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USAID Mekong Adaptation and Resilience to
Climate Change (USAID Mekong ARCC)

Annual Report

Year Three – October 1, 2013 to September 30, 2014

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World Resources Institute (WRI)
International Union for Conservation of Nature (IUCN)
Asian Management and Development Institute (AMDI)

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I. PROGRAM OVERVIEW

Program Name:	USAID Mekong Adaptation and Resilience to Climate Change (Mekong ARCC)
Activity Start Date And End Date:	September 26, 2011 through September 25, 2016
Name of Prime Implementing Partner:	DAI
Contract Number:	AID-486-C-11-00004
Name of Subcontractors/Subawardees:	International Centre for Environmental Management (ICEM) World Resources Institute (WRI) International Union for Conservation of Nature (IUCN) Asian Management and Development Institute (AMDI)
Geographic Coverage	Cambodia, Lao PDR, Thailand, and Vietnam
Reporting Period:	October 1, 2013 – September 30, 2014

The USAID Mekong ARCC project is a five-year program (2011-2016) funded by the USAID Regional Development Mission for Asia (RDMA) in Bangkok and implemented by DAI in partnership with the International Centre for Environmental Management (ICEM), World Resources Institute (WRI), International Union for Conservation of Nature (IUCN), and Asian Management and Development Institute (AMDI). The project focuses on identifying the environmental, economic and social effects of climate change in the Lower Mekong Basin (LMB), and on assisting highly exposed and vulnerable rural populations in ecologically sensitive areas increase their ability to adapt to climate change impacts on water resources, agricultural and aquatic systems, livestock, and ecosystems. USAID Mekong ARCC is headquartered in Bangkok and supports climate change research and adaptation initiatives in Cambodia, Lao PDR, Thailand, and Vietnam.

Flowing from the upper watersheds of Lao to the delta in Vietnam, the LMB connects and provides ecosystem services critical to livelihoods, food security and welfare of the Basin's 60 million inhabitants. Yet the connectivity of the basin also links Lao PDR, Thailand, Cambodia and Vietnam to transboundary climate and development threats. USAID Mekong ARCC works in each of the four LMB countries in recognition that each has its own national climate policies and economic and development priorities, and that communities are structured and function differently in each as a reflection of the respective nations' unique laws, histories and cultures. Lessons and experiences drawn from the national and community level will ultimately feed up to regional actors working at the transboundary level to help ensure they are shared across the Basin.

The impetus for USAID Mekong ARCC stems from the launch of the Lower Mekong Initiative (LMI). Announced by the U.S. Secretary of State and foreign ministers from each of the LMB

countries in 2009, the LMI emphasizes close cooperation between the United States and the governments of Cambodia, Lao PDR, Thailand, and Vietnam to support regionally sustainable and environmentally responsible growth.

The primary goal of USAID Mekong ARCC is to *increase adaptation capacity and resilience of communities to the negative impacts of climate change.*

The objectives of the project are:

- Increase human and institutional capacity to develop and implement climate change adaptation plans and strategies;
- Strengthen policies, tools, methodologies and practices for ecosystem services valuation and climate resiliency;
- Demonstrate and scale-up model actions for integrated approaches to climate change adaptation; and
- Support and sustain regional learning networks to share and replicate best practices.

USAID Mekong ARCC is comprised of five major technical tasks in addition to overarching program management. These are:

1. Regional Platform Partner and Knowledge Center;
2. Climate Change Impact and Adaptation Study;
3. Ecosystem and Community-based Adaptation Initiatives;
4. Valuing Ecosystem Services in Economic Planning for the Lower Mekong River Basin; and
5. Scaling-Up Successful Approaches.

2. ACTIVITY IMPLEMENTATION PROGRESS

2.1. Progress Narrative

From the outset of the project, USAID Mekong ARCC's objective has been to move beyond sweeping predictions found in most expert climate change studies to discover practical methods of applying those scientific findings at a community level. In practice, this means helping local leaders understand the nuances of a shifting climate – the grey area in between predictions of crop failure in 2050 and the next typhoon. Understanding these subtle changes – such as how an increase in average daily maximum temperature reduces rice yields and reproductive rates of livestock – is critical for communities to monitor, internalize, and make smart adaptive decisions. When communities begin adding these projected climate impacts into their customary decision making processes they will move beyond simply coping with change when it arrives and into the realm of longer term adaptation.

In year three the community engagement process began in earnest with the initiation of field work as part of the Ecosystem and Community-based Adaptation Initiatives. Two guiding principles are key to the USAID Mekong ARCC approach to community adaptation: 1) both top-down science and bottom-up community knowledge are critical inputs into the development of

technical solutions that strengthen community resilience, and 2) the decision making process is equally important as the technical solutions to reducing climate vulnerability. With that in mind, the Mekong ARCC community engagement model is broken down into two phases, the first of which was completed in year three of the project:

1) Adaptation Decision Making – USAID Mekong ARCC designed and implemented an adaptation decision making process with a total of 566 community-level beneficiaries in Laos, Thailand, and Vietnam to increase awareness and understanding of climate change impacts and the specific livelihood vulnerabilities that villagers could expect in their areas, as well as support climate change resiliency in livelihoods. Participatory processes were utilized to assist the villagers self-identify weather threats, trends and vulnerabilities, better understand the meaning of climate change, and incorporate scientific projections of climate hazards and livelihood vulnerabilities into the development local adaptation actions. Scenario planning exercises helped generate a view of vulnerability that factored both near and longer term time horizons, a perspective key for communities’ prioritization of adaptation options that will provide both immediate livelihood benefits and strengthen long-term resilience.

2) Activity Implementation/Monitoring – Activities such as improving aquaculture techniques or strengthening water management will be undertaken in the next phase of the community adaptation initiatives. These activities will illustrate tangible technical solutions to specific vulnerabilities and be monitored to evaluate the extent to which they reduce the exposure of local people and ecosystems to the impacts of climate change.

In the third year of implementation, the USAID Mekong ARCC project oversaw the initiation and final phases of the Adaptation Decision Making process, which generated important learning and lessons for the project team, implementing partners and target communities across the Lower Mekong. The results from this process, drawn with the participation and buy-in from community members, are integral to the development of activities aimed at reducing local level vulnerability to climate change. The completion of this process is not important just as a precursor to the development of resilience-strengthening activities, but is an important output in itself by increasing community understanding of climate change and the need to regularly assess vulnerability and plan adaptation strategies.

Also in Year three, the USAID Mekong ARCC project made further headway in disseminating experiences, lessons and results from the project. As one of the few adaptation projects that generates both science-based technical analyses and hands-on implementation experience at the local level, the USAID Mekong ARCC project engendered considerable credibility and currency with regional and national organizations. Over the course of this year, the project was able to build relationships with regional platform partners, particularly the Asian Development Bank’s Environment Operations Centre (ADB EOC) and the ASEAN Secretariat. These and other partnerships are assisting the project in scaling project results for broader uptake by regional, national and local actors in the LMB.

2.2. Implementation Status

Task I – Regional Platform Partner and Knowledge Center

Key Accomplishments in Year 3

- Developed and disseminated a variety of knowledge products summarizing and synthesizing findings from the main Climate Study that generated significant recognition within the adaptation community of the importance of this study and allowed for the diffusion of its results to target stakeholders within governments, regional platform partners, and implementing organizations.
- Developed and disseminated tools (visual aids, posters) to exchange and discuss understanding on weather and climate change impacts, to capture the community climate stories and convey the scientific climate stories.
- Maintained website traffic and visibility of knowledge products via social media and regional/global adaptation web platforms.
- Disseminated Climate Study GIS datasets for incorporation into planning of key regional platform organizations, such as the Asian Development Bank, the World Food Programme and the Mekong River Commission.

