Productivity of Agri-centered Livelihoods

Elements of a CSV

Session 2

Establishing the Context of CSV and Delivering CSA Portfolio

Tools and Experiences in Developing AMIA Villages

Participatory Tools in Identifying Community Vulnerability and Risks

Participatory Tools in Nutrition Programming in CSV Development

MODULE 1

Principles Involved in Establishing Climate-smart Villages (CSVs)

Session 1

Climate Smart Villages: An Agricultural Research for Development Approach to Addressing Climate Change and Food and Nutrition Security

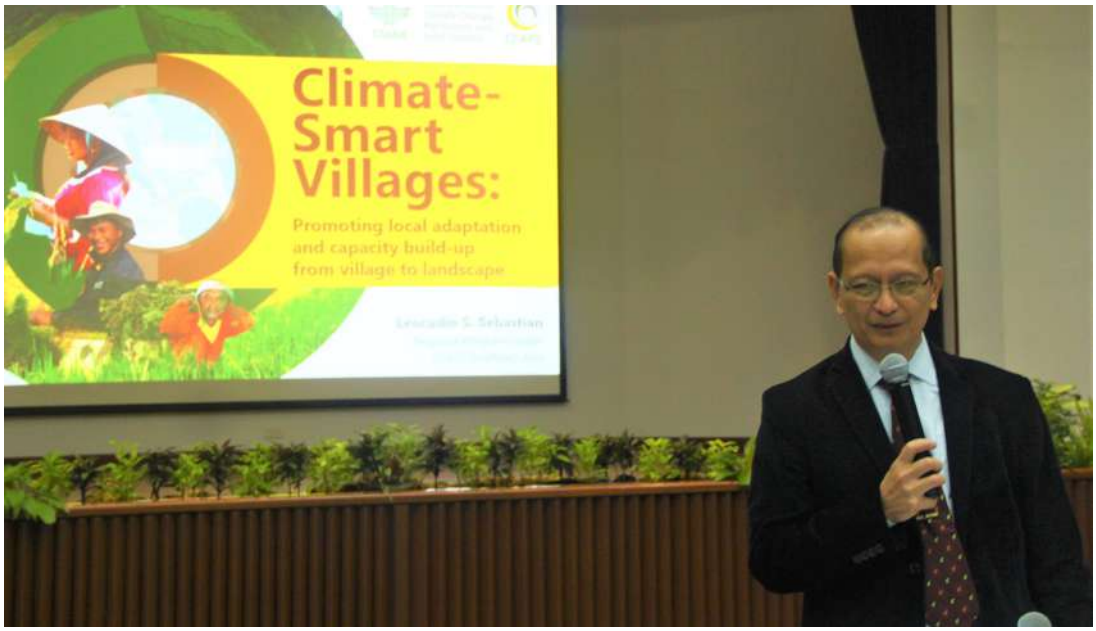
Moderator
Ms. Rosario B. Bantayan
Program Specialist
Knowledge Management Department, SEARCA

The CCAFS CSV Approach: Guiding Principles and Key Components

Dr. Leocadio S. Sebastian
Regional Program Leader for CGIAR Program on Climate Change, Agriculture, and Food Security in Southeast Asia

Climate-smart agriculture, according to Dr. Sebastian, needs smart implementers. He added that CSA is context-specific and puts a lot of emphasis on the process. It is also more about outcome or what happens after the technology is introduced to the community, rather than just the technology per se.

According to Dr. Sebastian, CSVs have varying degrees of success because villages have different contexts, such as the problems they face, climate stresses, and extent of participation. Thus, it is important that the lessons learned from the workshop are positioned within the context of the communities where CSVs are to be established.



Dr. Sebastian said that among target countries in Southeast Asia, CCAFS provides particular attention to Vietnam, Laos, and Cambodia. CCAFS' goal is to integrate its work in national programs and integrate CSA in national policies and development plans. Its flagship research projects cover the following areas: priorities and policies for CSA; climate-smart technologies and practices; low emissions development; climate services and safety nets; and gender and social inclusion.

According to Dr. Sebastian, CCAFS has established five CSVs in Southeast Asia, each at a different level of success. Moreover, each CSV addresses a different climate change; for instance, the CSVs in Ma and My Loi in Vietnam aim to improve resilience to flooding while those in Ekxang and Phailom in Lao PDR try to address drought.

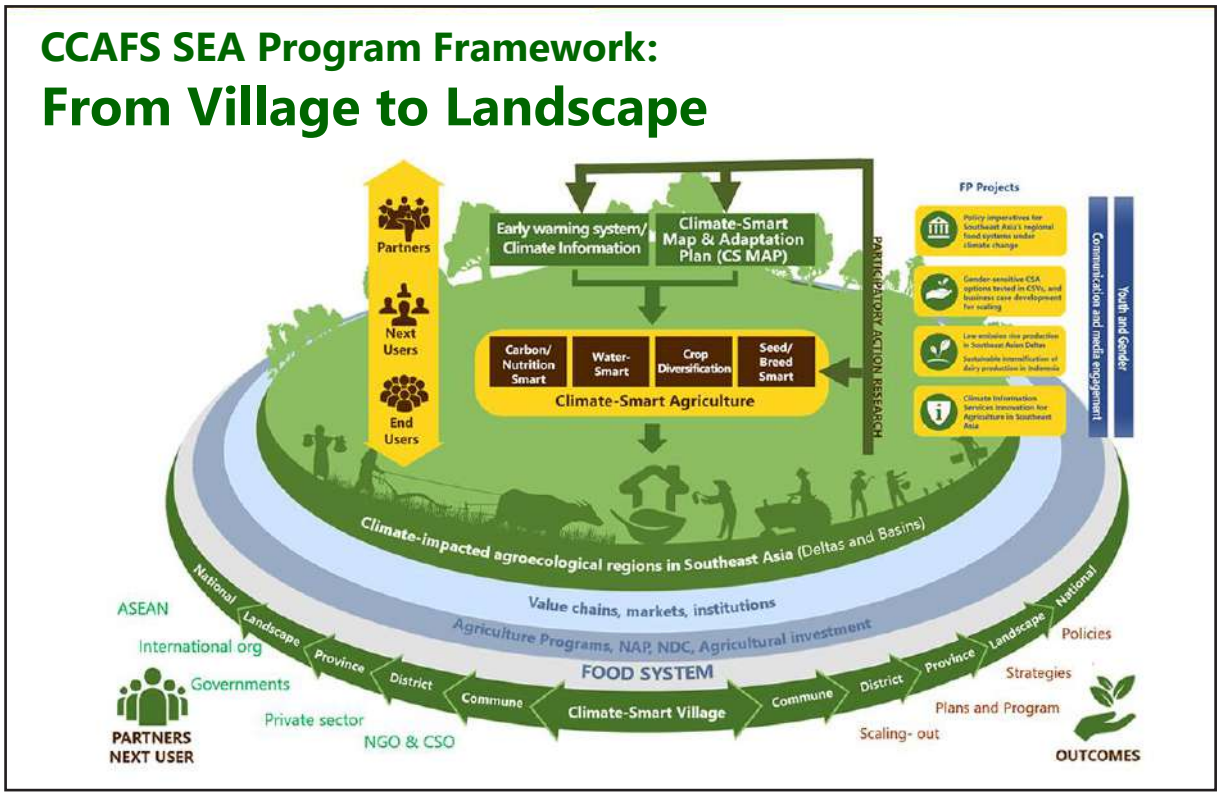
The concept of Climate-Smart Villages involves helping villages adopt climate-smart agriculture from specific farmers to a landscape. The process starts with social mobilization, which takes advantage of the existing political setup. Among the options that can be promoted to villages are climate smartness in the areas of weather, water, carbon, nutrient and pest, energy, and knowledge, depending on the context of the community. Selection of the appropriate option for a particular village follows a process that involves scoping, base lining, and participatory prioritization process with the community. Dr. Sebastian then discussed the protocols that CCAFS follows in establishing CSVs, namely: (1) Establishing partnership with local organizations and organizing CSV teams, (2) Conducting a baseline study, (3) Building capacity for CSV teams, (4) Social preparation and community engagement, (5) Participatory land use planning, (6) CSA prioritization exercise, (7) CSA evaluation and testing, (8) Upscaling, and (9) Monitoring and evaluation.

According to Dr. Sebastian, roving workshops conducted by CCAFS were observed to be effective especially in reaching areas where farmers are lagging behind and in engaging the people for whom technologies are intended. Another part of the CSV process is community-based land use planning, which uses participatory techniques to align community-produced land use plans with government land

use plans. Meanwhile, CCAFS used posters to facilitate participatory CSA prioritization at the village level.

Dr. Sebastian mentioned the following as the key concepts underlying the CSV approach: (1) Communities within a small landscape, (2) Provision of platforms for multi-stakeholder participation and collaborative work, (3) Site for collective and concerted actions at the community level and its surrounding landscape, (4) Development of solutions to anticipated future impacts of climate change, (5) Generation of location-specific evidence, (6) Fostering opportunities for farmer participatory research, and (7) Conduit for upscaling CSA.

Dr. Sebastian discussed the simplified procedural steps in setting up CSVs, which were developed by CCAFS and which can guide participants in applying the approach in the context of their respective countries. The first step is to identify the purpose and scope of the CSV, which, according to Dr. Sebastian, should be aligned with national programs and objectives. The second step involves the identification of the climate risks in the target areas, which is followed by locating a CSV in a small landscape. Consultations with stakeholders constitute the fourth step in the process of establishing a CSV while evaluating CSA options comprise the fifth step. The rest of the eight-step process involves developing a portfolio, scaling-up, and monitoring and evaluation of uptakes and outcomes. Dr. Sebastian emphasized that the challenge is on how to scale the broad concept of the village, since the entire country must benefit and not just a few villages. Lastly, Dr. Sebastian discussed the program framework adopted by CCAFS SEA, which cuts across from the village to landscape.



Program framework adopted by CCAFS SEA in establishing and implementing CSVs

Building Resilience, Increasing Adaptive Capacities and Productivity of Agri-centered Livelihoods

Dr. Julian F. Gonsalves
Senior Adviser and CCAFS Project Leader

Dr. Gonsalves' discussion focused on the conceptual and contextual basis for climate-smart villages, particularly the underlying socio-technical considerations in implementing CSVs. According to Dr. Gonsalves, CSVs serve as a scalable platform that brings about holistic and socially inclusive approaches to demonstrate location-specific solutions to climate risks. A transformational change in the rural livelihoods is one of the main indicators of its effectiveness.

Dr. Gonsalves discussed the different shifts that can occur due to climate change, namely, geographic shifts or change in area of suitability; elevation shifts; seasonal shifts that may involve change in yield and cropping patters; and extreme event shifts. This is why targeting matters, since one size does not fit all. He also said that different types of targeting should be considered, such as geographical, agro-ecological, and social group targeting.

Dr. Gonsalves pointed out that the various food systems that exist influence how agriculture is shaped. For some, it could take the form of sustainable diets or food safety. He added that it is important to contextualize CSA within landscapes, since there is interaction among the different components of ecosystems. Moreover, Dr. Gonsalves said that diversification of crops is a key step in the slow climate change adaptation process, and that CSA recognizes that the process is not only about climate-smart crops and varieties. The more diverse agro-ecological systems are more resilient while the more homogeneous ones are less resilient. Agroforestry is one method of diversification.

Dr. Gonsalves also emphasized the significance of incorporating local knowledge about unique local responses into the system, citing the example of the use of windbreakers in farming villages in Batanes Islands in the northern Philippines. Meanwhile, he stated that micro-dosing of chemical fertilizers is practical in the context of agro-ecological approaches.

Small farms are also seen to have the potential to become economically viable units while

serving in green growth and family farming efforts. Dr. Gonsalves pointed out that most of the food produced globally are from smallholder farmers; thus, smallholders are key and can become more resilient than large-scale farmers due to diversification.

Dr. Gonsalves emphasized that resilience is not only about technologies but also about access to resources and land. He said that a key issue

in this regard is that in most parts of the world, there are no frontline agricultural workers; thus, most initiatives establish farmer field schools (FFS), which does not reach majority of farmers. A method that allows for a large interface with farmers, according to Dr. Gonsalves, is the farmer-to-farmer extension system.

