Socio-Technical Methodologies in Establishing Climate Smart Villages in Myanmar as Platform to Promote Climate Smart Agriculture

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14 August 2019, Yangon, Myanmar

Abstract

The manifestations of climate change differ across different agro-ecosystems in Myanmar. Climate change impacts and local responses are different from each agro-ecology, so it is crucial that adaptation measures recognize the value of targeted, location specific, community-based strategies and processes. The climate smart village approach is one platform that can facilitate community-based adaptation in agriculture. With support from CCAFS in 2017 and with International Development Research Center (IDRC)-Canada in 2018, IIRR is implementing 4 climate smart villages representing 4 major agro-ecological regions of Myanmar namely; the central dry zone, mountain highlands, upland-plateau and delta. In this action research, we seek to demonstrate and test the different socio-technical methodologies in facilitating CSVs in Myanmar. Our initial findings have shown that by using socio-technical methodologies—we ensure active participation by farmers including women in the process of community-based adaptation as well as ensure the effectiveness of climate smart agriculture technologies and practices. These methodologies also allowed for initial out-scaling through awareness building of key stakeholders in Myanmar.

Introduction

In Myanmar, climate variability is experienced in most parts of the country with some parts receiving excessive rain, and others have to deal with drought periods during the cropping cycles. What a howling example of severe flood was occurred in 2008 because of Cyclone Nargis which stroke down the Ayeyarwaddy and Yangon regions; an estimate of 140,000

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people were killed and 2.4 million people were severely affected during that time. Regarding also with drought, a significant drought occurred in Myanmar during 2010 which was the most severe in several decades. The extreme temperature also recorded 47.2 °C at Myinmu station in dry zone area on 14 May 2010. Temperature has been higher in each year and monsoon approaches rain lately every year, causing severe shortage of water in many parts of Myanmar.

The effects of climate change being location specific, community-based and needs driven approaches which feature increased levels of community participation and engagement are needed in arriving at scalable models. Therefore, it is crucial that adaptation measures recognize the value of targeted, location specific, community-based strategies and processes. This needs to be provided special attention in implementing community-based adaptation (CBA) processes in Myanmar.

It is important for large-scale initiatives to consider local priorities and integrate lessons from successful adaptation efforts, relying on lessons derived from site-specific research located in areas where out-scaling is envisaged. This is particularly important in a country like Myanmar with a diversity of ethnic groups, climate zones and agroecosystems. There is increasing mention in the literature about the important contribution of community-based and led initiatives in effective adaptation efforts of smallholder farmers. (Heltberg, Siegel, & Jorgensen, 2009[2]; Kansiime, 2012[3]; Reid et al., 2009[4]). Despite this growing recognition and the potential value of community-based adaptation processes—the replication and increased practice of these processes is still relatively uncommon.

There is a complementary need to ensure that CBA processes in the field of agriculture create co-benefits that will address what is referred to as the current "development deficit". (Parry et al., 2009) CBA processes should contribute in sustaining ecosystems, creating stable incomes, achieving sustainable food systems that nourishes people and strengthening local institutions of governance.

[2] Heltberg, R., Siegel, P., & Jorgensen, S. (2009). Addressing human vulnerability to climate change: Toward a 'no regrets' approach. Global Environmental Change, 19(1), 89–99

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CBA is understood by IIRR and its partners as a process of resilience building, which relies on an initial phase of identifying vulnerabilities, mapping of CSA options (both processes and technologies) and associated participatory action research aimed at deriving a portfolio of scalable technological options and social learning processes which address climate and livelihood risks and local needs. Such portfolio of CSA options which usually address multiple household needs of livelihood, nutrition and income needs. Adaptation is not accomplished in a single intervention. Rather it is a continuum, requiring an overarching approach that range from those that address the underlying drivers of vulnerability to those designed exclusively to respond to climate change impacts (ODI, 2010). With a portfolio approach, diversification and intensification objectives can be achieved, especially for small holder and those with marginal landholdings.