Develop and disseminate a variety of knowledge products

This year, the USAID Mekong ARCC project developed specific knowledge products targeting key audiences such as government officials and policymakers, academia, climate change adaptation implementing organizations and practitioners, the private sector and media. Below is a table detailing the knowledge products developed, their target audiences, and the channels were used to disseminate them.

Knowledge Product	Targeted Audience(s)	Dissemination Channel(s)
1. Updated Key Final Results	Adaptation implementing organizations/practitioners; academia; regional platforms	USAID Mekong ARCC Website; Regional Conferences and networking meetings; Emailed to Partners
2. Headlines of Study	Adaptation implementing organizations/practitioners; academia; regional platforms; Media	
3. Priority Province Profiles	National/subnational government officials; Regional platform institutions; academia	
4. Country-Level Vulnerability Assessment Profiles (Thailand, Lao PDR, Vietnam, and Cambodia) <ul style="list-style-type: none"> • Translations into local languages 	Adaptation implementing organizations/practitioners; National government officials; academia; Regional platform institutions	
5. Project site information and	General public; government	

<p>climate analysis</p> <ul style="list-style-type: none"> • Translations into local languages 	<p>officials; Adaptation implementing organizations/practitioners; Communities</p>	<p>Website; Regional Conferences and networking meetings; community workshops</p>
<p>6. Livelihoods Sector Reports</p> <ul style="list-style-type: none"> • Agriculture • Fisheries • Livestock • NTFPs & CWRs • Protected Areas • Socio-economics 	<p>Adaptation implementing organizations/practitioners; regional platforms; academia; Specific sectors experts</p>	<p>USAID Mekong ARCC Website; Emailed to Partners</p>
<p>7. Climate Change Posters</p> <ul style="list-style-type: none"> • It's going to get hotter • It's going to get wetter • Kien Giang Climate Impact (Vietnamese) 	<p>General public; Adaptation implementing organizations/practitioners; academia</p>	<p>USAID Mekong ARCC Website; Regional Conferences and networking meetings</p>



A villager in Kien Giang, Vietnam shares her understanding of climate threats to her commune using a visual aid developed by USAID Mekong ARCC.

In addition to these knowledge products developed this year, the project team designed the layout of the main report of the Climate Change Impact and Adaptation Study for the Lower Mekong Basin, available in soft- and hardcopy at national government offices, implementing partners, and other relevant institutions in the region.

The USAID Mekong ARCC project also worked with Ecosystem and Community-based Adaption Initiatives implementing partners to create communication products to facilitate community understanding and discussion of localized climate threats and opportunities (see photo at left).

In the first quarter of the next project year, the USAID Mekong ARCC project will complete the design layouts for the Summary Report and six livelihood sector reports.

Website knowledge products and information linked to existing platforms

In year three, the USAID Mekong ARCC project website continued to serve as the main platform for housing and sharing knowledge products and project resources such as the Climate Study, Summary Report, and sector theme reports. The website saw over 13,000 page views, of which nearly 54% represented new visitors. Knowledge products that were most downloaded were the main Climate Study, the Summary Report, and the sector theme reports on agriculture, fisheries and livestock, respectively.

Although a majority of visitors came to the website using a direct weblink, organic search and referrals from partner sites and regional adaptation web platforms, social media, such as Facebook and Twitter, also helped drive traffic to the website. About 12.5% of traffic to the website came via social media (100 sessions out of total 800 sessions), a slight increase from 10% last year, and about 98% of that traffic from Facebook and Twitter. A significant volume of traffic resulted from retweets by USAID Asia, Lower Mekong Initiative (LMI), and DAI's global twitter account, as well as those of partners. At the end of FY2014, the project Facebook page had 258 likes, nearly double the amount from year two.

Referrals from other websites included implementing partners such as AMDI, regional knowledge sharing networks, such as Evidence on Demand, the Lower Mekong Initiative and the Greater Mekong Subregion Environmental Operations Center (GMS-EOC), as well as DAI's global webpage.

In addition, the project shared and posted project-related information to existing adaptation web platforms such as APAN (Asia Pacific Adaptation Network), CAKE (Climate Adaptation Knowledge Exchange), PreventionWeb.net, SEA Change, weAdapt.org, Vietnamese NGO Centre, IISD Reporting Services/Climate-L Forum.

Also this year, the project team sent out the project e-newsletter to email subscribers about the announcement of the final Main Report and select updates on the project website and blog. This contributed to 155 email subscribers by the end of FY2014.

Next year, the project team will continue exploring ways to grow and diversify traffic to the website and start identifying a sustainability plan for the key knowledge products and information housed on the project website, and disseminated among existing platforms.

Strengthen engagement with media

In the first quarter of year three, the USAID Mekong ARCC COP, Paul Hartman, and USAID Contracting Officer's Representative Brad Philipps, were interviewed by International Center for Tropical Agriculture (CIAT) for a news article featured on their website. The interview highlighted the main findings for the LMB from the Climate Study, and helped affirm similar findings from CIAT research in South America indicating that coffee growing regions can shrink as temperatures and rainfall patterns change. The article, which appeared on both CIAT's and USAID Mekong ARCC's websites can be found here: <http://mekongarcc.net/news/ciat-inspired-mekong-study-highlights-climate-concerns>

Other engagement with the media during the year included co-supporting citizen journalist trainings with IUCN Thailand in Sakon Nakhon and Chiang Rai, Thailand to train journalists and volunteers to help mobilize development in their communities. The trainings were facilitated by Thai PBS, who subsequently aired clips from the trainings on Thai national television and online, helping raise awareness about the USAID Mekong ARCC project.

In the first quarter of year four, the project will include in its communication strategy a plan for strengthening engagement with the media about the community adaptation activities in Cambodia, Lao PDR, Thailand, and Vietnam.

Support national government and regional platform efforts to disseminate climate change adaptation information to relevant regional actors

During year three, the project shared key findings from the Climate Study at a number regional meetings, conference and forums, and shared datasets from the Climate Study with relevant regional platform actors. The USAID Mekong ARCC COP presented the Climate Study key findings and community adaptation approach at the Federation of Asian Bishops Climate Change Seminar, the Lower Mekong Initiative Regional Working Group meeting, the CGIAR R4D Collaboration for Climate Change in Southeast Asia meeting, the Asian Development Bank (ADB) Greater Mekong Subregion Working Groups on Agricultural Knowledge and Environment event on the food-energy-water nexus, and the ASEAN-EU Dialogue on Climate Change. Additionally, the project shared datasets with ADB's Greater Mekong Subregion Environmental Operations Center for usage by the Climate Resilience and Road Improvement Project in Cambodia, with ICEM for their Mekong River Commission Information and Knowledge Management Program, and with the World Food Programme for their Consolidated Livelihood Exercise for Analyzing Resilience (CLEAR) of Cambodia.

Task 2 – Climate Change Impact and Adaptation Study

Key Accomplishments in Year 3

- USAID Mekong ARCC Climate Change and Impact Adaptation Study for the Lower Mekong Main Report was completed and approved by USAID.
- USAID Mekong ARCC Climate Study Summary Report and six livelihood sector reports were completed and approved by USAID.
- Main Climate Study, Summary Report and livelihood sector reports disseminated and publicized using conventional media and online channels.

Finalize and Disseminate Climate Study

This project year, the USAID Mekong ARCC project received USAID approval for the main Climate Change and Impact Adaptation Study for the LMB as well as for the shorter Summary Report, highlighting key findings from the Climate Study. Once USAID approval for these reports was received, the project team began disseminating them and their findings via numerous channels and regional platforms as described in the previous section, “Task 1 – Regional Partner Platforms and Knowledge Center”.