Emphasizing the need to move beyond "islands" of innovations to impact on scale, Dr. Gonsalves said it is worthy to look back at the criticisms of the Green Revolution, which adopted innovation diffusion in its early years. Dr. Gonsalves also warned against the elite capture of the innovations introduced, which does not always facilitate wider farmer-to-farmer processes, as well as the risks of cumulative advantage that allows for the same group of people to benefit from interventions, as these prevent the scaling of initiatives and approaches. According to Dr. Gonsalves, scaling and sustainability are two faces of the same coin.

He also underlined the importance of incremental adaptation, especially since this is what takes place naturally. Dr. Gonsalves said that addressing current climate change issues now and on scale helps build resilience and helps nurture innovation development at the community level. The "no regrets" approach, which constitutes adaptive practices and actions that will be beneficial in the future, regardless of whether the worst projections materialize or not.

Dr. Gonsalves cited three dimensions of resilience, namely, absorptive, adaptive, and transformative capacities. He also discussed the concepts of "stepping up," "stepping out," "hanging in," and "food insecure." Farmers that are stepping up invest in agricultural assets to expand the scale of intensity of existing activities, including purchases of at least some inputs or services. Stepping out involves the accumulation of assets that allow investments or shifts into new activities and assets. Meanwhile, "hanging in" is characterized by maintaining and protecting current levels of wealth and welfare amid threats of stresses and shocks. Lastly, food insecure agriculture-based livelihoods are those that are chronically food-insecure, experiencing food deficits for more than five months annually.

Dr. Gonsalves also pointed out the false dichotomy between rural and urban labor during the agrarian transition. According to him, most families actually occupy the central ground and do not fit into rural or urban categories.

Climate-smart agriculture, according to Dr. Gonsalves, provides new opportunities to address the need for local adaptation, resilient livelihoods, agrobiodiversity conservation, and better nutrition. Meanwhile, Climate-Smart Villages provide platforms for ensuring that various interventions converge at the local level, where it matters the most. CSVs can be considered as "lighthouses" where communities test, develop, and subsequently adopt appropriate CSA practices and technologies on a wider scale. Dr. Gonsalves said the CSVs provide a wide array of options for farms, landscapes, food systems, and services.

Elements of a CSV

Mr. Rene R. Vidallo
Philippine Country Program Director
Regional Center for Asia, IIRR

Mr. Vidallo presented how CSVs, as an agricultural research for development approach, was operationalized in the context of Guinayangan in Quezon Province, Philippines and how it was utilized for CSA scaling. Referring to the previous presentations which emphasized empowerment as a CSV outcome, Mr. Vidallo said that the greatest proof of empowerment observed in the Guinayangan CSV is the big change in the level of confidence of the program partners, especially those who are working in the agriculture office of the LGU.

Mr. Vidallo described Guinayangan as a third-class municipality in Quezon Province, Philippines with a population of 45,155 as of 2015. Its economy is largely agriculture-based, having monocrop coconut plantations as the dominant structure. Based on participatory vulnerability assessment, the climate-related risks faced by the municipality include storms, typhoons, and La Niña conditions. Guinayangan also experiences drought-like conditions and unpredictable onset of the rainy season.

Operationalizing the CSV approach, according to Mr. Vidallo, entails establishing key components. One of the foremost components of the Guinayangan CSV are the farmer learning groups that conduct participatory action research to test and learn CSA practices. In the case of the Guinayangan CSV, there are already 17 farmer learning groups, composed of 300 farmers that are engaged in learning about specific climate-smart practices, including agroforestry, coastal agriculture, and confined livestock raising, among others.

The second component of the Guinayangan CSV is composed of the learning sites or impact areas where on-site knowledge-sharing is facilitated. Mr. Vidallo stated that while CSA practices can be observed in lots of areas within the CSV, a specific geographic area can be considered an impact area only if it exhibits the following key features: (1) existence of climate-resilient agriculture or CSA technologies and practices for at least four consecutive cropping seasons (two years); (2) a critical mass of CSA practitioners in the area: at least five contiguous

households practicing at least one CSA technology; (3) area is already used for on-site knowledge-sharing events; and (4) presence of local knowledge resource(s): at least one farmer leader who can perform as resource person on specific CSA practices. Guinayangan features seven (7) impact areas for CSA, an example of which is the low external input pig production

learning site located in Barangay Capuluan Tulon and the low external input rice production systems in Barangay Danlagan Central.

On-site knowledge sharing is the third component of the Guinayangan CSV, according to Mr. Vidallo. The CSV, as a place where people can go to learn about CSA, should facilitate sharing of knowledge among farmers. Since 2015, IIRR has conducted farmer-to-farmer sharing and on-site scaling events, such as farmer field days, trainings and roving workshops.

Another component the CSV is the community support systems such as livestock breeding centers, seedling nurseries, and crop propagation centers. Mr. Vidallo said that the purpose of establishing support systems is for farmers to have easy access to inputs (materials and knowledge) that would allow them to test and learn CSA options firsthand. He also emphasized that facilitating social learning is an important form of community support system, and this is done by facilitating farmer learning groups and participatory action research, developing impact areas, facilitating on-site learning, developing community innovations or adaptation fund, providing support to local government programming, and conducting scaling up events both on-site and off-site.

Setting up sustainability mechanisms is also a key component of CSVs, according to Mr. Vidallo. In Guinayangan, this manifests in local government plans for the agriculture sector and it is in these planning platforms that designing agricultural interventions comes in and local governments allocate budget. Other sustainability mechanisms in the Guinayangan CSV include LGU investment in CSA demo site, support of national government agencies such as the DA to the LGU, building the capacities of extension service providers, and linking with the private sector and other government agencies.

The next key component of CSVs entails organizing scaling up events. Mr. Vidallo said that the Guinayangan CSV employed three major scaling up events to promote CSA, which are off-site events (e.g., conferences, fora, discussions, and meetings), on-site events (e.g., roving workshops, training, and visits), and media coverage. In Guinayangan, there is an ongoing municipality-to-municipality scaling, wherein neighboring municipalities regularly share information through farmer groups, the DA's AMIA program, and non-governmental organizations (NGOs).

The last component of CSVs is knowledge generation on CSA. According to Mr. Vidallo, CSVs were initially conceptualized from a research perspective and thus the inherent purpose of CSVs was to serve as a platform for CSA knowledge generation and sharing.

Open Forum

Question	Response
Dr. Thavone Inthavong: Right now, we are trying to scale out CSVs in Laos, but because the government cannot support such scaling out owing to limited financial resources, we are attempting to promote partnership with the private sector. However, when it comes to projects, the private sector would want to gain some benefits. What can you suggest or recommend on how to do private partnership to support Climate-Smart Villages?	**Dr. Sebastian**: I think it is in India where we have private sector participation in CSVs, but in Southeast Asia, we do not have any formalized private partnerships yet. In the case of Guinayangan, they have linked with the private sector to expand their market. This is why I always emphasize that one should not be prescriptive in terms of technology. You cannot force farmers to diversify if there is no market for the products that they will diversify into. One should focus on outcome, process, and location specificity, rather than focus on diversification. We teach farmers to plant different crops, but not which crops to plant, since farmers often know what is demanded by the market and prioritize local demand. If we can link farmers with the market and aid them in developing partnership with other sectors, then they can have better a chance of expanding their market. In Vietnam, for instance, where they have the small field, big farms approach, they bring in the private sector to provide services and to buy the produce, as well as provide inputs. You may have to go beyond the village if you want to bring in the private sector. **Ms. Baltazar**: In the Philippines, a few cases demonstrate the private sector being brought in as partner. As Dr. Sebastian has said, they serve as the market. There are civil society organizations (CSOs) that orient farmers on the process for them to qualify as suppliers in their specific niche markets. There are also partnerships on a bigger scale, and this is where the DA is working with bigger cooperatives and large companies. **Dr. Sebastian**: While it is important to engage large companies, farmers should also maximize the private sector at the local level. In my experience when it comes to diversification, it is best to tackle first the household food security. Take advantage of the local market first. Vietnam is a good example of diversification from the local to the foreign market. **Mr. Vidallo**: In the case of Guinayangan, we struggled in terms of identifying CSA interventions because the coconut industry is already well-developed. What stood out is that typhoons and long droughts have the biggest impact on coconuts, which affect their fruiting. Those who are dependent solely on coconut suffer economic losses. The only practical alternative is diversification. In terms of private partnership, we brought in potential market, thinking that farmers can take advantage of them. However, in the case of large-scale cassava producers, there were constraints in terms of harvesting and transporting the produce. What worked was small-scale production, which needs only to satisfy the local market.

Session 2

Establishing the Context of CSV and Delivering CSA Portfolio

Moderator
Ms. Rosario B. Bantayan
Program Specialist
Knowledge Management Department, SEARCA

Tools and Experiences in Developing AMIA Villages

Mr. James D. Leyte
Senior Research Associate
Agriculture Systems and Landscape Specialist
CIAT Philippines

Mr. Leyte's presentation centered on the tools that connect existing agriculture practices through the various knowledge generated by CIAT based on external resources and collaborations, which participants can employ in establishing Climate-Smart Villages.

According Mr. Leyte, CIAT adopts a four-step process in building climate-resilient communities. The first step involves understanding what is happening to the community and what could potentially happen in the future. This is followed by knowing the available options, which entails understanding the potential gains and losses in each option, for instance in identifying crops with the greatest gains and least losses based on a future scenario. The third step in the process is the

implementation stage, where action plans toward mitigating and addressing climate change impacts are carried out. The last step in building climate-resilient communities involve monitoring outcomes, which will help determine which sustainable strategies can be used or developed to encourage farmers to adopt CSA strategies.

The tools that can be used during the first step in the process include participatory geographic information system (GIS), crop suitability analysis, Terra-I, and climate risk vulnerability assessment (CRVA). CRVA is used for targeting, which involves identifying the nature and extent of climate change impacts and variability over a large geographic area. It also facilitates the prioritization of CRA options or packages of interventions for adaptation based on exposure, sensitivity, and needs for adaptive capacity in vulnerable areas identified. Meanwhile, crop suitability analysis provides an overview of the impact of climate change on different locations. It helps identify when and where are the areas that need to cope with, adjust to, or transform to adapt to climatic changes. To illustrate an example of crop suitability analysis, Mr. Leyte discussed the impact gradient map that CIAT devised for coffee based on projections into the 2050s in Africa. Using this map, areas that need to cope (incremental adaptation), adjust (systemic adaptation), and transform (transformational adaptation) were identified. Meanwhile, in the Philippines, CIAT adopted a climate risk vulnerability framework that uses sensitivity, hazard, and adaptive capacity indices.

For step 2 (knowing the available options), the tools used by CIAT include ecosystem services from agricultural landscapes, land use planning and trade-off, CSA investment prioritization, cost-benefit analysis (CBA) for CSA, and CSA profile. In the case of the Philippines, CIAT adopted CSA investment prioritization, CSA profile, and CBA for CSA. CSA investment prioritization, according to Mr. Leyte, is a framework composed of processes and tools that help identify promising climate-resilient practices for priority investment by the government and private sectors. CIAT's framework for CSA investment prioritization consists of four phases, which are as follows: initial assessment of CSA options (Phase 1); first workshop on identification of top CSA options (Phase 2); calculation of costs and benefits of top CSA options (Phase 3); and second workshop on portfolio development (Phase 4).

Meanwhile, the country CSA profile provides an overview of the agricultural challenges and how CRA can be employed to adapt to and mitigate climate change. Lastly, information on financial and environmental gains and losses over conventional and climate-resilient practices can be obtained from assessment tools such as CBA.

In step 3 (draw a plan), the tools that can be used are the following: (1) climate-smart value chains; (2) CSA implementer; (3) climate-smart agricultural plan; (4) climate information services; and (5) scaling CSA through value chains. Mr. Leyte's discussion focused on climate information services and scaling CSA through value chains. Climate information services is an advisory mechanism wherein climate knowledge and information about what could happen in a season and what practices can be utilized to maximize benefits or mitigate potential losses are generated, translated, transferred, and used. On the other hand, scaling involves using value chains as platforms for wide-scale adaptation of climate-resilient practices through agricultural innovations.