Figure 1 shows the key steps that IIRR follows in facilitating community-based adaptation in agriculture. Our approach is not of one-size fits all approach but takes on a location-specific approach where the basis of adaptation is the understanding of how climate change affects the local agriculture systems. We also take on a portfolio approach—developing a menu of technological options (point 2 in the diagram) where people can choose those that they think works well with their own context. Finally, we take on a social learning guided by evidence and knowledge generated from the testing of adaptation options.

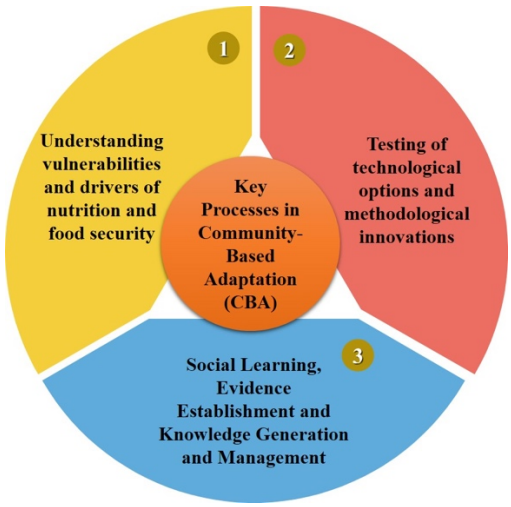

Figure 1: Key processes in Community-based Adaptation

In its work in the Philippines, IIRR has learned the importance of establishing proof of concept sites where scale is demonstrated and an evidence base is established for purposes of

supporting wider uptake of the CBA approach. In Myanmar, to promote the out-scaling of CBA in agriculture, IIRR believes that we need implement an approach that deal with context specificities of various agro-ecological regions as well as socio-cultural differences. Like in the Philippines, we refer to these proof of concept sites to demonstrate context specific community-based adaptation in agriculture as climate smart villages.

The Climate Smart Village (CSV) Approach

Climate smart villages (CSVs) are on-site, on-location platforms where discovery, learning and sharing happens. CSVs serve as basis for field level advocacy for promoting CBA processes. These are intentionally designed to be low cost and typically feature local teams and local institutions in order to enhance their role as "lighthouses" to support wider uptake.

Climate Smart Villages (CSV) are platforms (venue and location) for climate change adaptation wherein location-specific strategies for addressing climate risks and challenges are tested, developed and subsequently scaled up. This is done by establishing the necessary evidence base through participatory and collaborative approaches and associated action research. The process involves not only farming communities but also the local governments, and the local research community. Unlike the "Millennium Villages", a demonstration of input-intensive integrated rural development—The CSV is a demonstration of how (process) to assist local communities adapt to climate change CSVs recognize the fact that individual action is not enough in coping with climate change. They provide the platform for multi-stakeholder participation and collaborative work in targeted, clearly delineated geographic areas ("territories" or "small landscapes").

Climate Smart Villages in Myanmar

In 2016, IIRR with support from CGIAR-CCAFS conducted a rapid scoping study of 4 various agro-ecologies in Myanmar. The goal of this study is to get an overview of the agriculture systems in these agro-ecologies such as crops grown, crop calendar, markets, extension and impacts of climate change. This study provided the basis of the potential of establishing CSVs in Myanmar to promote climate resilience in agriculture. This is very unique to Myanmar where the country has diverse agro-ecologies therefore all the more important to adopt a more localized approach to agriculture development programs. IIRR believes that this localized approach can be the CSV approach.

In Myanmar, with support from CCAFS and the International Development Research Center in Canada, IIRR is conducting a 3-year participatory action research to establish 4 climate smart villages. This research is to develop a process of establishing CSVs in Myanmar, demonstrate climate smart agriculture in the 4 agro-ecologies and identify the pathways to bring CSVs to scale—replicate the CSVs by NGOs and government agencies all over Myanmar. Below summarizes the profile of the 4 CSVs established in Myanmar.