Develop and Disseminate Livelihood Sector-themed Reports

Also during the year, the USAID Mekong ARCC project completed six livelihood sector reports drawing on thematic areas mentioned in the main Climate Study – livestock, fisheries, agriculture, socio-economics, protected areas and non-timber forest products. These reports serve as focused briefs for quick reference on the aforementioned themes. These six livelihood sector reports have been completed and approved by USAID.

Submit articles on Climate Study results to Peer-reviewed Journals

In the first quarter of the next project year, the USAID Mekong ARCC project will engage Science Editor, Shelley Gustafson, to produce an article for peer-reviewed journals on the project's study results and how they are being incorporated into community adaptation planning. Having the Climate Study data and community approach published in a peer-reviewed journal is necessary to reach key actors in government and academia who shape the discussion about climate change adaptation worldwide, particularly through the IPCC Assessment reports. These IPCC reports most often will rely on information found in robust journals than in project reports, which are considered 'grey' literature.

Task 3 – Integrated Community and Ecosystem-based Adaptation Activities

Key Accomplishments in Year Three

- Selected and contracted implementing partners for community-level adaptation planning and implementation in six hotspot provinces in Lao PDR, Thailand, Cambodia and Vietnam.
- Completed baseline socio-economic and climate change awareness profiles for each site.
- Completed site threat and vulnerability analyses based on projections of the Climate Study as a key resource, community climate stories, science stories that drew from scientific projections, and final participatory threats and vulnerability assessments for each community.
- Communities better understand climate change vulnerabilities to inform adaptation planning through an adaptation decision-making process combining both the community and scientific knowledge.

Through Task 3 Community Adaptation Initiatives, the USAID Mekong ARCC team tested and is demonstrating how communities in the Lower Mekong Basin can use scientific climate information and local understanding to identify and address current and future climate vulnerabilities and threats. The *Climate Impact and Adaptation Study for the Lower Mekong Basin* identifies eight "hot spot" provinces that will likely see the greatest changes in terms of temperature increases, changes in rainfall patterns and volumes, and increased flooding from sea level rise. The USAID Mekong ARCC project team targeted six of these "hot spot" provinces¹ to test and support community adaptation initiatives. The project team continued with adaptation activities in Lao PDR, Vietnam and Thailand. Late in the year USAID/Cambodia agreed that USAID Mekong ARCC could partner with the World Food Programme (WFP) to support community adaptation initiatives in Kampong Thom.

¹ USAID/Cambodia initially determined that Mekong ARCC should not carry out activities at the field level in Cambodia, but during the project year agreed to community engagement work in the Kampong Thom "hotspot" province. USAID/Vietnam also ruled out Gai Lai province in Vietnam for project activities, but allow for field work to be carried out in Kien Giang hotspot province.

Selection of Implementing Partners

The USAID Mekong ARCC team selected implementing partners (IPs) for supporting community-level adaptation planning and implementation using a competitive bidding process. This process focused on selecting IPs that could work in five hotspot provinces in Lao PDR, Thailand and Vietnam, as USAID/Cambodia had not yet agreed to project activities in Cambodia. Given the relatively short timeframe for working with communities (less than two and a half years), the USAID Mekong ARCC team only considered IPs that demonstrated:

- Recent and ongoing work with communities in identified provinces,
- Proven relationships with local community and government officials; and
- Knowledge of applying community-based and ecosystem-based adaptation methods to support climate planning at the community level.

Through this competitive process, the USAID Mekong ARCC team selected the following IPs for selected community sites that represented five distinct ecozones within the Lower Mekong Basin (see Fig. 1):

- IUCN Thailand in Chiang Rai and Sakon Nakhon Thailand
- IUCN Lao PDR in Khammouan Lao PDR
- WWF in Champasak, Lao PDR (WWF)
- AMDI-Vietnam Red Cross in Kien Giang, Vietnam (AMDI-Vietnam Red Cross)



Figure 1: Map of Implementing Sites and Ecosystems

Changes During the Year

Two notable changes occurred during the year that impacted initial plans for the next stage of project implementation. In April, WWF withdrew from the project citing their inability to secure a Memorandum of Understanding (MoU) with the government of Laos to expand their operations in Champasak for the Mekong ARCC activities. At the same time, Mekong ARCC was approached by the World Food Programme country office in Cambodia to consider a potential partnership supporting community vulnerability analyses and adaptation planning in Cambodia. USAID/Cambodia gave the green light, so efforts began later in the year to identify communities in Kampong Thom that could participate in the Mekong ARCC program. By the end of the project year, this work had just begun.

Socio-economic and Climate Change Awareness Baseline Report

Between February and June of year three, each Community Adaptation Initiative Implementing Partner (IP) conducted baseline studies of the communities within their targeted sites to

measure community knowledge, attitudes and practices related to climate change and identify community perceptions of vulnerability. IPs surveyed approximately five percent of the working age population in each community, and from these interviews (total of 679), developed socio-economic profiles for each targeted site. The survey was designed to elicit information about each community’s awareness about climate change and the threats it poses to their livelihoods and well-being.

The IPs used the findings to develop a baseline of awareness of weather changes and climate change and site profiles summarizing the local geographic and socio-economic conditions, and describe current development and climate change coping activities being undertaken by community members. Summary findings from these baseline reports include:

- Most community members at all sites engage in agriculture and animal husbandry, and gather products from nearby forests and waters for both food and income.
- The vast majority of community members interviewed noticed significant changes in the weather within their lifetimes (83%).
- Most respondents reported that they began noticing significant weather changes in the last five to ten years, particularly in terms of increasing temperatures, changing rainfall patterns and increased flooding. The type of weather changes and frequency of responses are shown in red in Figure 2 below.
- Virtually all villagers interviewed reported declines in crop yields, shortages of water at times during the year, and increased incidence of sickness and diseases among village members that they attributed to the changing climate. These livelihood impacts and the relative frequency that they were noted by respondents is depicted (in green) in Figure 2 below.
- Overall, the study found that more educated villagers were also more likely to be aware of and concerned about climate change.

More frequent natural hazards



Figure 2: Perceptions of Climate Changes and Their Impacts

Community-level Vulnerability Analysis and Adaptation Decision Making

At the launch of field work subcontracts from December-February of year three, the Mekong ARCC team conducted a round of preparatory meetings with each IP to clarify the technical expectations, USAID requirements and the general process they wanted each IP to follow in using the Mekong ARCC climate study to inform community vulnerability analyses and adaptation decision making. The process envisioned by the Mekong ARCC team is shown in Figure 3 below.