For step 4 (monitoring of outcomes), Terra-i can be used for real-time monitoring of vegetation loss to support immediate response by government and conservation organizations. In Indonesia, Terra-i has been piloted for eco-labeling and certification to attest that the coffee sold in the market is not contributing to deforestation. Meanwhile, the 5Q approach can be used in monitoring whether farmers are adopting the technology or not using a feedback mechanism. It employs five questions asked at a time at different time periods.

According to Mr. Leyte, the efforts done by CIAT in the Philippines with regard to CSA has resulted in project outputs being used by the national government in its development and investment plans. These have also demonstrated the usefulness of CRA and have been used in the overall initiatives of the DA as regards climate change adaptation.

Participatory Tools in Identifying Community Vulnerability and Risks

Ms. Magnolia M. Rosimo
Program Manager
Learning Community Program, IIRR

In this session, Ms. Rosimo discussed Participatory Climate Vulnerability and Risk Assessment (PCVRA) as a tool that combines the climate lens and participatory rural appraisal (PRA), with sustainable livelihood as the guiding framework in doing the assessment. Based on this framework, Ms. Rosimo pointed out that the five elements of sustainable livelihood—human, natural, financial, social, and physical capital—were assessed to be at risk.

Ms. Rosimo explained that PCVRA is guided by the principle of participatory rural appraisal and combines different approaches and methods that enable local people to share, enhance, and analyze their knowledge of life and conditions to plan and act. In terms of the process, it is at this stage that the community is involved in analyzing their risks and in developing plans to respond to the risks identified.

There are five key principles that should be kept in mind in doing PCVRA, as follows:

1. Empowerment is important in climate change adaptation and the community should feel in control.

2. Researchers should show respect for the community and not consider them merely as a source of information. This entails the reversal of roles between insiders and outsiders.

3. Localization of tools is crucial in the PCVRA process and it is recommended that local materials should be used extensively and creatively.

4. The process should also be inclusive, ensuring that all sectors are represented, especially the marginalized groups.

5. The process should be enjoyable for the community.

While the usual PRA is employed to generate information, PCVRA incorporates the climate change perspective, according to Ms. Rosimo. Also, the tools used are community-friendly, since visual and other learning aids are employed to encourage community participation and engagement for learning and decision-making action.

Ms. Rosimo said that one of the PRA tools used in PCVRA is community mapping, wherein members of the community map the available resources

(such as the five capitals that are important to the community's livelihood) and the areas affected by specific climate hazards. Historical timeline is also used to identify the past significant events in the life of the community, including major disasters and socioeconomic, political, and cultural events and developments. This tool captures the positive and negative impacts of these events on the community, and the coping capacities and mechanisms of the community. It also captures the changes in landscapes and trends.

Another tool used in PCVRA is the seasonal calendar with climate change perspective. This tool uses three sets of calendars representing timelines from 30 years ago, 10 years ago, and the current calendar. Key elements to measure are: amount of rainfall, temperature, frequency and strength/ force of typhoon. Meanwhile, the livelihood matrix incorporates the gender lens in determining the gender roles and the decision-makers for each livelihood activity. In addition to this, the 24-hour clock is also employed, wherein two sets of gender clocks represent normal conditions versus extreme climate-related events, such as typhoons and droughts.

According to Ms. Rosimo, the PCVRA was able to surface the manifestations of climate change in the community. Climate change-related concepts such as exposure, sensitivity, and adaptive capacity are easily grasped by the community through the PCVRA. Thus, PCVRA facilitates the understanding of the level of risks of the community's livelihood and capacity to adapt to manifestations of climate change.

After data gathering and analysis, results of the assessment are validated with the participation of the community. Triangulation was also done using information from other sources, including secondary data and key informant interviews. After validation, further analysis is conducted together with community members to surface doable adaptation strategies to address the livelihood risks.

Ms. Rosimo added that PCRVA facilitates community discussions and provides a venue for households and marginalized sectors to participate in planning, whose voice is usually left out.

Participatory Tools in Nutrition Programming in CSV Development

Mr. Wilson John D. Barbon
Country Director
Myanmar Program, IIRR

Mr. Barbon's discussion focused on how the CSV program in Myanmar integrates nutrition and food security. According to Mr. Barbon, the climate-smart, agriculture-based program in Myanmar is being implemented in four villages, which represent different agro-ecological contexts, namely, the central dry zone, the delta zones, and upland/hilly zones.

The research themes being worked on in these Climate-Smart Villages are as follows:

- What are the ways to optimize CSA and community-based adaptation (CBA) processes in four different agro-ecological and socio-cultural settings in Myanmar?
- What mechanisms and social learning process can be adopted in Myanmar to scale-out CBA and CSA?
- How do current mechanisms and programs of government, academia, and civil society serve as pathways toward scaling-out CBA and CSA?

According to Mr. Barbon, a comprehensive baseline study was conducted at the onset of the program, wherein the nutrition and food security aspects are integrated. Household surveys, participatory vulnerability analysis, and validation meetings were the methodologies employed in the conduct of the baseline study. Out of the 11 areas of analysis included in the baseline study, three are particularly related to nutrition and food security, namely, Household Food Insecurity and Access Scores (HFIAS), Household Diet Diversity Scores (HDDS), and Knowledge, Attitude, and Practices (KAP) assessment.

The first tool used in the baseline study, the Household Food Insecurity and Access Scores, was developed by the United States Agency for International Development's (USAID) Food and Nutrition Technical Assistance (FANTA). According to Mr. Barbon, HFIAS is a qualitative method of monitoring and tracking food insecurity. He added

that it is essentially a perception survey that looks at uncertainty and anxiety of households towards food supply, as well as at insufficiency of food quality and food intake. The higher the score obtained by the household, the more food insecurity the household experienced.

Another tool employed was the household diet diversity score (HDDS), which considers the number of different food groups consumed over a given reference period, usually within the past 24 hours. Also developed by USAID FANTA, HDDS is based on the assumption that a more diversified diet would lead to more important nutrition outcomes. The HDDS is presented as number of food groups consumed out of the maximum 12 food groups included in the score. The higher the HDDS, the more diverse is the diet of the household.

Lastly, a KAP assessment was conducted to evaluate the respondents' knowledge about food groups and sources of vitamin A, protein, and minerals; their attitudes towards vegetables, legumes, and food preparations; and their practices in cooking, food preparation, and hygiene.

Mr. Barbon proceeded to share the highlights of the baseline study results. For the HFIAS, the most food insecure was the Sakta CSV, which is located in the upland zone, followed by Htee Pu CSV, which is located in the central dry zone. These two villages are located in a highly vulnerable agro-ecosystem (mountainous, hilly and dry zone). For mountain regions, their isolation from the main trading centers limits their food supply to their own agricultural production only. On the other hand, food production and income from agriculture are limited during the long dry season in the dry zone. These are posing a challenge to accessing food for the households. The least food insecure households were found in the Masein CSV, which is located in the delta zone.
In terms of the HDDS, all the villages except the Sakta CSV registered a lower than 6 HDDS. Most of the CSVs got an HDDS of 6 out of the highest possible score of 12 food groups. While this may be a good indication of a diverse diet, it is significant to note that the top food groups consumed are cereals, oils and fats, sweets, and vegetables, which does not reflect a balanced diet to provide nutrition to the households. Roots and tubers, milk, and other fruits were the least consumed food groups. Such information can be used in developing appropriate nutrition intervention and identifying which crops farmers can plant to address the issue.

Based on the results of the baseline study, the following key nutrition and food security considerations were identified:

- Diversification of production all year round contributes to diverse sources of food and income.
- Promotion of new food crops reduce dependence on climate-sensitive crops.
- Increased consumption of vegetables and fruits for vitamins, minerals, and micronutrients
- Promotion of Water, Sanitation, and Hygiene (WASH) to reduce risk of gastrointestinal diseases that leads to malnutrition

Meanwhile, the interventions the program identified for implementation in 2019 include developing nutrition education modules for nutrition education; nutrition education sessions; and diversifying homestead production.

Open Forum

Question	Response
Dr. Thavone Inthavong: Tools such as crop suitability are helpful to the local farmers because they get the information before the planting season. For weather forecasting, is it possible to have a long-term scenario so that they can see the seasonal variability?	**Mr. Leyte**: Weather forecasting in Colombia is done for sub-seasonal and seasonal forecast. Seasonal forecast involves three-month climate prediction, while sub-seasonal forecast involves two- to three-week climate prediction. Farmers use this to change the planting dates. We are right now calibrating the model; we have just started exploring it in the Philippines. The problem with climate forecasting is that uncertainty increases for longer periods of time.

MODULE 2

Emerging Lessons from CSVs in Southeast Asia

Session 1

Panel Discussion: Learning from CSVs across Southeast Asia

Session 2

Learning from CSV in the Philippines and Myanmar

Session 3

Scaling Considerations in CSV Development

MODULE 2

Emerging Lessons from CSVs in Southeast Asia

Module 2 of the workshop featured a panel discussion that focused on the lessons learned from CSVs established in Southeast Asia. The panel discussants are Dr. Leocadio S. Sebastian, Dr. Julian F. Gonsalves, and Ms. Perla G. Baltazar. Ms. Carmen Nyhria G. Rogel, Program Specialist from the Research and Development Department of SEARCA, served as moderator. The panel discussion was followed by a presentation on scaling considerations in CSV development by Ms. Jana Patricia Koerner, CCAFS Scaling Officer, CCAFS SEA.

Session 1

Panel Discussion: Learning from CSVs across Southeast Asia

Opening Statements

In her opening statement, Ms. Baltazar said that the DA's climate change program, the AMIA Program, started the implementation of CSVs in 2016. The program started with climate risk vulnerability assessment (CRVA), with CIAT as partner. This was followed by the testing and identification of CRA practices, together with IIRR, in Guinayangan, Quezon, which also served as the learning site for the 17 DA Regional Offices that visited IIRR prior to implementing CSVs in their own region. Capacity building activities, which include the localization of climate information system, were then conducted. Part of the process is the monitoring and evaluation of the program.

According to Ms. Baltazar, providing support to CSV partners, such as capacity building and providing CRA options, as well as financing and marketing support, all contribute to the success of CSV implementation. In the case of the AMIA Program, the DA was able to tap a lot of partners, especially the LGUs that are at the forefront of delivering services to their constituents.

Ms. Baltazar added that for interventions to be effective, they should be done at a wide scale, and it is hoped that the AMIA villages would serve as models to influence other villages to follow to create greater impact and more sustainable adaptation.

On the other hand, Dr. Gonsalves pointed out that the CSV initiative in Southeast Asia provides a special opportunity to address poverty. Equity and climate gaps, while rarely talked about, are defining factors in the CSV approach. Dr. Gonsalves emphasized that social inclusiveness is an important part of the climate-smart village project and it is important to ensure that the bottom 40 percent, or those that are left behind, can also get involved.

Dr. Sebastian said that when they started implementing CSVs in Laos, Cambodia, and Vietnam, they had a very simple and practical protocol in selecting target sites, which involves voting and rating among members for each of the selection criteria set. Dr. Sebastian added that while there are many methodologies that can be employed, he advised choosing practical methods especially during operationalization. He added that such practical methods requiring the least resources in establishing CSVs allow for replication in many places.

Question 1: How effective has this approach been in addressing climate change impacts on the agriculture sector? If it is effective, is it worth investing into? Would government go further and spend more? Would the private sector be enticed to be part of the CSV project?

In response to the question posed, Ms. Baltazar said that given the limited experience in implementing CSVs, no formal monitoring and evaluation has been done yet. What has been observed, however, is that farmers were able to identify the CRA options that are best suited to their situation, which is manifested in their being able to produce more and earn more, which in turn contribute to increasing their adaptive capacity. Ms. Baltazar affirmed that the CSV initiative is worth investing into by the government because farmers do not have the capital to experiment and to try out innovations and practices that would be applicable to their specific situation.