Table 1: Profile of the Myanmar Climate Smart Villages

Name of Village	**Saktha**	**Htee Pu**	**Ma Sein**	**Taung Kamau**
Agro-ecology	Highlands	Dry Zone	Delta	Upland
Major crops	Rice, corn, vegetables	Groundnut, pigeon pea, green gram	Rice	Rice, millets. corn
Township	Hakha	Nyaung-Oo	Bogale	Nyaung-Shwe
State/Region	Chin	Mandalay	Ayeyarwaddy	Shan
Total households	200	275	103	94
Total Population	865	1,1180	453	405
Female	445	603	249	215
Male	420	577	214	190
Distance from Tsp. nearest	32 km	35 km	11 km	20 km
Ethnic Group	Chin	Burmese	Burmese	Pa-o

As noted in this table, this represents the diversity of agro-ecologies and its corresponding agriculture systems. For instance, the agriculture system in Chin state, given their isolation is more driven by household food security, farmers grow so they can have food. This different from the agriculture systems in Delta and Dry Zone where production is driven my markets. The CSV in Shan production is driven both for food consumption and markets are they are close to the trading centers.

Each of these CSVs also experience climate change differently. It is in this context that IIRR presents the importance of localized climate change adaptation in agriculture that is systems-oriented rather than crop or commodity-oriented approaches. In a systems-oriented approach

takes into consideration the soils, water, climate variability and extension services—all determine the outcome and quality of agriculture production. In the CSVs, IIRR is demonstrating a systems-approach to building resilience in agriculture. In this paper, IIRR will present the different socio-technical methodologies it developed to facilitate the process of adaptation in agriculture that is localized and systems-oriented.

Socio-Technical Methodologies in the Climate Smart Village

The CSVs in Myanmar was introduced in 2016 through CGIAR-CCAFS and IIRR. CCAFS supported the Ministry of Agriculture, Livestock and Irrigation (MOALI) in the formulation of the Myanmar Climate Smart Agriculture Strategy. This document laid out the long term as well as short-term strategies and priorities to promote climate change adaptation in Myanmar agriculture. One of the strategies identified is the establishment of CSVs. With support from CCAFS and IDRC-Canada, IIRR ventured into establishing CSVs in 2017, starting with 2 CSVs then in 2018 added 2 more CSVs for a total of the current 4 CSVs.

The work of IIRR in the Myanmar CSVs involved using a variety of socio-technical methodologies. Table 2 below summarized the different socio-technical methods that IIRR has used to facilitate the establishment of the Myanmar CSVs.

Table 2: Summary of Socio-Technical Methodologies in the Myanmar CSVs

Steps in the CSV Establishment	Methods	Purpose	Socio	Technical
Social Preparation	○ Opening Wedge Activities	▪ To build community trust and initial interest to participate	●	
Assessment of Agriculture Systems and Climate Change Risk	○ Household Surveys	▪ To facilitate targeting and monitoring outcomes	●	
	○ Participatory Vulnerability Assessments and Gender Analysis	▪ To collectively identify and analyze climate risks to agriculture and gender ▪ To build awareness of climate change risks	●	●
Identification of	○ Focus Group	▪ To develop a menu of	●	●

Steps in the CSV Establishment	Methods	Purpose	Socio	Technical
Options for Adaptation	Discussions (sector based)	options based on local knowledge		
	○ Secondary Research	▪ To identify latest technologies and practices developed by scientists		●
Multi-location and participatory Testing of Identified Options	○ Participatory Varietal Selection	▪ To field test new varieties of major crops ▪ To characterize new varieties vis a vis specific climate condition		●
	○ Crop Trials	▪ To field test introduced crops to the system		●
	○ Demonstration	▪ To field test integrated systems (e.g. trees, small livestock, gardens)		●
	○ Setting up adaptation fund	▪ To support strategic adaptation options	●	
Farmer to Farmer Learning	○ Farmer learning groups ○ Farmer Field Days	▪ To share knowledge and materials ▪ To develop farmer specialists	●	
Scaling Out CSVs	○ Roving Workshops	▪ To build awareness of policy makers and NGOs	●	