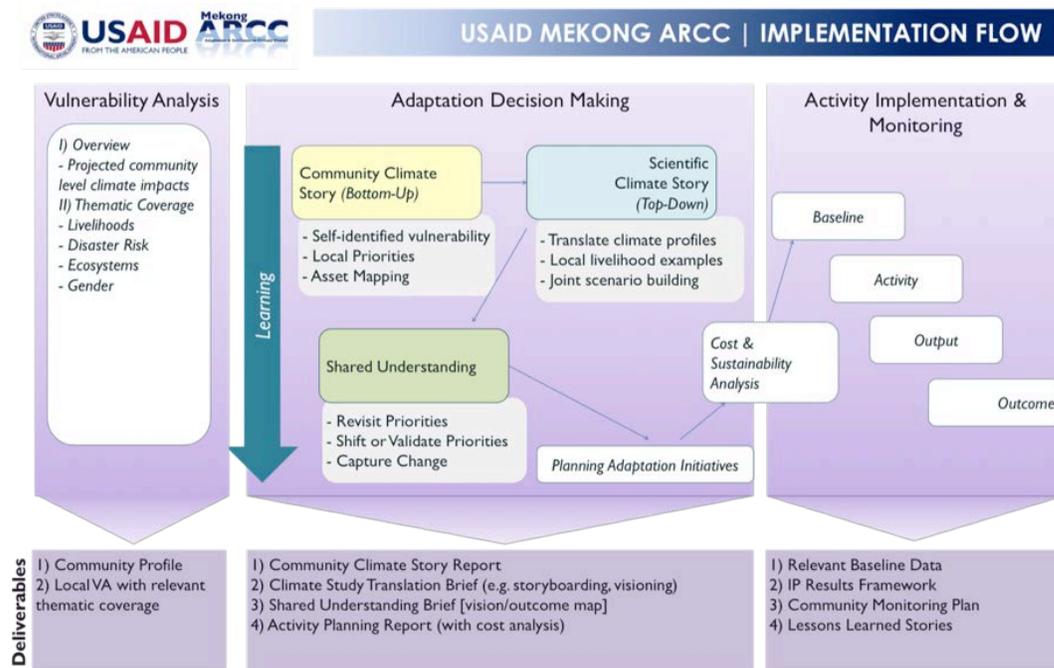


Figure 3: Top Down and Bottom Up Vulnerability Analysis and Adaptation Planning

While each IP was free to apply their own approaches in working with communities, the Mekong ARCC team expected each IP to complete the following steps and reports:

- **Vulnerability Analysis.** Since each IP was already carrying out activities in the targeted provinces and had first-hand knowledge of the area, they were asked to conduct a community vulnerability analysis by drawing on existing information and their in-house expertise. The objective of these vulnerability analyses was to identify existing community vulnerabilities and serve as a guide that the IPs could use in planning their work with the communities.
- **Community Climate Story.** The objective of the community climate story was for community members identify what they saw as both the climate and non-climate threats and their vulnerability to these threats. To develop these community climate stories, IPs led community members through a process to: (1) Identify their financial, physical and natural assets, and prioritize those resources upon which they most depend; (2) Map a typical annual agricultural production cycle and overlay this with the climate calendar to highlight times of the year when extreme weather puts crops, livelihoods and community well-being

at risk; and (3) Describe trends in both climate and non-climate hazards to understand how the communities perceive these to be changing over time. Through this “bottom up” discussion, IPs helped community members articulate how weather is changing in their area and how these changes are impacting them. See Annex C for the design of the Community Climate Story design developed by the USAID Mekong ARCC project team.

- *Scientific Climate Story.* The IPs introduced community members to the climate analyses and projections from the Mekong ARCC climate study and their localized VA for their area. Using different participatory tools, IPs helped community members understand these “top down” scientific climate projections. They then asked community members to describe how the scientific climate change projections related to the weather extremes they were currently experiencing, and how these would exacerbate current threats like droughts and floods that would impact the crops, livestock, fisheries and NTFPs they depend on for food, shelter and livelihoods. See Annex C for the design of the Scientific Climate Story design developed by the USAID Mekong ARCC project team
- *Shared Understanding.* IPs assisted the community members to integrate the “top-down” climate science into their “bottom up” community climate story and reach a shared understanding among the participating members of the present and future climate threats and vulnerabilities. This shared understanding of vulnerabilities provides the foundation for community adaptation planning, priority setting and action in the coming years. See Annex C for the design of the Shared Understanding design developed by the USAID Mekong ARCC project team.

Results of Community-level Awareness Surveys, Localized Vulnerability Assessments and Adaptation Decision Making Process by Community Site

The following discussion of each site pulls from information collected through the Socio Economic and Climate Change Awareness surveys and different analyses conducted through the Community-level Adaptation Decision Making process.

Khammouan, Lao PDR

The Nakai district is one of the nine districts in low-lying Khammouan Province of Central Lao. IUCN Lao PDR works in two villages of the district—Ban Kouane and Ban Xong comprised of six sub-villages. These villages are located in the narrow river valleys of the limestone mountains

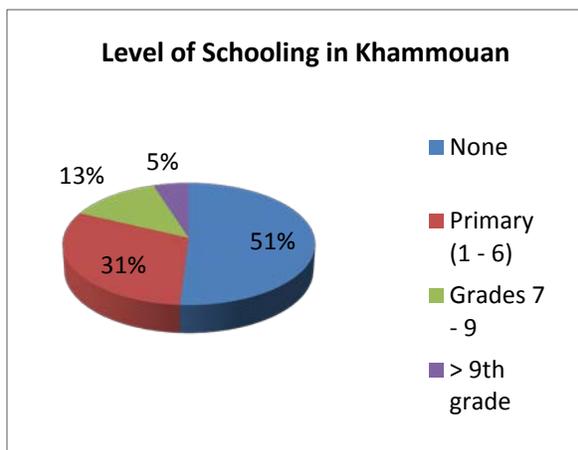


Chart 1: Level of Schooling in Khammouan

inside the Phou Hin Poun National Biodiversity Conservation Area. The villages are comprised of 400 households and 2,093 people, and cover an area of 2,555 hectares. Most of the land is agricultural area, community forests or protected areas. Access to these villages becomes extremely limited in the wet season. The people living in these villages are quite poor. Nearly 65% of the households earn income below the national poverty line of \$22/month, and less than half have a permanent home. Most households generate income from the sale of rice and livestock.

Households supplement their diets and income by gathering wild plants and animals from the forest and streams.

The overall level of education in the target area is quite low. More than 80% of the villagers have less than a 6th grade education (see Chart 1). In spite of this limited education, approximately 65% of the people profess some understanding of the term climate change (see Chart 2). However, this knowledge does not translate into concern as approximately two-thirds of those who say they have an understanding of climate change show little to no concern about its impact on their livelihoods and well-being.

More than 50% of the villagers access and receive weather information at least weekly. The primary source of weather information is via radio and television supplemented by printed media and family and friends.

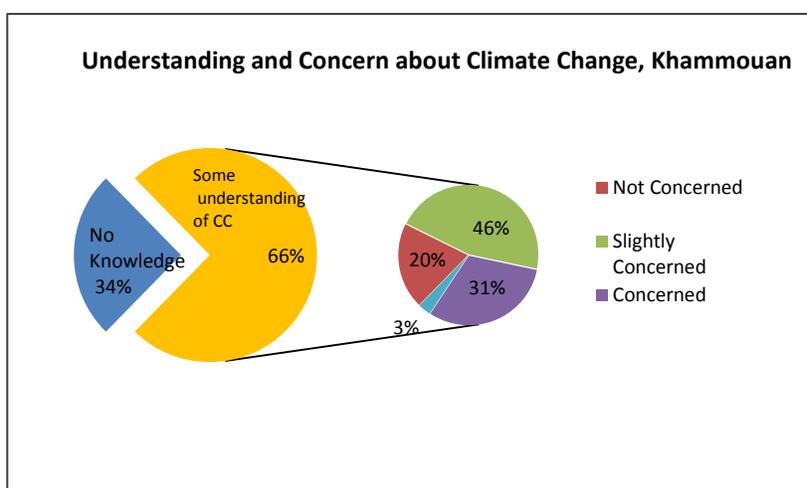


Chart 2: Understanding of Climate Change in Khammouan

Principal Livelihoods. Virtually all villagers in the area live by raising crops and livestock, capturing fish and other aquatic animals in the rivers and streams, and collecting NTFPs for food and medicine.