Meanwhile, Dr. Sebastian said that CSVs are definitely effective, since they can address poverty, increase the income of farmers, and respond to climate change. The difficult part, according to Dr. Sebastian, involves scaling, although opportunities for scaling can be found by looking at how other government agencies such as the Department of Health and the Department of Social Welfare and Development mobilize communities for their programs. He also said that investments could start coming in once the challenge of scaling has been addressed. Dr. Sebastian furthered that the structure of Philippine government agencies, which

focuses on specific commodities, could explain the difficulty faced in implementing an integrated CSV program.

Question 2: Do you think that is one of the problems – that we cannot integrate because of the structure and the way we look at things?

Ms. Baltazar said that integration and mainstreaming is also one of the stumbling blocks in implementing the various programs of the DA. In the Cagayan Valley Region, where the AMIA program implementers are not researchers but those involved in planning, they were able to raise PHP 20 million from other sources because they know where to find the financial resources and how to utilize them. Success depends on the implementers and the support of the high-ranking officials.

Responding to the concern about commodity bias, Dr. Gonsalves said that it would be difficult to change the way the government is structured. For this reason, according to Dr. Gonsalves, when one talks about how to make programs more sensitive to climate change, the assumption is that the integration takes place at the lowest level.

Question 3: Who do you think would be best to establish partnership with, the government, development organizations, or the private sector?

Ms. Baltazar asserted that the local government units would be the logical choice for partnership, since they have the mandate as the frontline service providers to their constituents and have the resources and access to these resources.

Dr. Gonsalves said that there is no question as to the necessity of forming partnerships. Yet, since the government has difficulty dispensing the funds, stakeholder platforms assume a crucial role in bringing together different partners. According to Dr. Gonsalves, the problem with the private sector leading such initiatives is that the issue of conflict of interest comes in. This is different from the concept of corporate social responsibility, where business people contribute to the CSV process. Thus, Dr. Gonsalves said that the LGUs are still calling the shots and that it is necessary to strengthen partnership with them.

Meanwhile, Dr. Sebastian stated that partnership depends on the country and the location, but the government cannot be ignored. Governments provide balance and the environment for sustainability. He added that there are areas where it is the local community that takes the lead and other partners just follow suit, especially when there is strong leadership in the community. There are also other cases where the government has insufficient capacity to implement CSVs; in this case, international organizations could provide support.

Question 4: When you were starting with establishing CSVs, were there communities that vehemently opposed being part of the project?

Dr. Sebastian said that priority should be given to communities that are willing to be part of the project. It is impractical to spend time convincing communities to adopt the approach when there are a lot of communities who are interested in joining the program.

Meanwhile, Dr. Gonsalves reiterated that their approach is incremental adaptation so that step-by-step, the village grows in terms of resiliency to climate change impacts. This is designed so that farmers can build their capacity to innovate and see what works. In one instance, they were asked if they can just send a truckload of seeds and were even asked not to come back to the village.

Learning from CSV in the Philippines and Myanmar

Dr. Julian F. Gonsalves
Senior Adviser and CCAFS Project Leader

After the panel discussion, Dr. Julian shared the lessons learned from establishing CSVs in the Philippines and Myanmar. According to Dr. Gonsalves, CSVs serve as platforms for identifying, testing, demonstrating, and scaling CSA/CRA options. He added that one does not need to be a researcher to know that solutions should be situated. The big issue, according to him, is who is leading the CSV initiative?

Dr. Gonsalves furthered that there is a tension between the community's need to manage its resources to make a living, which may not be addressing the issues targeted by CRA, and the need to adopt the CSA approach towards resiliency. He also expressed concern over how many CSVs serve the purpose of being just showcase areas, which is an issue that needs to be dealt with.

Stressing the importance of making real investments, Dr. Gonsalves said that limited financial resources would have little impact on the level of municipality or at higher levels. On the issue of outcome attribution, Dr. Gonsalves said that the fruits of CSV implementation are generated by the governments and the communities.

Open Forum

Question	Response
Dr. Hla Than: In our country, the CSVs are being implemented by different institutions, such as the government, Food and Agriculture Organization (FAO), and IIRR. However, the problem is that people are now migrating in-country and out of the country, and that their priority is on survival, making it hard for farmers to do CSV. What is your opinion on this?	**Dr. Sebastian:** When we talk about Climate-Smart Village, we are talking about a community that already exists. We are not going to set up a new community. We are using the institutions, the framework that exists within that community. If in Myanmar, the smallest unit is the township, then you work with the township. We are not going to create a village. The CSV is not an instrument for the creation of a village. It will strengthen villages in terms of food security, nutrition security, and climate resiliency. We cannot stop migration. In Laos, at a certain time of the year, most of the men go to Thailand and the women are left behind. The question becomes: How can we improve livelihood within the village or what agricultural practices can be introduced so that women can have a source of income?

Question	Response
Ms. Thitirut Assawamongkholsiri: How do farmers obtain climate information update in their area given the different contexts?	**Dr. Sebastian:** When it comes to the different CSA practices, there is a part in the process wherein you try to determine the climate risks. You can get information from experts on the possible CSA options. You can also get information from the farmers: What are their current practices in coping with climate challenge? Then you'll go through a prioritization process to identify which of these options would be effective in the community. Climate information services are the most challenging part, because you need to convert the information in terms of agricultural process: Do you recommend the farmer to spray or apply fertilizer given this certain percentage of precipitation or humidity? Here you will need better technical services that may come from local extension services or from the private sector that provides similar services. For instance, Dr. Thavone from Laos has devised a cropping calendar that incorporates climate information that they share with the farmers. In Thailand, they have what they termed as One Tambon, One Product (OTOP). The challenge here is how to make the supply chain of OTOP not only productive but climate-resilient and sustainable.
Mr. Sorraphong Pasomsouk: It is not easy to prioritize one or two CSA options or activities. Right now, we have 1,450 communities.	**Dr. Sebastian:** The first thing that you should do is determine how you can make these communities climate-resilient through simple interventions. You do not have to start from scratch. This is what Nepal did, they adopted and implemented the approach as part of their interventions in 1,000 villages. How can we make these communities climate-smart? You can look at the value chain, the supply chain, you look at the production system and then see where you can intervene in what is already existing in the communities.

Session 3

Scaling Considerations in CSV Development

Ms. Jana Patricia Koerner
CCAFS Scaling Officer
CCAFS SEA

According to Ms. Koerner, in the same way that setting up CSVs has elements of science but basically entails action, scaling is about action; it is about doing something to achieve impact. She then proceeded to share key messages on scaling that were largely synthesized from foregoing discussions and presentations.

First, Ms. Koerner provided various definitions of scaling. While project implementers feel a strong pressure to reach numbers as indicator of success, scaling aims to reach impact at scale. Based on the 2018 CCAFS Learning Platform on Partnerships and Capacities for Scaling, the CCAFS working definition of scaling is "the set of processes required to go beyond pilot projects to bring more quality solutions to millions of farmers in a fast, equitable, and lasting manner."

This definition was later refined during the CCAFS Southeast Asia Conference on Scaling in 2018. In the new definition, the scaling up of agricultural innovations is understood to "take place in complex systems of agricultural transformation. Therefore, sustainable scaling should build into 'sustainable change at scale'."

Ms. Koerner stressed the fact that scaling does not happen in a straight line, but should be considered as a journey across a landscape, with different entry points, or a zigzag between different possibilities and opportunities. The next question to ask, according to Ms. Koerner, is "What are we going to scale?" In answering this question, she underscored the need to strike a balance between the most urgent needs of the farmers and the areas where the CSV approach can make the biggest impact or have

the greatest leverage. She added that scalable solutions can be identified tools and practices that prove so beneficial and scalable that these will be scaled out to a larger scale.

Likewise, Ms. Koerner emphasized the importance of building capacity for innovation, especially since the environment is changing and communities must be flexible enough to adjust to the changing conditions. She added that while innovations must be easy, affordable, and culturally acceptable, these must also be better than any other comparable solutions. This hints strongly at economic assessments, and there should also be analysis of costs and benefits not only at the farmer level but also at the policy level.

Inclusiveness concerns must also be considered, as the most vulnerable people and areas have different needs. The question that must be asked is, "Who shall benefit from the intervention?"

According to Ms. Koerner, at this point the need to strike a balance and accept trade-offs could arise. This also requires good targeting, since the vulnerable groups are mostly the ones that do not have the infrastructures and capacity for scaling out.

Ms. Koerner said that one cannot separate innovation development and scaling, both of which are iterative processes. She added that right from the very beginning, stakeholders must be involved in the process so that they can have a sense of ownership of the intervention. There is also a need to negotiate different interests so communication occurs and shared understanding is reached across all levels.

For Ms. Koerner, the biggest learning as regards scaling is that one cannot scale in isolation. Scaling is a collective action and involves "leveraging across different levels and sectors, a series of synergies and momentums."

Open Forum

Question	Response
Dr. Thavone Inthavong: What do you suggest regarding the level to which we should do scaling out or scaling up? Also, do you have any recommendations on how to inform policymakers about CSVs?	**Ms. Koerner:** It depends on your starting points. Farm villages can be scaled up to regional governments. It would probably be good to contextualize based on the realities of your countries and your entry points. As for informing policymakers, seeing is believing. You have to present evidence. If they are able to come and see what you are doing, there is a great chance that these people can get involved. We need evidence at different levels and scales. There are various communication tools, too.
Mr. Vidallo: In one of the discussions on scaling up, somehow there is a dichotomy between mainstreaming and scaling up. Sometimes the discussion becomes a little bit blurred.	**Ms. Koerner**: Mainstreaming looks at the enablers.

MODULE 3

Roving Workshop

Field Visit 1: Barangay Cabong Norte
Upland Agricultural System/Corn Production

Field Visit 2: Barangay Capuluan Tulon
Small Livestock Production

Field Visit 3: Barangay Capuluan Central
Fishery and Coastal Agriculture

Field Visit 4: Maulawin Spring Protected Landscape
Water Resource Management and Green Fund

Field Visit 5: Barangay Sta. Cruz
Agroforestry and Diversification Techniques

Field Visit 6: Barangay Danlagan Batis
OMA CSA Demo Farm

Quick Stop: National Swine and Poultry Research and Development Center

Quick Stop: Quezon Agricultural Research and Experiment Station

MODULE 3

Roving Workshop

The third module of the workshop on establishing CSVs in the ASEAN Region consisted of a roving workshop, where participants visited various field sites in the Guinayangan CSV from 10-12 July 2019. These field sites represented the various agro-ecological settings and showcased the CSA options and best practices adopted to address the prevailing climate risks specific to these settings.

Field Visit 1

Barangay Cabong Norte
Upland Agricultural System/Corn Production

The first CSV site visited by the participants featured intercropping in an upland agricultural setting. Mr. William R. Lopez, Agricultural Technologist from MAO-Guinayangan, facilitated the discussion and field visit to the corn production farms in Barangay Cabong Norte. Barangay Cabong Norte is an upland agricultural village in Guinayangan, Quezon with a total area of 437.44 hectares. Its major agricultural products include coconut, corn, legumes, upland rice, livestock, fruit trees, banana, root crops, and chili.

Through the partnership between OMA and IIRR, farmers learned about corn-legume intercropping as a CSA option to increase yield and land use efficiency. In addition, to address the vulnerability of the area to water scarcity due to prolonged dry season, the OMA and the LGU initiated efforts to find alternative water sources, including construction of open deep wells. Four-wheel tractors were also provided to replace manual plowing to address synchronicity and timeliness of planting schedule in the area.

Another challenge faced by corn producers in the area is the lack of post-harvest facilities, specifically for drying the harvested corn during the wet season. In response, the OMA-LGU partnership provided a corn sheller and corn dryer. Meanwhile, Mr. Lopez said that the OMA adopts a holistic approach in providing assistance to the farmers, from providing inputs to extending marketing assistance to help them sell their produce at a more profitable price.