We refer to these as socio-technical methodologies because it is a combination and complementation of agriculture research (technical) and social mobilization and organizing (socio). We believe in the importance of this complementation because for adaptation to be sustainable—the subjects (farmers, households and villagers) has to own this process of adaptation. True resilience cannot be given to farmers, true resilience has to be built within the farmers mindset and expressed in his attitude and practices towards farming. This cannot be achieved by just doing hard agriculture research. This is where the value of social mobilization, social learning and organizing comes in to achieve sustainability.

On the technical side of this methodologies, we worked with different research organizations within the CGIAR system and the Department of Agriculture Research through their field research stations located near the CSVs. This way we ensure that whatever technologies and practices farmers are learning in their field testing of options—these are backed by research of scientists, specialists and practitioners.

Results and Discussions

After almost 3 years of working in the 4 CSVs and implementing these combinations of socio-technical methodologies, these are our initial results.

Social Preparation

One of the key questions we asked in the beginning of this work is how and where do we find the village to be designated as a CSV in Myanmar. Based on the experience and performance of the other CCAFS CSVs in Southeast Asia, we used the following criteria to narrow down the list of villages we will consider as CSVs.

a) Representing a key agro-ecological region of Myanmar and high risk to climate change impacts
b) Accessibility of the CSV to facilitate visits by other farmers, government officials, researchers, donors and partners
c) Manageable size in terms of population; we considered households to be between 100-250 households
d) Least served by previous NGO or government programs on agriculture this is to ensure equity of services
e) Presence of a local organization who will be willing to be trained to implement the CSV approach

After the CSVs were identified, we conducted initial activities we called as "*opening wedge activities"*. These are activities that engages farmers in onsite testing of technologies identified based on the needs identified during the scoping missions. The primary purpose of these activities is to build good will and trust between the community members and the facilitators of the CSV activities. The *opening wedge activities* we implemented crop trials of new varieties as well as for new crops, introduction of diverse fruit trees into homesteads and introduction of boundary planting of fertilizer trees such as *Cassia siamea*. These activities

are to be understood as exploratory range of diversified options that illustrate a portfolio of (diversified) CSA options. These activities are more social activities of trust building rather than hard agriculture research.

Assessment Agriculture Systems and Climate Change Risk

The process of identifying the CSVs and the implementation of the "opening wedge activities" took at least one cropping season of 2017. In 2018, with commitment and participation already established in the social preparation, we conducted the next step in the CSV process—the assessment of agriculture systems and climate change risk. There are 2 main methodologies we used in the assessment and these are: participatory vulnerability assessment (PVA) and the household surveys.

The PVA we conducted took between 2-3 days of facilitating various participatory tools such as community mapping, seasonal calendar, timeline, problem tree analysis and focus group discussions. The information and analysis we gathered in the PVA are: description and characterization of the agriculture production systems (e.g crops grown, crop calendar, issues and concerns in production), climate change risks (e.g. changes that were observed that affected production) and finally the role of men and women in the agriculture, food security and nutrition.

While the PVAs were conducted, we also conducted household level surveys to gather individual data related to livelihoods, wealth estimates, household coping, household food security and diet diversity and then household gender dynamics. We used the information we gathered in the surveys to better informed the design of the support we will provide to the CSVs. From the assessment we were able to develop a profile of the climate smart village. The summary of are as follows:

Htee Pu CSV (dry zone)

Half of the 275 households in Htee Pu CSV engages in farming as a form of livelihood. Another 15% works in livestock such as goat, cattle, and pig. Htee Pu farmers are primarily growing pigeon pea, tomato, sesame, and groundnut, which they plant during the rainy season. However, agriculture in this village faces several challenges that are aggravated by climate change. Htee Pu CSV is in Myanmar's Dry Zone, where desertification is prevalent. Desertification is driven by deforestation, soil erosion, and salinization. Deforestation occurs

because of the high demand for fuel wood and other forest products. Soil erosion is intensified due to strong rainfall and rapid surface runoff. Rainfall in the Dry Zone is not only stronger than in other areas, but also highly variable. This leads to droughts and floods that limit crop production and quality and exposes farmers to various pests and diseases.