Summary of Localized Vulnerability Analysis. The localized vulnerability analysis carried out by IUCN highlighted two principal climate threats: 1) increasing frequency and severity of rainfall events within the four-month rainy season that already causes flooding and landslides, cuts off access to outside markets and threatens crops and livestock; and 2) increasing temperatures that already impact crop yields and livestock productivity. Based on this analysis, and the socio-economic survey, they ranked the threats and impacts as follows:

Table I – Top Ranked Weather Changes and Effects in

Top Ranked Weather Changes	Top Ranked Effects of Weather Changes
1. Increasing temperatures	1. Low crop yields
2. Change in rainfall frequency/severity	2. Shortage of water for crops
3. Change in flood intensity	3. Shortage of water for household needs

4. Frequent natural hazards	4. Low NTFP yields
5. Stronger winds	5. Low livestock/fisheries production

Community Climate Story. IUCN and USAID Mekong ARCC project staff facilitated meetings to help community members refine their own perceptions of how changing weather patterns are impacting the community. A majority of community members had noted changes in weather, particularly over the past five years, and were also noticing how these weather changes were impacting rice and livestock production, and the availability of fish, crabs, frogs and eels in the streams. Through a priority setting process, the community identified increasing temperatures during the dry season as a cause of significant concern, particularly as it leads to lower water in the streams that impacts capture fisheries and the growth of important NTFPs. Interestingly, the villagers did not perceive the increasing severity of rainstorms and particularly the flooding these storms cause as a significant threat.

Introduction of the Scientific Climate Story. IUCN and USAID Mekong ARCC project staff presented the climate projections developed from the Mekong ARCC Climate Study and localized VA for Khammouan province to the community members and facilitated discussions with villagers to help them better understand how these projections related to current weather conditions and what they would mean for the sustainability of livelihoods.

Shared Understanding of Vulnerabilities and Priorities. The villagers revisited the community climate story in light of the climate change projections presented in the scientific climate story, and reassessed their vulnerabilities to current and projected climate changes threats. This fostered a shared understanding among community members that their greatest vulnerability stemmed from the following: the unpredictability of rain and dry season onset and ending; the increasing frequency of storms and the flooding and landslides these caused; and, increasing temperatures and their impact on agricultural productivity, particularly during the dry season.

Potential Strategies for Coping with Climate Change. From the discussions, villagers in Khammouan identified several strategies they could undertake to be better prepared for the types of changes in weather they currently experience. These included:

Improving agricultural production by -

- Water storage and introducing irrigation
- Better sources of weather information to provide early warning of weather changes
- Introducing and testing climate-resistant crop varieties
- Diversifying farming systems

Improve animal husbandry by -

- Improving water storage for livestock
- Fodder production
- Diversifying animal production

Improve the management of NTFPs by -

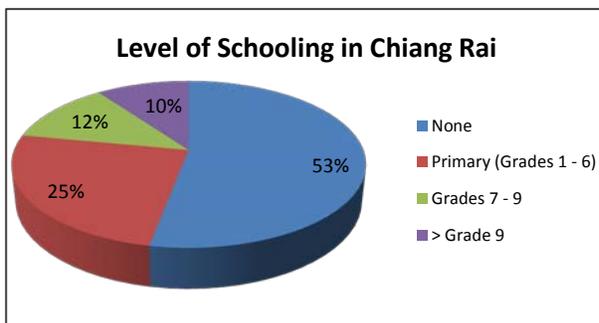
- Introducing fire and drought resistant varieties
- Establishing forest management plans to protect against overharvesting
- Domesticating NTFPs
- Seasonal restrictions on harvesting

Strengthen resilience to natural disasters by -

- Constructing water storage and piping systems for household use
- Improving housing construction to better resist extreme weather events

Chiang Rai, Thailand

Chiang Rai is the northernmost province of Thailand. The target villages - Baan Loh Yo, Baan Hae Ko, and Baan Huai Kang Pla - are connected through the Mae Chan watershed, a sub-basin of the Mae Kok River Basin. They are located in western Pa Tueng Sub-District approximately 50 km from Chiang Rai City. Baan Loh Yo is inhabited by the ethnic minority Akha hill tribe people and comprises 60 households and 600 individuals. Baan Hae Ko is inhabited by an ethnic Lisu hill tribe community and is made up of 49 households and 282 individuals. Baan Huai Kang Pla is situated in the lower reaches of the watershed in the east of Pa Tueng Sub-District and contains 326 households and 2,177 individuals. Most of the land is agricultural and community use forest areas. The total land area of the three villages is 1,284 ha. There is year-round access to the villages. The villages rely on both subsistence and income generation activities. Primary means of livelihoods include: corn and rice production, fruit orchards, livestock (chickens and pigs) and NTFPs. One village captures wild fish while another produces peanuts.



In terms of education, more than half of the villagers had no formal education, while half of those with some schooling had not progressed beyond primary grades (see Chart 3). This limited access to schooling is likely because most community members were from ethnic groups and lacked Thai citizenship identification.

Chart 3: Level of Schooling in Chiang Rai, Thailand

According to the surveys, approximately 88% of the respondents indicated awareness and understanding of climate change (see Chart 4). Most noted changes in climate over the past 5 to 10 years, like the other target communities. Their primary source of weather information is from local radio and TV media. Villages access weather information a few times per year when planning crop planting and harvesting. To date, none of the villages have factored climate change into long range planning nor have they developed any plans for adapting to expected changes in climate.

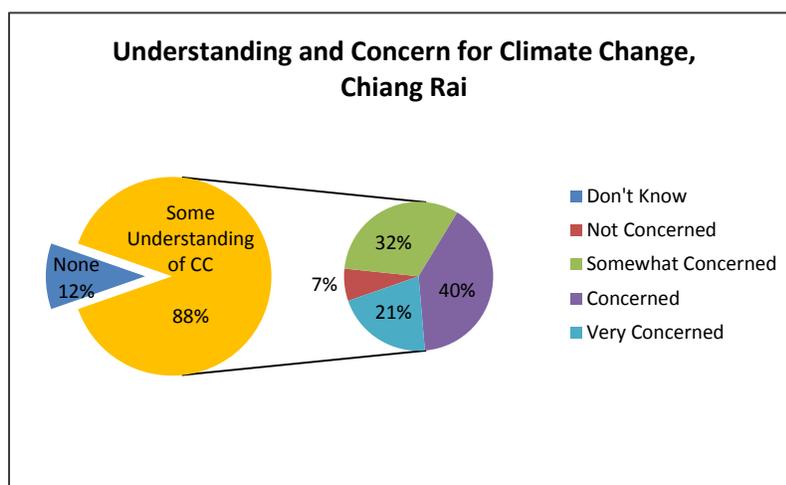


Chart 4: Understanding of Climate Change in Chiang Rai

Principal Livelihoods. Virtually all villagers in the area live by raising crops and livestock and collecting NTFPs from nearby forests for food and medicine.

Summary of Localized Vulnerability Analysis. The Mekong ARCC Climate Study indicates that Chiang Rai will experience large rainfall increases between 9 - 18% and temperature increases of 5 – 8%. In its localized vulnerability analysis, the IUCN team identified the following climate-related threats and their impact. The most impacted crops were upland rice, maize, fruits and coffee.

Table 2 – Top Ranked Weather Changes and Effects in Chiang Rai

Top Ranked Weather Changes	Top Ranked Effects of Weather Changes
1. Increasing temperatures	1. Low crop yields
2. Changes in Rainfall	2. Shortage of water for crops
3. Unpredictable weather	3. Shortage of water for household needs
4. Frequent natural hazards	4. Damage to houses, land and infrastructure
5. Increased flood intensity	5. More diseases among family members

Community Climate Story. As noted above, a high percentage of community members recognized that weather was changing and were concerned about these changes. Through facilitated meetings with groups of 30 – 60 villagers in each community, the IUCN team helped community members identify and prioritize climate threats and how these would impact their livelihoods. In these discussions, community members identified their primary concerns as drought, storms and intense rainfall causing flash floods, along with increasing temperatures. They believed these changes were impacting yields of crops such as upland rice, maize and fruits, reducing the availability of important NTFPs and even impacting village water supplies.