Among the future plans of the OMA and the LGU, according to Mr. Lopez, are to establish seed production of glutinous corn; establish demo farm on sorghum production; initiate seed production of peanut; expand chili pepper production; construct four additional open deep wells; establish community vegetable farms; and apply the six-sector industrialization approach, which covers the various activities along the value chain, from production to marketing.

Ms. Jessean Dueñas and Mr. Wilberto Dueñas, farmer beneficiaries of the program, shared how they adopted the CSA approach, particularly intercropping, to maximize the use of land and to earn additional income for their families.

Field Visit 2

Barangay Capuluan Tulon
Small Livestock Production

During the second site visit, participants learned how the provision of livelihoods and community support structure, climate-smart livestock production in the case of Barangay Capuluan Tulon and Barangay Arbismen, have contributed to the economic empowerment of women. Mr. Gerry Hernandez, Agricultural Technician from MAO-Guinayangan, served as the facilitator for the discussion and tour of the native pig breeding center in the area.

Barangay Arbismen consists of 300 households that are mainly dependent on rice and coconut production. Its rice farms, the largest in Guinayangan in terms of land area, are primarily rain-fed. The area experiences prolonged dry spells, and in fact, farmers were not able to plant rice for three years due to water scarcity. Meanwhile, Barangay Capuluan Tulon has 240 households, with coconut production as their primary source of livelihood. In the past years, the area suffered from low production volume and declining prices of coconut in the market. To augment the traditional sources of income in the two barangays, the women tried to raise livestock, raising commercial pig breeds at the onset before transitioning to the more climate-resilient native pig breeds.

Farmers were able to link with the National Swine and Poultry Research and Development Center (NSPRDC) for assistance with regard to technical input and source of good pig breeds. They also collaborated with the DA Region 4-Southern Tagalog Integrated Agricultural Research Center (STIARC) for the provision of support on value chain development through the crafting of business plan and setting up of holding facility. Farmers have also introduced more climate-resilient crops in their farms, including corn and drought-tolerant high-value crops.

It was interesting to note that 70 percent of the participants are women. Through the years, women farmers have led the formation of farmer groups, which continue to grow in membership. The establishment of farmer learning groups (FLGs) and the conduct of participatory action research has provided invaluable inputs and capacity building to the farmers. Aside from serving as a learning platform for farmers, FLGs are also a mechanism for scaling out and an avenue for farmer-to-farmer exchange, addressing the problem as regards limited manpower for agricultural extension systems.

Mr. Hernandez shared the case story of Ms. Leony Labro, who used the money obtained from selling her pig to finance the hospitalization of her husband. Afterwards, participants were given a tour of the native pig propagation center that

showcases low-external input and low-carbon footprint technology. According to Godofredo Rosales, president of the Community Savings and Credit Association (CoMSCA) in Barangay Capuluan Tulon, the expenses incurred for the maintenance of the breeding facility is shared by the organization members themselves. The facility utilizes alternative pig feeds from naturally-growing plants (banana stalk, coconut meal, and *Trichantera gigantea*, among others). In terms of addressing climate risks, Dr. Gonsalves said that the breeding facility has a lower carbon footprint than the commercial pig production since it reduces the need for commercial feeds. Moreover, it addresses food safety issues as it provides an alternative source of meat to the commercial pigs that are administered antibiotics, which may cause antibiotic resistance. The design of the facility, particularly the materials used and the airflow, also reduces temperature by 2 to 3 degrees Celsius, while the floor mattings/living bio-beds (made of rice hull, coconut husk, and soil) consume less water, produce less methane, and have less foul smell.

Towards the end of the site visit, Ms. Rosimo emphasized the role of community support structure in encouraging more farmers to adopt CSA approaches to augment their livelihood while addressing climate risks. Another important social process that can be observed in the site is that of participatory action research, wherein the farmers themselves assess the climate risks and then discuss and test the adaptation strategies.

Field Visit 3

Barangay Capuluan Central
Fishery and Coastal Agriculture

Participants proceeded to Barangay Capuluan Central, a coastal community dependent primarily on subsistence fishing. Mr. Joel Fabricante, Fishery Technician from OMA-Guinayangan, facilitated the discussion. During the *amihan* (northeast monsoon) and *habagat* (southwest monsoon) seasons and during typhoons, fisherfolks in Barangay Capuluan Central are not able to catch fish in the sea. During this period, which lasts from September to December, fishermen resort to coconut farming and livestock raising as alternative sources of food and income. Another challenge faced by fisherfolk in Barangay Capuluan Central is the limited fishing area, since the Ragay Gulf is shared by 10 municipalities. Fish catch has also been decreasing through the years.

According to Mr. Fabricante, one of the programs of the OMA-Guinayangan is mangrove reforestation, which started in 2010 and funded by the Bureau of Fisheries and Aquatic Resources (BFAR). This reforestation project has also served as an alternative source of income, since BFAR provides remuneration for every propagule planted and separate remuneration when the propagule has survived and developed. The community has also engaged in seaweeds production as alternative livelihood through the efforts of the Office of the Provincial Agriculturist of Quezon. The fisherfolk produce pickled seaweeds from harvested seaweeds and have trained on the production of seaweed noodles. Meanwhile, the Guinayangan LGU has launched efforts to protect sea turtles and corals.

One of the collaborations between the LGU and IIRR is on coastal agriculture, which aimed to increase the adaptive capacity of coastal communities. In 2015, the program attempted to plant different species of mangroves with diagonal spacing to help break strong waves. Although the program started with eight villages, it is now operating only in three villages, namely, Barangay Capuluan Tulon, Arbismen, and Dancalan Caimawan.

According to Dr. Gonsalves, coastal agriculture can also act as a bio-shield that could protect communities during typhoons and storm surges. He added that the goal is to get as much plant varieties that can thrive in saline conditions into the system, including eggplants, root crops, and fruit bearing trees such as mango, cashew nuts, coconut, and jackfruit. In terms of small-scale livestock production, pigs can tolerate rains and saline air.

Field Visit 4

Maulawin Spring Protected Landscape
Water Resource Management and Green Fund

The participants visited the Maulawin Spring Protected Landscape (MSPL), formerly known as the Maulawin Spring Watershed Forest Reserve. MSPL is a 149-hectare protected landscape located in barangays Himbubulo and Magsaysay in Guinayangan, Quezon. Ms. Kimberly Anne Abrera and Ms. Keya Zia Pitero of the Department of Environment and Natural Resources discussed the LGU's efforts toward sustainable management of water resources in the municipality and the application of payment for ecosystem services.

The MSPL represents one of the remaining intact forests in Southern Quezon. Classified as a tropical rainforest, the MSPL houses Philippine dipterocarp species and other native tree species. Given its unique features, the MSPL was declared a Protected Area under the Protected Landscape category by virtue of Presidential Proclamation No. 295 issued on 23 April 2000. In 22 June 2018, the MSPL was classified as a National Park under Republic Act 11038. Its total land area of 183.15 hectares is divided into two management zones, namely, the strict protection zone (SPZ) and multiple use zone (MUZ). Multiple use zones, which constitute around 57 hectares, are intended for forestry, agriculture, and ecotourism. This is also where tenured migrants are given temporary settling areas and serves as source of livelihood for the communities.

In terms of biodiversity, the MSPL serves as home to 325 species of flora and fauna, 13 of which are Philippine endemic while 40 are threatened species. Its watershed is also an invaluable source of potable water to the neighboring communities. Income generated from resource user fees collected by the Guinayangan Water District (GWD) and entrance fees from visitors of the ecotourism zone are utilized for programs and activities that aim to protect and conserve biodiversity, as well as to maintain and develop the ecotourism facilities.

Protection and conservation efforts by the Guinayangan LGU include reforestation, boundary fencing between multiple use and special protection zones, and private lands, and monitoring and maintenance of established plantations. The IIRR has also engaged in reforestation and boundary fencing activities in the MSPL, in addition to enrichment planting and the tagging and identification of priority species. On the aspect of climate-smart agriculture, IIRR has collaborated with tenured migrants of the protected landscape in applying agroforestry and raising of climate-resilient livestock such as pigs.

Meanwhile, Guinayangan Mayor Cesar J. Isaac III shared the municipality's experience and successful implementation of the payment for ecosystem services (PES) and how the LGU helped the Department of Environment and Natural Resources (DENR) in protecting watersheds within Guinayangan. According to Mayor Isaac, the current water requirement of the municipality totaled 63.55 liters per second. While in 1964 the available water from the watershed was 100 liters per second, this declined to 20 liters per second in 2012, falling short of current water demand of the municipality. At an annual population growth of 2.37 percent, the LGU deemed water shortage imminent, prompting collaboration with organizations such as the IIRR and the Forest Foundation Philippines to preempt this problem. One fruit of this collaboration is the establishment of the Municipal Ecosystem Management Council (MEMC) and the Green Fund.

The MEMC aims to preserve and maintain the ecological, economic, and cultural services of the forest resources in Guinayangan; protect and rehabilitate watersheds; ensure that activities conducted within forestlands are in accordance with national guidelines, rules, and regulations; and develop new watersheds outside of the MSPL.

Mayor Isaac shared that the key to the successful implementation of PES in their municipality is ensuring the involvement of the stakeholders throughout the various stages of the process, from planning to monitoring and evaluation. By ensuring that stakeholders are engaged, conflicts are minimized during preparation and implementation of PES because these are immediately resolved at the level of the MEMC, which has representatives of stakeholders as members. Currently, the Green Fund is collected from the clients of the local water district, which is already incorporated in their monthly bill. To ensure transparency and accountability, the fees collected are deposited into a trust fund that is subject to annual audit by the Commission on Audit. Moreover, the Municipal Environment and Natural Resources Office (MENRO) of Guinayangan, as the MEMC Secretariat, is tasked to provide quarterly financial reports shared through social media platforms and the LGU's accountability board.
Mayor Isaac reported that 50 percent of the collections from the Green Fund are allocated to the development of the watersheds while the rest will be used for the procurement of additional land adjacent to the watersheds. Mayor Isaac furthered that while the amount collected from the Green Fund may be relatively small, it is significant in that every time the Green Fund is collected, people are reminded that they depend on natural resources and ecosystems services for their livelihoods.

Field Visit 5

Barangay Sta. Cruz
Agroforestry and Diversification Techniques

After the site visit to the MSPL, participants proceeded to Barangay Sta. Cruz to learn about agroforestry and diversification techniques, as well as to hear how farmers linked with an institutional market to ensure a stable buyer of the chili pepper they produce. Mr. Lopez, who facilitated the discussion, said that one of the challenges for farmers is establishing partnerships with a stable market.

In the case of Guinayangan, farmers, through the vegetable farmers association, formed a partnership with Jollibee Foods Corp. to buy their chili pepper. To ensure that farmers meet the market standards, they underwent a series of trainings and three rounds of test marketing and established monitoring and quality assurance mechanisms. Farmers started supplying chili pepper to Jollibee Foods Corp. in January 2019 and have delivered 3,428 kilos of chili pepper as of July 2019.

Providing the context of the upland agriculture initiatives of the local government, together with various organizations such as the IIRR, Dr. Gonsalves said there are risks associated with climate in the process of diversification. According to him, trees play a big role in risk reduction but are also vulnerable to the failure of fruiting and pollination services. Thus, there is a need to promote diversification. For instance, cacao farmers in the upland areas are currently focusing on Liberica coffee production due to its climate-resilient features, and this is intercropped with black pepper. Dr. Gonsalves added that diversification through agroforestry also addresses price risks, helps regulate temperature, and facilitates pollination.

Upland farmers applying agroforestry and diversification techniques in Barangay Himbubulo Este and Sta. Cruz shared their stories and lessons learned to the workshop participants. Ms. Emma Alfiler, who raises pigs and plants coconut, madre de cacao, black pepper, and chili pepper, among others, shared that her training in the farmer field school taught her to diversify crops planted in her farm. Meanwhile, Ms. Noime Balido intercropped papaya trees with chili peppers to maximize the use of her farm. After the discussion, participants paid a short visit to the chili farm of Mr. Placido

Mijares, who related how the shift from rice production to chili pepper farming has increased his income by more than 10 times.