Ma Sein CSV (delta)

Rice cultivation is the main livelihood of Ma Sein CSV residents. They also plant coconut and betel nut trees in their cultivated lands, which cover 397 hectares. Those without access to these lands engage in backyard animal husbandry, small-scale fishing and aquaculture, and betel nut and coconut trading, among others. Ma Sein CSV is in Ayeyarwaddy Region, a low-lying, flood-prone area in Myanmar. Aside from floods, the people in this region regularly face storms and other natural disasters. The constant exposure of Ayeyarwaddy to these disasters contribute to its high landless rates, recorded at 50% for poor households and 24% for non-poor households in 2017. Gender issues also prevail in the region, specifically in Ma Sein CSV, where only 17 out of the 249 women are actively engaged in development issues such as village development and social welfare.

Saktha CSV (mountain highlands)

This CSV is situated in Hakha Township in Chin State, considered the poorest state in Myanmar. One of the drivers of poverty in this state is a lack of access to markets, which is exacerbated by a lack of road infrastructures and poor quality of available roads. These roads are often blocked due to landslides during the monsoon season. This inadequacy of infrasttracture hinders the delivery of agricultural extension services to Saktha CSV such as planting materials and inputs. These services are critical to Saktha CSV, wherein more than 90% of the households work in the agricultural sector. The sector, though, now faces intensified floods, droughts, and rain infestations, among others, leading to food insecurity.

Thaung Kamau (uplands)

Taung Khamauk is the village under Tone Lae village tract, Nyaung Shwe Township which is situated in the southern part of Shan State and it is about 1-hour drive from Nyaung Shwe. There are 94 total households and 405 people all members of the Pa-o ethnic group. The village is situated above 3,000 feet elevation above sea level. Most (80%) of the village members depend on agriculture and livestock rearing. Agricultural season regularly starts with rainy season on May. There is only one cropping season because of lack of water

resources. This is the climate change risk affecting the village, variability of rainfall. Heavy rainfall also led to soil erosion and degradation. Lack of rainfall is also becoming more frequent and severe in these
days, and the onset of rainfall is becoming unstable which leads to shift the sowing time leading to low yields and crop failures.

In the household surveys we also learned interesting information about the nutrition and food security in the CSVs. One of the indicators we used for nutrition and agriculture is the Household Diet Diversity Score developed by FANTA/USAID. In the 4 CSVs, we found out that there is good diversity in the diets of the villagers, scoring an average of 6 food groups out of the standard 12 food groups needed for a good diet. However, while this is a good score, we also learned that these food groups consumed are mostly cereals, oils and fats and vegetables. The least consumed food groups are white roots/tubers, milk and other fruits. The surveys also revealed that in these CSVs—agriculture production is mostly for markets except for Saktha in Chin state where production is mainly for home consumption.

Identification and selection of option for CSA

The assessment of agriculture systems and climate change risk, we worked with the farmers and other members of the village to identify solutions to the challenges they identified. These solutions we referred as options for climate smart agriculture. As mentioned in the beginning, what we are after is to develop a portfolio or a menu of options to which farmers can choose.