Introduction of the Scientific Climate Story. IUCN staff presented villagers with the downscaled climate information development by Mekong ARCC for Chiang Rai and facilitated discussions

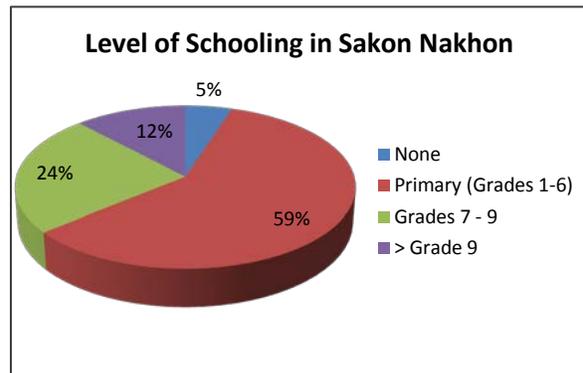
among villagers on how they perceived these longer range changes would impact their agriculture, livelihoods, health and infrastructure. These led community members to identify a much wider range of likely impacts that will affect their livelihoods and well-being in the coming years.

Shared Understanding of Vulnerabilities and Priorities. After re-assessing the community climate story in light of the broader list of potential climate changes impacting their specific crops, livelihoods and health, villagers had a shared understanding of their community’s vulnerabilities to unpredictable, intense rainfall and severe drought during the dry season. From this shared understanding, the community members, with IUCN’s help, identified several potential adaptation strategies, including:

- Shifting the timing of planting and harvesting to when rains are more assured for crops like rice and maize.
- Vaccinating pigs and chickens that are particularly vulnerable to increased incidence of disease during periods of high heat.
- Building check dams and digging ponds to store water for crops and livestock use in dry seasons.
- Re-foresting degraded forest areas as sources of NTFPs and improved watershed management.

Sakon Nakhon, Thailand

Sakon Nakhon Province is adjacent to the highland plateau of the Phu Phan Hill in northeastern Thailand. The surveyed Kok Klang Village or Baan Kok Klang is located in Sakon Nakhon’s Tao Ngoi District, in the Nam Phung River Basin. The Nam Phung River connects the village to the Mekong River via the Songkhram River Basin. Baan Kok Klang has a population of approximately 1,143 people across 454 households. Almost all village members are ethnic minorities consisting principally of Yor, in addition to So, Kaleung, Lao, and Phutai. Land tenure is complex – a combination of preserved forest with some areas given to villagers under usufruct rights to farm and live on. The total land area is approximately 4,800 ha.



Community livelihood activities are for both subsistence and income generation. The villagers make use of the nearby forest, which is part of the Phu Pha Yon National Park, for their living. Kok Klang has about 1,400 hectares of community forest; however, an official request for it to be declared as community forest under the Community Forest Act is yet to be submitted.

Most of the villagers surveyed had attended school, but the majority had not progressed beyond the primary level (see Chart 5). Similar to other sites, survey respondents indicated a good awareness of climate change with 60% expressing some level of concern about how climate change will impact their livelihoods and wellbeing (see Chart 6). In interviews respondents

noted that they track and use weather information, mainly from the radio and TV, in making agriculture decisions.

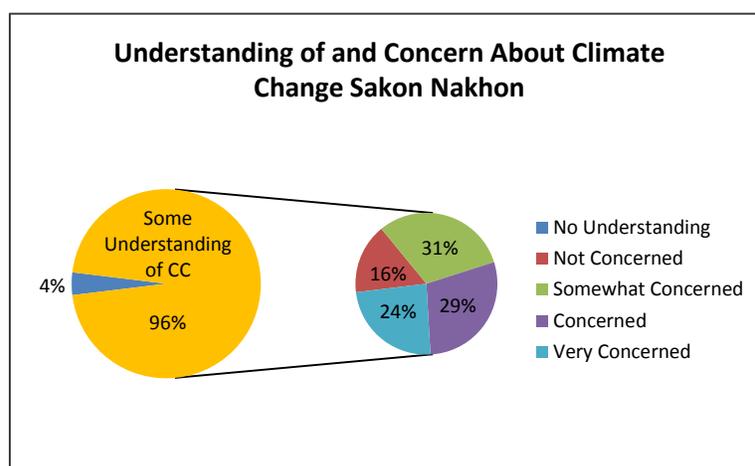


Chart 2: Understanding of Climate Change in Sakon Nakhon

Principal Livelihoods. Community members derive their livelihoods from harvesting NTFPs for food and medicine, cattle husbandry, and working on nearby rubber plantations. They also grow cassava, sugarcane, and rain-fed rice as commercial crops.

Summary of Localized Vulnerability Analysis. The Mekong ARCC Climate Study indicated that Sakon Nakhon will likely experience rainfall increases up to 13% and temperature increases of 5 – 6%. The largest impacts these will have stem from the timing and amounts of rainfall, and more intense droughts during dry seasons. The localized vulnerability analysis and socio-economic survey conducted by the IUCN team projected the following changes in climate and how these will impact livelihoods and well-being.

Table 3 – Top Ranked Weather Changes and Effects in Sakon Nakhon

Top Ranked Weather Changes	Top Ranked Effects of Weather Changes
1. Changing rainfall	1. Low crop yields
2. Increases in temperature	2. More incidence of disease among family members
3. Shifting seasons	3. Shortage of water for household needs
4. Frequent natural hazards	4. Low NTFP yields

Community Climate Story. The IUCN team facilitated discussions among community members from Kok Klang to help them articulate what they see as the principal climate and related threats and how these are impacting their livelihoods. From these discussions, villagers identified two principal climate threats – unpredictable and intense rains which make farming more difficult and cause flooding and more intense droughts during the dry season which has increased the risk of forest fires. Community members believed the livelihood pursuits most at-

risk as a result of these changes in climate were the collection of NTFPs which they use for both food and handicrafts, available water supplies during the dry season for household and livestock needs, and livestock production.

Scientific Climate Story. IUCN staff presented the villagers with the downscaled climate information developed by Mekong ARCC for Sakon Nakhon and facilitated discussions with villagers on how this information would inform how they perceived longer range climate vulnerabilities and risks to livelihoods. Villagers then expanded the range of likely impacts on crops, livestock, fisheries and NTFPs beyond what they had previously identified. Of particular note, villagers recognized that their primary cash crops of rubber and cassava were at risk along with chickens, pigs and the cultivated and wild fish that they rely on for food.

Shared Understanding of Vulnerabilities and Priorities. The villagers reviewed the community climate story in light of the broader list of potential climate impacts and ranked how the climate change projections would impact crops, livestock and NTFPs. Through this process, community members placed greater importance on the impacts of temperature, storms and floods on their livelihoods with fisheries (both farm and wild) followed by NTFPs, rubber and chickens. As a result, villagers considered diverse adaptation options such as enrichment planting within the forests, increasing water storage/retention, and identifying other crops they might grow to replace cassava production.