Field Visit 6

Barangay Danlagan Batis
OMA CSA Demo Farm

The last site visited by the participants is the OMA CSA Demo Farm and Eco-Park, which was established to serve as a training ground of farmers in organic farming, and has now expanded its function as demo site for CSA. Ms. Belina O. Rosales, Municipal Agriculturist of Guinayangan, discussed integrating CRA into current agriculture programming of the municipality and the banner programs of the DA, as well as the systems and structures established to support CRA programming.

In the case of the rice program, climate change was integrated into the Farmer Field School (FFS) curriculum. Their Climate-Resilient Farmer Field School on rice production uses climate-smart technologies such as system of rice intensification (SRI), use of green leaf manure, rice-duck system, and use of saline-tolerant rice varieties. For the corn program, intercropping with legumes as mulch was done to preserve soil health and to provide alternative food and income source. Meanwhile, the use of organic fertilizer (e.g., vermiculture), diversification of crops, and agroforestry was promoted in producing their high value commercial crops. Small livestock raising was also integrated into the programs, with special preference for native stock and the use of intensive feed gardens. In recognition of the critical role of timely and science-based information through the climate information system, the Guinayangan LGU conducts seasonal planning to provide guidance and relevant information as basis for farmer decision. There are also plans to implement 10-day advisory and training of the new Municipal Disaster Risk Reduction and Mitigation Office for data collection.

The Guinayangan LGU has also invested in structures and in building partnerships to sustain its CRA programming. The Demo Farm and Eco-Park in Barangay Danlagan Batis include community support facilities that provide not only technologies but also interventions. Among the community support facilities housed by the OMA Demo Farm and Eco-Park are the greenhouse, coconut nursery, sweet potato propagation center, goat breeding center, organic rice production, tilapia breeding center, plant nursery, dragon fruit demo farm, and crop museum.

To support these technologies and CRA practices, the LGU, together with the Agricultural Training Institute, has established the Farmer's Information and Technology Services (FITS) center where farmers can conduct online and offline research for their production and marketing needs. In addition, the LGU has provided farmers with farming equipment, such as four-wheel tractors, corn hammer mill, corn sheller, rice flatbed dryer, hand tractor, and irrigation facilities, among others.

According to Ms. Rosales, to fully assist and serve Guinayangan farmers, the local government helps build institutional markets and links farmers in the value chain as part of resilience building. Moreover,

since Guinayangan is a coastal municipality, LGU conducts regular mangrove reforestation. Value adding is also being done in the processing center, especially by women community members.

Ms. Rosales mentioned that one of the factors which contributed to the success of farmers is group building, which prepared them in engaging with different institutional markets and value-adding processors. In Guinayangan, farmers have organized themselves into farmer groups such as AROMA (A*sosasyon ng Responsable at Organikong Magkakape*) and CACAO Growers. In addition, the LGU continues to strengthen its coordination with DA to complement resources to facilitate better resiliency building of farmers.

Quick Stops

National Swine and Poultry Research and Development Center (NSPRDC)
Quezon Agricultural Research and Experiment Station

En route back to Los Baños for Module 4 of the workshop, participants made a quick stop at the National Swine and Poultry Research and Development Center located in Tiaong, Quezon. Ms. Marivic M. de Vera, Supervising Agriculturist from NSPRDC, facilitated a discussion on the Center's efforts to propagate and develop native pig breeds throughout the country. The participants watched an audio-visual presentation of past and current research and development programs of the NSPRDC for swine and poultry and took a brief tour of its facilities.

Next stop was the Quezon Agricultural Research and Experiment Station, where participants learned about the DA-AMIA Program through a briefer presented by Dr. Elmer T. Perry, Regional Technical Director for Research and Regulations and AMIA Focal Person of DA-Regional Field Office IV-A. Dr. Perry discussed the AMIA Program Framework and the programs funded under AMIA Program, including the scaling out of CRA in San Francisco and Guinayangan in Quezon Province. He also shared the other mainstreaming initiatives of DA, including the construction of climate-resilient agriculture infrastructure, such as farm-to-market roads, and climate-resilient agriculture extension system.

Ms. Aida P. Luistro, Ms. Elizabeth R. Gregorio, and Ms. Girsky V. Anda of DA-Regional Field Office IV-A shared the experiences and lessons learned from establishing AMIA villages in San Francisco, Quezon. Among the adaptation strategies and interventions implemented in the San Francisco

AMIA villages, for instance in rice-based production, are participatory learning trials on the use of stress-tolerant rice varieties, rice-mung bean crop rotation, fertilizer application based on soil analysis, and building links to financial services. These efforts have succeeded in increasing the awareness of rice farmers on CRA technologies and practices and on available financial services. These have also encouraged community participation in action research planning and implementation and enhanced technology transfer through farmer-to-farmer knowledge sharing. The presenters likewise discussed the various adaptation strategies and interventions for corn-based production, yam production systems, and coastal livelihood. They further discussed other initiatives of DA efforts under the AMIA Program in terms of delivering climate information to farmers and scaling out CSA at the local level.

MODULE 4

Reflection and Synthesis

Session 1

Country Presentations: Sharing of Best Practices and Experiences in CSA-related Work

Session 2

Re-entry Action Planning

Session 3

Plenary Presentation of REAP

MODULE 4

Reflection and Synthesis

Session 1

Country Presentations: Sharing of Best Practices and Experiences in CSA-related Work

With the experiences and knowledge generated from the roving workshop in the Guinayangan CSV serving as take-off point, participants shared the best practices and experiences in CSA-related projects and programs in their respective countries.

Myanmar

Dr. Hla Than
Yezin Agricultural University
Na Pyi Taw, Myanmar

Dr. Hla Than discussed the establishment of the National Climate-Smart Agriculture Center and its efforts toward promoting CSA. One such project is the "Sustainable Cropland and Forest Management in Priority Agro-ecosystems of Myanmar," which has project sites in the Chin State, Ayeyarwaddy Region, and Mandalay Region; and is designed to support national efforts to facilitate the application and upscaling of CSA, sustainable forest management, and sustainable land management.

Dr. Hla Than discussed the vision, mission, goal, and objectives of the National CSA Center, as well as the main roles and responsibilities of the Yezin Agricultural University (YAU) related to the Center.

According to Dr. Hla Than, the National CSA Technical Support Group was established on 26 March 2018, composed of the Department of Agriculture, Department of Agriculture Research, Department of Planning, Department of Agricultural Land Management and Statistics, Forest Department, Yezin Agricultural University, and Food and Agriculture Organization. Part of the efforts is the development of the CSA curriculum to facilitate the integration of best CSA practices in undergraduate and post-graduate degree programs offered by the YAU. Dr. Hla Than also shared the Center's current research undertakings, particularly on the assessment of awareness and practices of farmers on CSA, the role of indigenous knowledge in CCA strategies for agriculture, and

farmer innovation and best practices on shifting cultivation.

In closing, Dr. Hla Than discussed other CSA-related activities of the Center, which include field demonstration plots, methane collection, trainings on CSA, and a workshop with the theme "Promoting Climate-Smart Agriculture in Myanmar."

Lao PDR

Dr. Thavone Inthavong
National Agriculture and Forestry Research Institute
Vientiane, Lao PDR

Dr. Thavone Inthavong shared the best practices and experiences related to rice crop management practice in Lao PDR. Dr. Inthavong reported that the CSV approach can serve as a strategy to manage climate risks in agriculture, which currently suffers from the adverse impact of climate change. In Lao PDR, the uncertainty in the onset of rainy season shifts the time of sowing and transplanting, while the more frequent floods and droughts have negative effects on plant growth and development.

Based on the example of Guinayangan CSV, Dr. Thavone Inthavong said that CSA practices, such as agroforestry, could aid in the thrust to increase farmers' incomes through the production of commercial crops. He presented the framework being used in Lao PDR that integrates resilient agriculture concepts into the management of risks due to climate variability and change. The key elements of this framework are commercial agriculture, sustainable natural resource management, climate-smart village, and food security.

Dr. Thavone Inthavong then discussed how climate-smart technology can help address or adapt to the various defining, limiting, and reducing factors in crop yield production to lessen the impacts of climate change. Meanwhile, he also shared how they use crop establishment through dry direct seeding as a climate change adaptation measure.

Cambodia

Mr. Chea Sokhon
Department of Agricultural Extension
Ministry of Agriculture, Forestry, and Fisheries
Phnom Penh, Cambodia

In his discussion on best CSA practices in Cambodia, Mr. Chea explained how the CSA approach has contributed to the efforts toward increasing the resilience of rural farmers. According to him, the project "Increasing Resilience to Climate Change for Farmer in Rural Cambodia through Climate-smart Agriculture Practices," was piloted to develop a suitable CSA approach for Cambodia, relying primarily on the "learning-by-doing" approach. The project aims to increase the resilience of vulnerable smallholder farmers; ensure that agriculture programming contributes to the improvement of the climate resilience of smallholders; and disseminate the products and lessons learned to the Ministry of Agriculture, Forestry, and Fisheries and to development practitioners and students.

According to Mr. Chea, the tools employed in designing and selecting CSA options are participatory approaches and simulation tools and the CSA Practices, Diagnostic, and Implementation Manual developed by CCAFS and the Environmental Changes Institute of the University of Oxford.

Zeroing in on the CSA demonstration actions in Kandal Province, Mr. Chea enumerated the various steps to formulate CSA demo action, namely: (1) CSA options proposed by farmers through diagnostic exercise; (2) clustering options into group/area; (3) shortening the most practical option through village meetings; (4) formulating CSA de-action by Group for Environment, Renewable Energies, and Solidarity; (5) rating, ranking, and selection of the most practical option with the Provincial Departments of Agriculture, Forestry, and Fisheries (PDAFF); and (6) formulation of action plan, including project cost and cost-profit analysis.

Meanwhile, the three demo actions discussed by Mr. Sokhon are as follows:

1. Enhancing underground water usage and soil nutrient management through integration of drip irrigation system, mulching, and organic fertilizer for rotation crops planting;

2. Enabling local agriculture-input supplier to provide village agri-clinic service to support farmers and to efficiently report farmer problems to PDAFF through smart monitoring systems; and

3. Promotion of conservation of local garlic leaf planting materials by enhancing its production chain and trading.

Malaysia

Ms. Fazlyzan Binti Abdullah
Agrobiodiversity and Environment Research Center
Selangor, Malaysia

According to Ms. Fazlyzan Binti Abdullah, farmers in Malaysia experience prolonged dry season for one to two months. To address this climate risk, they encouraged farmers to shift the planting date of rice for about two weeks from the actual date based on the forecasting conducted.

They have also conducted studies on the critical stage of water stress on rice, but they continue to conduct similar studies for different rice varieties. Farmers also practice organic farming, but the most successful farms are managed by the private sector, as they have already secured certification.

In addition, Ms. Abdullah said that intercropping or integrated farming is practiced in Malaysia, as well as eco-engineering farming, which is similar to integrated farming but more focused on pest and disease management and landscape management.

Philippines

Ms. Samraida A. Undong
Bangsamoro Autonomous Region in Muslim Mindanao-Integrated Agricultural Center, Department of Agriculture

Ms. Samraida A. Undong said that the programs from national agencies such as DA and the Department of Science and Technology that are done at the regional level include those implemented by the DA-Disaster Risk Reduction Management and early warning/ advisories from the National Disaster Risk Reduction Management Council (NDRRMC). Information dissemination to far-flung areas and adjustment of seasonal calendar are also conducted. Meanwhile, buffer stocking of rice, corn, and vegetable seeds are also done to provide farmers affected by calamities with initial planting materials.

Ms. Undong further highlighted the best practices done by farmers in Bangsamoro Autonomous Region in Muslim Mindanao (BARMM), which include the following: application of indigenous knowledge of farmers in weather forecasting; simultaneous planting or diversification; planting of diverse crops during prolonged dry season; and after-harvest rice ratooning.