We developed and facilitated systematic and elaborate *"participatory scoring tool"* to identify and prioritize the identified options. At the beginning of this exercise we developed together with the villagers a set of criteria that includes—whether it is ecologically sustainable, whether it is practice and affordable, whether it responds to climate variability and whether it offers opportunities for women to engage. During the discussions, the participants in the CSV also identify key objectives in identifying the options. These objectives are:

- Minimize losses of primary crops due to climate risks (very wet, very dry, very cold, very hot, seasonal changes)
- Increase diversity of sources of income and food
- Achieve security in access to food during non-production months

- Increase the contribution and participation of women to livelihoods and community development

We conducted several focus group discussions—guided by this *"participatory scoring tool"* we facilitated separate discussions for farmers and women to ensure that what the CSV will identify are owned by both men and women in the CSV. Out of these process in the CSV, these are the CSA options we identified per CSV:

Table 3: List of Identified Options for Adaptation for the 2019 Season

OPTIONS IDENTIFIED (technologies and practices)	
Farms	**Homesteads/HH**
SAKTA CSV (mountain highlands), Chin State	
Climate Change Effects: Heavier rainfall causing floods and landslides, Increased temperatures, Cooler winters, Stronger winds, Erratic rainfall patterns (longer monsoon), Food insecurity during non-production months, Crops losses (poor germination, low yields, crop death, pest and diseases), Animal losses due to diseases	

• Diversifying upland rice varieties in the CSV
  o Promotion of Tarpegu and Upland 2 rice varieties
  o PVS trials for other rice varieties
  o Seed production and banking for Tarpegu and Upland 2
• Diversifying varieties of millets and corn
  o PVS Trials for millets and corn
  o Seed production and banking of Yezin 1 and Ekary varieties
• Fish propagation in 'forest' ponds with fish propagation centers
• Integration cash crops such as EFY
• Promotion of Alnus nepalensis planting in farms
	• Vegetable gardening with RTB
	• Rearing pigs and chickens
	• Pig/Chicken Propagation Centers

HTEE PU CSV (dry zone), Mandalay Region	
Climate Change Effects Increasing variability of rainfall (some seasons very wet, some seasons very dry), Increasing temperature, Climate extreme events such as long dry season, Degradation of soil from lack of organic matter, soil erosion from rainfall and high temperatures, Pest and diseases, Delays in planting, Lower yields, Crop death, Animal diseases	

OPTIONS IDENTIFIED (technologies and practices)	
Farms	**Homesteads/HH**

• Promoting Climate-smart agronomic practices in farms
  o Crop rotation
  o Mulching
  o Cover cropping
  o Integrated Pest Mgt
• Intercropping of pigeon pea, corn and groundnut
• Dryland horticulture
• Boundary planting of Cassia to improve soil organic matter and as wind breaks
• Revaluing millets and sorghum for other applications
  o PVS Trials for millets
  o PVS trials for sorghum
  o Seed propagation for sorghum
• Seed propagation and banking for groundnut, pigeon pea, sorghum
	• Vegetable gardening with fruit trees
	• Rearing goats and chickens
	• Bagan Goat and Chicken Propagation Centers

MA SEIN CSV (delta), Ayeyarwaddy Region Climate Change Effects Climate variability, some seasons have too much rain, some have less rains, increasing temperatures, Saline intrusion due to sea level rise, Climate extremes such as cyclones (deadliest was Cyclone Nargis, Crop losses due to flooding, Difficulty of drinking water, Low income	

• Organic matter improvement of rice farms using sun hemp, Gliricidia and Sesbania
• Diversifying rice varieties for flood tolerance and saline tolerance (PVS for Rice Varieties)
• Coconut husk fiber processing (e.g. coco coir)
	• Diversification of homestead-based low-input production of:
	  o Betel leaves. Testing trichodarma+EM5 for fungus mgt
	  o Duck rearing for eggs. Testing for locally grown feeds
	  o Fish production in backyard runnels
	  o Low input pig/chicken production with homestead fodder production (Tricanthera, RTBs)
	  o Homestead Fruit trees and pineapple