Kien Giang, Vietnam

Kien Giang Province is located on the coastal plain of the Mekong Delta in Southern Vietnam. The province’s landscape consists of intensively farmed rice paddies and accompanying waterways and road networks. The target community is the Thuan Hoa Commune in An Minh District, approximately 50 km south west of the province’s main city Rach Gia. Bordering the ocean and with an average elevation of 0.2 – 0.4 meters, this area is particularly susceptible to flooding and sea level rise. The commune site was once part of the U Minh Thuong National Park, one of the most important wetland parks in Vietnam, until most of the land in the commune was cleared for development. The commune covers a total land area of 8,246 ha and has a population of 16,401 spread among eight villages and 3,622 households. As indicated in the community resource map below, the commune is divided into four distinct livelihood zones: mudflat, mangrove forest, aquaculture zone, and the rice-shrimp zone.

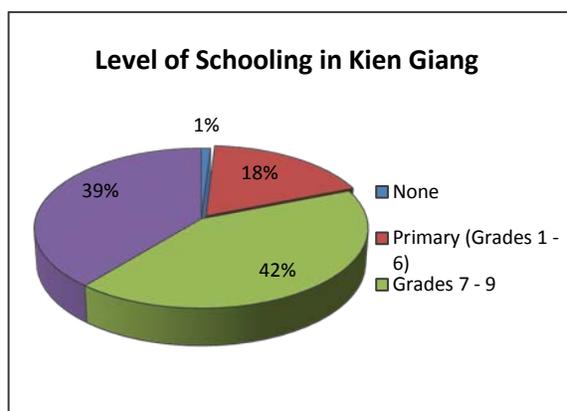


Chart 3: Level of Schooling in Kien Giang

Most of the population in Thuan Hoa has received some schooling though with a significant gap between men and women (see Chart 7). For example, nearly three times as many women are illiterate (14%) compared to men (5%). Similarly, women are half as likely to advance beyond primary education (21%) compared with men (44%).

This variation along gender lines in education levels correlates with local knowledge and understanding of climate change (see Chart 8). While only 36% of the population surveyed had

heard of climate change, men were more than twice as likely to have heard about and have some understanding of climate change compared to women (40% compared to 16%). And while most of the people surveyed had noted changes in weather and flooding in recent years, few grasped how these changes related to larger climate trends.

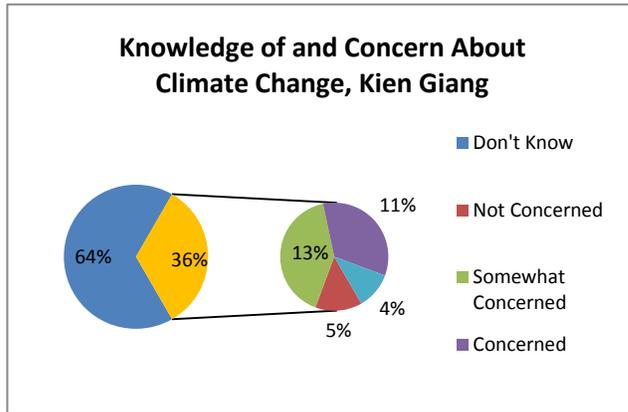


Chart 4: Understanding of Climate Change in Kien Giang

Principal Livelihoods. The primary livelihood activities in Kien Giang revolve around aquaculture (shrimp, cockles, fish and crabs), supplemented by rice production and NTFP harvesting. Aquaculture products are raised for cash and consumption, while crops and livestock are chiefly for consumption. Approximately 20% of the households in Thuan Hoa Commune live below Vietnam’s poverty line for rural areas, approximately \$150 per year per capita.

Summary of Localized Vulnerability Analysis. The Asian Management and Development Institute (AMDI) used the climate projections developed by Mekong ARCC to prepare an initial vulnerability analysis for Kien Giang province. While the average annual precipitation in Kien Giang is projected to increase only by 5 – 8%, rainfall will come in a more compressed and defined six-month rainy season with daily rainfall reaching 5 cm. Conversely, the six-month dry season will be much drier with monthly reductions in average rainfall of up to 10%. Year round average temperatures are projected to increase by 2 - 3°C with maximum temperatures reaching almost 42°C. In addition to these projected rainfall and temperature changes, the province expects to see large areas of flooding up to depths of one meter as a result of both sea level rise and increased rainfall intensity by 2050. AMDI looked at how these changes are impacting households in the four zones.

- The government has divided the 1,000 hectare mudflat area into parcels up to 5 hectares and contracted these to households for capture fisheries. Households use these lands to capture fish and collect cockles and clams. This area is highly susceptible to sea level rise and storm surge.
- The 1,150 hectares of mangroves are considered protected forest. Approximately 300 households have been given a usufruct right to collect NTFPs and clear up to 30% of their areas for aquaculture. This area too is susceptible to sea level rise and salinity levels vary dramatically between the wet and dry seasons.
- The aquaculture zone consists of semi-extensive ponds used to produce cockles, crabs and shrimp. These ponds are susceptible to widely changing salinity, flooding during the rainy season and to high temperatures during the dry season.

- The rice-shrimp zone is the most important. Farmers produce rice during the rainy season and shrimp during the dry season. However, because income from shrimp production is much higher, many farmers have pushed the shrimp production period, resulting in increasing salinity in the soils.

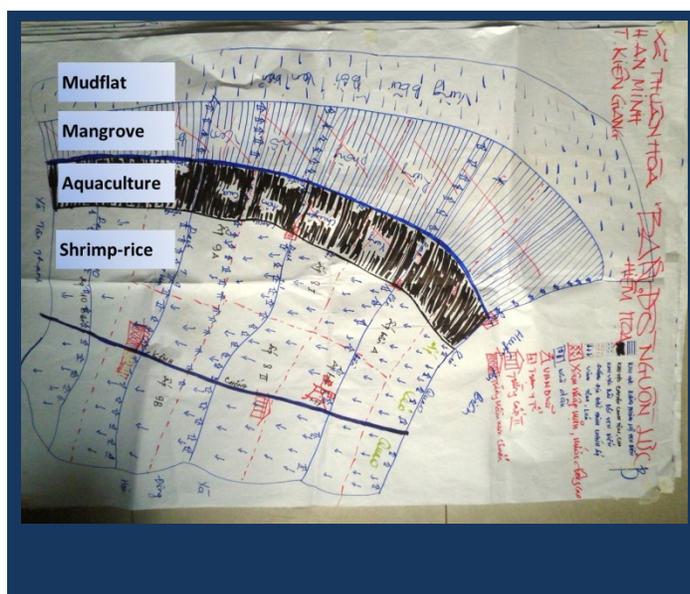


Table 4 – Top Ranked Weather Changes and Effects in Kien Giang, Vietnam

Based on their knowledge of the area, AMDI ranked the principal climate threats and their

Top Ranked Weather Changes	Top Ranked Effects of Weather Changes
1. Increasing temperatures	1. Low fisheries/livestock production
2. More disasters – unpredictable weather	2. More diseases among family members
3. Rising tides/sea level/salt water intrusion	3. Low crop yields
4. Longer dry seasons	4. Loss of jobs
5. Increased/intense rainfall	5. Increasing soil and water salinity

impacts on livelihoods as shown in the following table.

Community Climate Story. The AMDI team, and their partner the Vietnam Red Cross (VNRC), facilitated a series of focus group discussions and community mapping exercises with village members. Through these, they mapped the seasonal production calendar and captured village perceptions of how storms, drought, prolonged hot weather and salinity were impacting their livelihoods. Villagers recognized that changing weather and rising sea levels were posing significant threats to both aquaculture and rice cultivation. From their perspective, the greatest challenges include:

- Loss of shrimp, crab and cockle harvests during the rainy season due to reduced salinity in estuaries and ponds
- Lower rice yields due to increased salinity in the soils and irrigation water
- Protected areas shrinking from increased exploitation and also becoming less productive
- Fewer day labor employment opportunities as a result of the above.