Thailand

Ms. Thitirut Assawamongkholsi and
Ms. Sainam Udpuay
Department of Agriculture, Thailand

Ms. Assawamongkholsiri presented the interventions implemented by the Department of Agriculture in Thailand. They include farmer-to-farmer-sharing, farmer group learning, and crop-based programs such as corn and rice programs. Since farmers are encouraged to work and share knowledge and have a strong organization, they were able to train farmers from other communities. Consequently, they formed linkages with better markets, improved their incomes, and gained a deep understanding of the importance of adopting climate-smart agriculture.

Meanwhile, Ms. Udpuay said that there are a number of agricultural projects implemented in Thailand in line with building farmers' resilience to climate change. For instance, they have program for low-input, high-output production (Agriculture 4.0), organic farming, sustainable agriculture, and research on improving productivity.

Indonesia

Dr. Helena Lina Susilawati
Researcher
Indonesian Agricultural Environment Research Institute

Dr. Susilawati shared with the participants the best practices and experiences of Indonesia in implementing climate-smart paddy rice cultivation. She said that due to Indonesia's huge population, which is among the top five most populous countries in the world, the government aims to address issues on food security. One of Indonesia's targets is to become the world's food barn in 2045. In relation to CSA, Dr. Susilawati said that following the presidential decree issued in 2011, which stipulates reduction of greenhouse gas emissions, the CSA became the approach that they adopted.

Dr. Susilawati shared the experiences from the collaborative project between the Indonesian Agricultural Environment Research Institute (IAERI), World Agroforestry Centre (ICRAF), and GIZ in the Banjarnegara, Purbalingga, and Banyumas Districts. Among the technologies and approaches they employed in the project are use of leaf color charts, paddy soil test kit, organic amendment application, National Seed Management Unit-certified seeds, and water regime management with intermittent irrigation. The project also used CSA adaptation and mitigation strategies such as demo plots site and technology package for CSA implementation and field schools as a CSA demo plot approach.

Results of the study showed that both organic farming and CSA approach have decreased the global warming potential and increased the revenue of farmers compared to those who practice traditional farming. She added that Indonesia's Ministry of Agriculture is set to obtain funds for the upscaling of the project in eight provinces having mineral soil and two provinces with beach soil for five years. She further emphasized that it is not only technology that is important but also markets.

World Food Programme

Mr. Sorraphong Pasomsouk and
Mr. Phouttha Khanmphanthong
World Food Programme
Vientiane Capital, Lao PDR

According to Mr. Pasomsouk, the CSA approach is a new concept for the World Food Programme (WFP) in Lao PDR, especially since it has focused on relief and immediate response in the past. Recently, WFP-Lao PDR added the CSA component so it can build a committee in vulnerable areas to make them more resilient to climate change and achieve food security. It has partnered with the National Agriculture and Forestry Research Institute (NAFRI) to implement CSA-related initiatives in seven provinces in Lao PDR, resulting in the establishment of seven climate farmer field schools.

Mr. Khanmphanthong added that they have been working with different government bodies such as the Ministry of Planning and Investment (MPI), Ministry of Education and Sports), and Ministry of Health. Focusing on achieving the second Sustainable Development Goal (SDG) on zero hunger, WFP-Lao PDR has established school gardens where students can learn how to farm; as well as farmer nutrition schools, greenhouse farming, and house plots.

Eight Guide Steps for Setting up a Climate-smart Village (CSV)

Dr. Julian F. Gonsalves
Senior Adviser and CCAFS Project Leaderstitute

Dr. Gonsalves said that it does not take much to get started in climate-smart agriculture. There are many entry points for the introduction of CSA—it could start from dry seeding or buffer stocks. These entry points are important and are dependent on existing institutional arrangements and contexts.

Dr. Gonsalves then discussed the eight guide steps synthesizing the lessons learned and knowledge generated from implementing CSVs in Southeast Asia. It is a generic guide, which could still be modified depending on the particularities of the site.

The first thing to do, according to Dr. Gonsalves, is to understand the purpose and scope of CSV. He said that different stakeholders would have a different understanding of CSV; thus, it is crucial to ensure a common understanding of the underlying key concepts and principles. The second step is to identify the climate risk in the target areas, which necessitates conducting research to determine the location-specific risks. Dr. Gonsalves said that the research method used could be as simple as PCVRA or as sophisticated as those done by CIAT.

Next, the CSV must be situated in a small landscape, taking into account the interactions among various subsystems. The fourth step involves consulting the stakeholders. Dr. Gonsalves stressed the importance of the LGU platform simply because it has the capacity to convene different stakeholders. The next step is to evaluate CSA options through participatory action research. Implementers could then come up with a portfolio of CSA options depending on what is manageable for the institution. Dr. Gonsalves added that CSA options do not only include technologies but also involve social learning approaches.

The seventh step involves scaling up by identifying scaling opportunities and pathways. In scaling up, according to Dr. Gonsalves, it is important that one has enough number of farmers for horizontal and vertical scaling. He said strengthening the capacity

of people to do something is a scaling mechanism in itself.

The last guide step in establishing CSVs involves monitoring and evaluation of uptakes and outcomes. During this step, indicators can be used to monitor progress, such as productivity, livelihoods, food and nutrition, equity, gender participation, and resilience.

Session 2

Re-entry Action Planning

The final activity of the workshop involved the crafting and presentation of re-entry action plans (REAP) for each ASEAN-CRN country-member that attended the workshop. SEARCA provided the matrix that was used as template for the action plans, which indicated the objectives and the strategies of the action plan. The desired results, progress indicators, activities, timeline, inputs/ resources needed, estimated cost/budget source, and responsible person/unit were asked for each guide step in establishing CSVs.

Session 3

Plenary Presentation of REAP

Participants Ms. Fazlyzan Binti Abdullah presented their respective re-entry action plans by country. Highlights of the presentation of REAP are summarized below.

Country	Presenter	Highlights
Laos	Mr. Sorraphong Pasomsouk	Strengthening of the capacity of farmers in the upland areas of Lao PDR to improve food security and resilience by providing livelihood options
Myanmar	Dr. Hla Than	A workshop on establishing CSA/CSV to improve knowledge on climate change impacts and improve the livelihood of farmers
Thailand	Ms. Sainam Udpuay	Addressing issues on monocropping and soil degradation to improve the livelihood of upland farmers and improve forest diversity in Nan Province, Thailand
Cambodia	Mr. Chhel Chhen	Establishment of a climate-smart village in Pailin Province, Cambodia
Malaysia	Ms. Fazlyzan Binti Abdullah	Enhancing the livelihood of local communities by improving yield quality and by reducing yield losses during prolonged dry and wet season
Philippines	Ms. Samraida A. Undong	Reducing the impacts of natural calamities and human-induced calamities through community-driven initiatives on climate change adaptation and mitigation
Indonesia	Dr. Helena Lina Susilawati	Strategic irrigation for sustainable crop production in East Nusa Tenggara, Indonesia to address water scarcity and high precipitation

Synthesis and Closing Program

Dr. Gonsalves gave the synthesis of the five-day workshop right after the presentation of the REAP. He said that there are two pathways to adapting to climate change in agriculture: one is to use CSA with technologies such as direct seeding as entry points, another is to see CSA as a platform or as a methodological research/action research. But there is a third pathway, and it is to use CSA as an entry point toward establishing CSVs, Dr. Gonsalves said. Lastly, Dr. Gonsalves underlined the importance of knowledge management and sharing of prototypes to facilitate further understanding of CSVs.

Speaking on behalf of the participants, Ms. Abdullah said that the workshop provided her with a better understanding of CSA, CRA, and CSV. She thanked the organizers of the workshop. Meanwhile, Dr. Thavone Inthavong also said that he learned a lot from his experiences during the field visits and from other participants. He added that knowledge and technology sharing during and after the workshop would greatly help in their efforts to upscale CSV.

In his closing remarks, Dr. Gregorio pointed out that integrating all that was learned and discussed during the workshop, the challenge in establishing CSVs is doing more with less. Another challenge, he said, is ensuring inclusive development and environmental sustainability. Dr. Gregorio said that the solution to this is the confluence of science-based application, information and communication technology engagement, meaningful partnerships, and innovative and entrepreneurial farmers. He enjoined the participants to remember the five Cs: collaborate, communicate, compete, conserve the environment, and concentrate and focus.

APPENDICES

Program Schedule

Participant Directory

Keynote Speaker and Resource Persons

Appendix 1. Program Schedule

SEAMEO SEARCA | CGIAR Research Program on Climate Change, Agriculture and Food Security | CCAFS | IIRR International Institute of Rural Reconstruction — Empowering Communities to End Poverty

ASEAN | ASEAN Climate Resilience Network | German Cooperation | Implemented by giz

Establishing Climate-Smart Villages (CSVs) in the ASEAN Region to Improve Food Security and Resiliency in Local Communities

8-14 July 2019 | SEARCA, Los Baños, Laguna, Philippines

WORKSHOP AGENDA

DAY	ACTIVITY	
Day 0, Monday, 8 July 2019		
	Arrival of Participants	
	Dinner & accommodation at SEARCA Residence Hotel Annex, Los Baños, Laguna	
Day 1, Tuesday, 9 July 2019		
8:00-8:30	**Registration**	
8.30-10:00	**Opening Program**	
	Welcome Messages	**Dr. Glenn B. Gregorio** *Director,* SEARCA
		Dr. Leocadio S. Sebastian *Regional Program Leader for CGIAR Program on Climate Change, Agriculture and Food Security in Southeast Asia (CCAFS SEA)*
		Ms. Emilita Monville Oro *Country Director, Philippine Program* *Regional Center for Asia* *International Institute of Rural Reconstruction (IIRR)*
	Introduction of Keynote Speaker	**Ms. Perla Baltazar** *Senior Technical Officer* *DA-Systems-wide Climate Change Office (DA-SWCCO)*
	Keynote Address	**Dr. Rex Victor O. Cruz** *Professor and Director* *Environmental Forestry Programme* *College of Forestry and Natural Resources,* *University of the Philippines Los Baños*
	Introduction of Participants, Resource Persons and Workshop Management Group	**Ms. Rosario B. Bantayan** *Program Specialist* Knowledge Management Department, SEARCA
	Overview of the Workshop	**Ms. Magnolia M. Rosimo** *Program Manager* *Learning Community Program, IIRR*
	GROUP PHOTO	
	Ms. Carmen Nyhria G. Rogel *Program Specialist* Research and Development Department, SEARCA	
10:00-10:30	***Coffee and Tea Break***	

DAY	ACTIVITY	
10:30-12:00	**Module 1. Session 1** – Climate Smart Villages: An Agricultural Research for Development Approach to Addressing Climate Change and Food and Nutrition Security ***Moderator: Ms. Rosario B. Bantayan***	
	Session 1a. The CCAFS CSV Approach: Guiding Principles and Key Components	**Dr. Leocadio S. Sebastian**
	Session 1b. Elements of a CSV	**Mr. Rene R. Vidallo** *Philippine Country Program Director* *Regional Center for Asia, IIRR*
	Session 1c. Building Resilience, Increasing Adaptive Capacities and Productivity of Agri-centered Livelihoods	**Dr. Julian F. Gonsalves** *Senior Adviser and CCAFS Project Leader, IIRR*
Open Forum		
12:00-13:00	***Lunch***	
13:00-14:30	**Session 2** – Establishing the Context of CSV and Delivering CSA Portfolio ***Moderator: Ms. Rosario B. Bantayan***	
	Session 2a: Tools and Experiences in Developing AMIA Villages	**Mr. James D. Leyte** *Senior Research Associate- Agriculture Systems and Landscape Specialist* *CIAT Philippines*
	Session 2b. Participatory Tools in Identifying Community Vulnerability Risks	**Ms. Magnolia M. Rosimo**
	Session 2c. Participatory Tools in Nutrition Programming in CSV Development (via ZOOM)	**Mr. Wilson John D. Barbon** *Country Director, Myanmar Program, IIRR*
Open Forum		
14:30-16:00	**Module 2.** Emerging Lessons from CSVs in Southeast Asia ***Session Chair: Ms. Carmen Nyhria G. Rogel***	
	Session 1: Panel Discussion: Learning from CSVs Across SEA	
	a) Panel Discussant 1: Learnings from CSVs in Laos, Vietnam and Cambodia	**Dr. Leocadio S. Sebastian**
	b) Panel Discussant 2: Learnings from AMIA Villages (Philippines)	**Ms. Perla G. Baltazar**