OPTIONS IDENTIFIED (technologies and practices)	
Farms	**Homesteads/HH**
	• Pig propagation center • Fish propagation centers
TAUNG KHAMAUK (upland), Shan State	
Climate Change Effects Heavy rainfall, Longer monsoon season, too less rainfall, increasing variability of rainfall, Pests and diseases to crops, Low yield, Diseases in cattle and animals	
• Improving access to climate-smart crop varieties o PVS Trials for upland rice o PVS trials for groundnut o PVS for Millet o Crop trials for soybean, sunflower, wheat, Niger seeds • Trials of soil management practices o Integration of Gliricidia, sun hemp, lime and compost • Trials of water management practices • Integration of avocado fruit trees in the farms	Homestead food production o Sweet corn and corn o Vegetables o RTB o Fruit trees (e.g jackfruit) • Low-input chicken and pig production with alternative feed system • Pig/Chicken propagation centers

Multi-Location and Participatory Testing of Options

As part of this research, we setup an adaptation fund which allocates a specific lump sum of funds available for the CSV. The purpose of this fund is to catalyze implementation of the options. Asking farmers to change technologies and practices in farming is difficult without any support and incentive to do so. The farmers in the CSV are one of the poorest in Myanmar and will not have sufficient assets and resources to do experimentation and trials. We have received positive feedback from the CSV as it allows them to do determine how the fund will be used in a way they think will help them effectively. In 2018 cropping season, the multi-location testing and trials of the adaptation options have produced significant learning already in terms of adaptation within the CSV. Some of these findings are:

- Saktha CSV: The upland rice varieties developed and tested in the Aungban Research Station of DAR performed very well in highland conditions. Chin farmers want to cultivate more.

- Saktha CSV: There is big potential for upland aquaculture using seasonal ponds called “forest ponds”. This offers co-benefits that include additional sources of income and food and at the same time harvest water for use during the dry months.
- Htee Pu CSV: Farmers find integrating fruit trees (mostly seintalone mango) into farms climate smart because fruit trees are more resistant to climate variability.
- Htee Pu CSV: There is also a developing resurgence and acceptance of sorghum production, a crop with fodder and foot potential.
- MaSein CSV: Homestead-level production offers great opportunities for diversifying from rice-based production system. Homestead production in the delta includes betel production, small livestock and aquaculture.

These lessons and findings were results from the 2017-2018 cropping season where farmers work with IIRR to test adaptation options—options that farmers identify and options that research stations and scientists.

Social Learning via Farmer to Farmer Approaches

In order to share the experiences and good practices derived from the testing, we also facilitated in the CSVs, farmer field days. Farmer field days are leading to the emergence of farmer specialists in the CSV that has become a resource of a specific crop/variety. Farmer field days also opened up opportunities for the villagers and the local NGO partners to engage with the local government extension offices to get technical support and to scale out the practice or option. During the field days, the villagers learned about the options for them in terms of:

- Varieties of crops they have tested are suitable and performing well in their farms.
- Challenges that farmers experienced during the testing of these options. These are also opportunities to innovate in the next season.
- Potential support from other agencies including government to further support the initiative

Aside from the farmer field days, we also conducted a training course for local NGO partners working at the national level and at the regional/state level. The goal of this training course is to build their awareness as well as provide them basic guidance and a framework to follow for them to design and implement their climate smart villages project. This is one pathway of out-scaling CSVs in Myanmar being pursued.

Conclusion

In this paper, we echoed the same message that many authors concluded about the location-specificity of community-based adaptation. In this paper we presented that this is even more important in agriculture, where production is depended on the agro-ecological context. Our research seeks to demonstrate and test the different socio-technical methodologies in facilitating climate smart villages in Myanmar as a platform that government and development organizations can adopt to promote climate resilience in agriculture in Myanmar. Our initial findings have shown that by using socio-technical methodologies—we ensure active participation by farmers including women in the process of adaptation as well as ensure the effectiveness of climate smart agriculture technologies and practices. These methodologies also allowed for initial out-scaling through awareness building of key stakeholders in Myanmar. In the succeeding activities of the action research, we will setup mechanisms for spontaneous horizontal exchanges. We will also strengthen the evidence-base of the CSVs to influence policies and programs leading to sustainability and wider uptake of climate resilience in agriculture in Myanmar.

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