DAY	ACTIVITY	
	c) Panel Discussant 3: Learnings from IIRR Experience in Philippines and Myanmar	**Dr. Julian F. Gonsalves**
	Session 2. Scaling Cconsiderations in CSV Development	**Ms. Jana Patricia Koerner** *CCAFS Scaling Officer* *CCAFS SEA*
Open Forum		
16:00-16:15	***Coffee Break***	
16:15-16:30	Closing and final instructions for the Roving Workshop	**Ms. Magnolia M. Rosimo**
16:30	Leave for Guinayangan, Quezon Sleep in Guinayangan, Quezon	
Day 2, Wednesday, 10 July 2019		
7:00-8:00	***Breakfast at the Maine hotel***	
8:00-12:00	**Module 4:** Roving Workshops	
	Opening Program **Venue**: ABC Hall	
	Welcome Remarks Introduction of Participants Discussion on Local Government Programs and Projects	**Hon. Cesar J. Isaac III** *Municipal Mayor, Guinayangan*
	Instructions and overview of Roving Workshop	**Mr. Rico V. Locaba** *Learning Community Manager* *IIRR Philippines*
	Site Visit 1: Barangay (Village) Cabong Norte	**Municipal Agriculture Office with Cabong Norte-San Isidro farmers**
12:00-13:00	***Pre-arranged Lunch on-site***	
13:00-17:00	***Continuation of Module 4: Roving Workshops***	
	Site Visit 2 : Barangay Arbismen & Barangay Capuluan Tulon	**IIRR with Guinayangan Pig Growers Association**
	Site Visit 3: Barangay Capuluan Central	**Municipal Agriculture Office and Municipal Environment and Natural Resources Office with Guinayangan Fisherfolk Association**
17:00-19:00	**Free Time**	
19:00-21:00	**Welcome Dinner with Guinayangan Local Government Unit** **Venue:** 2nd Floor, SB Hall	

DAY	ACTIVITY	
Day 3, Thursday, 11 July 2019		
7:00-8:00	***Breakfast at the Maine hotel***	
8:00-12:00	***Continuation of Module 4: Roving Workshops***	
	Site Visit 4: Maulawin Spring Protected Landscape (MSPL)	**Department of Environment and Natural Resources with MSPL Protected Area Management Board**
	Site Visit 5: Barangays Sta. Cruz and Gapas	**Municipal Agriculture Office with farmers**
	Site Visit 6: Guinayangan CSA Learning Site, Barangay Aloneros	**Municipal Agriculture Office**
12:00-1:00	***Pre-arranged Lunch on-site***	
13:00-17:00	***Session 2.*** Delivering CSA portfolio on the ground Venue: Barangay Aloneros)	**IIRR CSA Team**
	Session 3. CSA mainstreaming in local government programs	**Hon. Mayor Cesar J. Isaac, III with LGU officers**
17:00-18:00	***Free Time***	
18:00-19:00	**Module Synthesis.** Windows for including Climate Resilient Agriculture within LGU Programs	**Dr. Julian F. Gonsalves**
19:00	**Dinner at La Playa Resort**	
20:00 onwards	**Guided Reflection Session**	**SEARCA Team**
Day 4, Friday, 12 July 2019		
7:00-8:30	***Breakfast at the hotel***	
8:30-18:00	Travel to Los Banos & stop at partners' local research stations along the way: • Interaction with partners from the National Swine and Poultry Research and Development Center (NSPRDC) and Southern Tagalog Integrated Agricultural Research Center (STIARC) on their role in CSA and CSV development	
18:00-20:00	Dinner at Kamayan sa Palaisdaan sa Bay (Floating Restaurant)	
20:00	Sleep at IRRI Swaminatahan Hall, Los Banos, Laguna	

DAY	ACTIVITY	
Day 5, Saturday, 13 July 2019		
6:30-7:30	***Breakfast at IRRI Cafeteria***	
7:45	Travel to SEARCA Headquarters	
8:00-10:00	***Module 5.*** Reflection & Synthesis Session ***Session 1***. Country presentations: Sharing of best practices and experiences in CSA –related work	
10:00-10:15	***Coffee Break***	
10:15-11:15	***Session 2.*** Re-entry Action Planning (REAP) Workshop	**Workshop Participants** **SEARCA and IIRR**
11:15-12:30	***Session 3.*** Plenary Presentation of REAP	**Workshop Participants** **SEARCA and IIRR**
12:30-13:00	**Synthesis** **Closing Program** **Post-Evaluation**	
13:00	**Lunch**	
14:00	**Free Time**	
Day 6, Sunday, 14 July 2019 **- Departure**		

Appendix 2. Participant Directory

Establishing Climate-Smart Villages (CSVs) in the ASEAN Region to Improve Food Security and Resiliency in Local Communities

8-14 July 2019 | SEARCA, Los Baños, Laguna, Philippines

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Appendix 3. Keynote Speaker and Resource Persons

Keynote Speaker

Dr. Rex Victor O. Cruz is a Professor and the Director of the UPLB CFNR Environmental Forestry Program. He holds the rank of Scientist III under the UP Scientific Productivity Program. He was appointed Chancellor of the University of the Philippines Los Baños (UPLB) in 2012 and was the Dean of the UPLB College of Forestry and Natural Resources from 2008-2011. In 2009, he was awarded the Outstanding Researcher Award given by the National Research Council of the Philippines and the Ten Most Outstanding UPLB Alumni Award. Dr. Cruz was also a former Director of the Forestry Development Center (1995-2000), which was created mainly for policy studies and development in forestry and natural resources management. He was the Project Leader of more than 20 research studies/projects in climate change studies, forestry, and watershed management during the last five years and has been providing extension services in various trainings and development projects all over the Philippines. He also published/written/presented more than 70 technical papers locally and internationally on various topics, including watershed management, forestry, land use planning, and climate change. In 2019, he was elected Academician by the National Academy of Science and Technology in recognition of his exemplary contribution to science and technology and the advancement of its cause in the Philippines.

He was a member of the Working Group II of the UN Intergovernmental Panel on Climate Change (IPCC), 2007 winner of the Nobel Peace Prize, as Principal Lead Author of the Second Assessment Report (1992-1995), Lead Author of the Third Assessment Report (1997-2000), and Coordinating Lead Author of the Fourth Assessment Report (2004-2007). He was one of the early proponents of climate change studies in the Philippines. He is a member of the UPLB Interdisciplinary Committee on Climate Change and led the vulnerability and assessment for the forestry sector as a contribution to the preparation of the Philippine Second National Communication to be submitted to the UN Framework Convention on Climate Change.

Previously, he conducted several studies on climate impacts, vulnerability, and adaptation assessment in several parts of the Philippines. He has also done numerous research and development projects in watershed and forest management. Some of these were on impacts of tenurial arrangements on local communities, particularly their practices and livelihoods, and on the conditions of the forests; and on impacts of land use and land cover on soil, water, and biodiversity. He organized several multisectoral forums on watershed management between 1995 and 2005, gathering researchers, practitioners, policymakers, academicians, local community members and other stakeholders to discuss crucial policy and development issues on the conservation of soil, water, and other critical watershed resources. The output of these forums became a vital basis for the crafting of the Philippine Strategy for Improved Watershed Resources Management (PSIWRM) in 1998. He authored the Guidelines for Watershed Management in the Philippines, which was a supplementary guidebook for the PSIWRM. Before the Watershed Ecosystem Management framework was adopted by the DENR as the planning and management unit for forest management in the Philippines, he had published several papers on using the watershed or river basin as the unit for forest management, land use planning, and integrated area development, which he presented in numerous conferences.

Resource Persons

Mr. Wilson John D. Barbon is the Country Director of the Myanmar Program of IIRR. He is a motivated social development professional for more than 20 years, with solid experience in rural development, natural resources management, disaster risk reduction, disaster preparedness, and climate change adaptation. He served as Manager for IIRR's Disaster Risk Reduction and CCA Program. He was the Deputy Executive Director of Agri-Aqua Development Coalition Mindanao, Inc. He earned his master's degree in Environment and

Dr. Julian F. Gonsalves is an internationally recognized scientist in the field of agriculture and rural development. He served as evaluator of programs concerning food security, agro-biodiversity, value chain, and climate-smart agriculture. He has served as Vice President of IIRR and currently he is a Technical Advisor and Team Leader of various IIRR programs and projects. He earned his doctorate degree in Extension Education and International Agricultural and Rural Development from Cornell University. He has also received several awards, including the Sustainable Agriculture and Rural Development Award from Germany and the Global 500 Roll of Honor Award from the United Nations Environment Programme.

Ms. Jana Patricia Koerner is a professional in development work with more than 15 years of experience in agriculture and food and nutrition security. She worked with the German NGO formerly known as the German Agro Action in Sudan, Afghanistan, Cuba, and Myanmar. Realizing that climate change will eventually need to involve all research and development initiatives in agriculture, she took up work as Scaling

Officer for CCAFS in 2017. At the same time, she is a member of the CGIAR Task Force on Scaling that is seconded by the German Society for International Cooperation (GIZ).

Mr. James D. Leyte is a CIAT Philippines Senior Research Associate-Agriculture Systems and Landscape Specialist in charge of crop suitability, pest and disease risks, climate modeling, developing ICT-based decision support and farmer advisory tools, assessment of climate resilience for crops, farming systems, and agricultural landscapes. Prior to joining CIAT or the International Center for Tropical Agriculture, Mr. Leyte worked for the Philippine Rice Research Institute. He obtained his bachelor and master's degree from the University of the Philippines Los Baños.

Ms. Magnolia M. Rosimo manages the Learning Community Program of the Philippine Country Program of IIRR. She works with the Program Director in providing strategic direction to these learning communities and leads its operationalization of development frameworks as she provides guidance for managers in the field. With more than two decades of experience in development work, Ms. Rosimo has worked on project management, community organizing, training and research, and program implementation, working with farmers, women, and the urban poor. She advances people-centered approaches and participatory community development. She has designed research methodologies and tools on vulnerability assessment with gender lens, designed and conducted baseline studies and livelihood assessments. Ms. Rosimo earned her social science degree from the University of the Philippines.

Dr. Leocadio S. Sebastian is the current regional program leader for CCAFS Southeast Asia, where he leads the integration of CCAFS agenda into the regional agenda and national program in CCAFS focus countries. He is also a multi-awarded plant breeder and research administrator, integrating the whole spectrum of research, development, and extension and mobilizing governmental, intergovernmental, and international networking and collaboration for greater impact.

Prior to joining CCAFS he was the Regional Director for Asia Pacific Region at Bioversity International. He was also former Executive Director of the Philippine Rice Research Institute (PhilRice) where he strengthened and mobilized the national rice research and development network, enabling the Philippines to increase rice productivity and sustain PhilRice's stature as a premier knowledge generating institution in Southeast Asia.

His expertise in R&D management is internationally recognized through his involvement in various international research networks, consortia, and review panels organized by the World Bank, Food and Agriculture Organization of the United Nations, Global Crop Diversity Trust, CGIAR, International Crops Research Institute for the Semi-Arid Tropics, and International Rice Research Institute.

Dr. Sebastian was conferred with prestigious awards in the Philippines, such as the Ten Outstanding Young Men in 2001, Outstanding Young Scientist in Plant Breeding, Pantas (Sage) Ward for Research Management and JICA Presidential Award. He earned his doctorate degree in Plant Breeding and Genetics from Cornell University, Ithaca, New York, and his BS and MS degrees from UPLB.

Mr. Rene R. Vidallo is IIRR's Philippine Program Director and the Lead Person in the development and growth of IIRR's climate-smart agriculture program in the Philippines. He previously held post in the Institute as Asia Program Specialist for Agriculture and Natural Resource Management, and later as Program Manager for Food Security and Sustainable Livelihood. Aside from providing guidance and assistance to Philippine-based staff in program development, he also provides technical assistance to Cambodia and Myanmar staff on climate-smart agriculture programming. He has a degree in Forestry major in Social Forestry.