Scientific Climate Story. Building on the community’s climate story, AMDI and VNRC introduced community members the climate projections developed by Mekong ARCC for Kien Giang and how these related to the changing weather patterns villagers currently experience. Through facilitated discussions, the villagers gained a better appreciation of climate trends and what these meant for current land uses and production practices in the four zones. While the general types of threats identified by the community members did not change, they did recognize that the threats were increasing and would require changes in current cultivation and management practices if they were to maintain livelihoods, particularly in rice/shrimp farming and aquaculture.

Shared Understanding of Vulnerabilities and Priorities. Through the process of preparing a community climate story and then integrating it with the science climate story, community members reached some shared understanding of the vulnerability of different zones and the livelihoods they support, and began to identify different adaptation strategies for each zone that will form the foundation for adaptation planning and action. These included:

- Monitoring weather closely before seeding baby shrimp
- Deepening areas along rice fields to provide areas with lower temperatures for shrimp
- Increasing the height of pond banks in order to deepen the water levels
- Switching to more salt resistant varieties of rice
- Applying urea and DAP composts to points to lower water temperature
- Strictly following the seasonal production calendar for rice and shrimp
- Planting shade trees around houses
- Limiting outside activities and wearing hats while outside during very hot weather



Outcome mapping helped the Thuan Hoa Commune in Vietnam’s Kien Giang Province prioritize adaptation options.

In the first quarter of the next project year, USAID Mekong ARCC will focus on working with IPs to develop adaptation plans that take into account sustainability and cost, conduct a second awareness survey with the communities and compile key lessons learned across the project sites. Given the importance of aquaculture, an expert has been engaged to carry out an aquaculture gap analysis and to provide specific recommendations for pilots to improve the long term resilience and economic benefits of aquaculture.

Task 4 – Valuing Ecosystem Services in Economic Planning for the Lower Mekong River Basin

Key Accomplishments in Year Three

- Completed the economic values-at-risk (VAR) assessment of climate change impacts in the Lower Mekong Basin.
- Completed drafts of four country-specific guides for valuing ecosystem services in Cambodia, Lao PDR, Thailand and Vietnam.

In Year three, the USAID Mekong ARCC project and partner World Resources Institute (WRI) developed two important studies/reports that will be used by the project to guide and shape adaptation decision-making by national, provincial and local governments in the LMB. The first report undertaken by WRI takes a unique analytical approach to analyzing the economic values at risk (VAR) from climate change in the LMB. The second set of draft reports are country-specific guides for valuing ecosystem services for Cambodia, Lao PDR, Thailand and Vietnam.

Economic Values At Risk (VAR) Study

The VAR study provides information that national governments can combine with the Mekong ARCC Climate study to both understand the climate threats and understand their potential impact on specific economic assets. The report puts a value on the assets at risk that countries can use when devising adaptation options to gauge their relative economic efficiency. In preparing this VAR study, the author tried to apply conservative estimates when valuing specific assets studied - built infrastructure, worker productivity, crop production, hydro-electric power generation and ecosystem services. The methodology for valuing the risks to these assets was as follows:

- (1) Used the climate model information to identify geographic areas that are likely to be affected most by climate change, such as extreme heat waves, drought and sea level rise.
- (2) Identified the key economic resources in these geographic areas that would be impacted by these changes in climate.
- (3) Developed estimates for the economic values of these resources and assets using standard techniques that took into account whether those goods and resources are represented in formal or non-formal markets.

While the VAR study does not generate precise estimates of how climate change costs will unfold nor where such costs will likely occur at a fine spatial scale, it does provide an analytical approach that can be used by national and local governments and other stakeholders to:

- Prioritize adaptation plans and investments
- Assess the cost effectiveness of specific adaptation investments and strategies in relation to the value of economic assets at risk
- Inform planning and land use decisions to avoid actions and investments that lead unnecessary exposure to climate risks.

The VAR approach differs from other approaches that use future climate projections to predict future economic impacts. By estimating the current values of key assets at risk, it offers more understandable insights into the economic consequences of climate change in the LMB. In developing these estimates, the author combined the climate projections and findings from the

Climate Impact and Adaptation Study for the Lower Mekong Basin with information extracted from existing research papers and available data to estimate the current value of built infrastructure, worker productivity, crop production, hydro-electric generation and ecosystem services at risk from projected increases in flooding, drought and temperature. Table 5 below summarizes the estimates of the value of each resource that is at risk from climate change in the LMB.

Table 5 – Summary of Minimum Annual Values at Risk for the LMB

Resource	Mean VAR- (\$2013-millions)
Worker Productivity	\$8,371
Built Infrastructure	\$3,427
Crop Production	\$2,546
Ecosystem Services	\$1,241
Hydro-electric Power Generation	\$434
Totals	\$16,018

Worker Productivity

Per the study, lost worker productivity poses the greatest risk from climate change in the LMB, and makes up approximately 50% of the total resources values at risk from climate change. The study estimated the economic impacts of lost worker productivity in the agriculture and

• • •
 “The economic value of the risks to worker productivity is most surprising. There has been **little to no indication about climate change impacts on worker productivity**, but whether in rural or urban areas, **tens of millions of outdoor workers** – construction workers, farmers in the fields, people gathering non-timber forest products - **are likely to experience greater levels of heat stress and heat-related illnesses** when temperatures start rising above 40C.”

-John Talbert, WRI,
 Author of VAR Report

• • •

construction sectors as a result of temperature rise. Expected impacts caused by temperature rise include several health disorders such as heat rash, transient heat fatigue, heat syncope, heat cramps, heat exhaustion, and heat stroke. These disorders, in turn, are expected to reduce work performance and hours worked and increase accident rates.

Built Infrastructure

The VAR report confined its analysis to the areas with the greatest likelihood of increased flooding with climate change and expected sea level rise of 0.3 meters and floods averaging a depth of 0.5 meters. It looked at both the existing capital stocks of infrastructure that would be impacted as well as the goods and services this infrastructure provides to estimate the impact of increased flooding and sea level rise on local and national economies.

Crop Production

Projected changes in temperature and rainfall are likely to have significant impacts – both beneficial and adverse - on agricultural production. The study looked at two risk factors:

negative shifts in crop suitability with changes in temperature and rainfall and more extensive inundation from flooding and sea level rise for eight commercial crops (rainfed and irrigated

rice, maize, cassava, soya, sugar, rubber and Robusta coffee). Using information modeled by the USAID Mekong ARCC Climate Study team, the study estimates the areas of selected commercial crops that will be impacted in the “hot spot” provinces. It also estimated the amount of cropland likely to be flooded in both hot spot and non-hot spot provinces. The study developed high and low estimates of the value of production at risk by multiplying the total crop area at risk by both low and high yield estimates and the low and high end of market prices that farmers receive as reported by the FAO. It then averaged the high and low estimates to develop the average estimate reported in the summary table.

Hydro-electric Power Generation

Over the past ten years, interest in hydropower has escalated in the LMB accompanied by increasing private sector investment in dams and other power infrastructure. Most Mekong River tributaries now have “cascades of dams in place or planned with some 71 projects expected to be operational by 2030” (ICEM 2010). To calculate the energy production at risk, the VAR study assumed that only those facilities located in tributary reaches predicted to experience significant increases in temperature and increases in agricultural drought conditions would be at risk from climate changes. The study team identified 11 facilities at risk by overlaying the location of facilities with the USAID Mekong ARCC’s modeled spatial data showing locations of projected increases in temperature and changes in agricultural drought months due to climate change. For each facility, the team used the installed capacity multiplied by 0.4 and 0.6 capacity factors to estimate the range of energy production at risk, and then multiplied this production range by two different pricing estimates based on past studies. This analysis showed a value at risk between \$293 and \$575 million which, averaged together, produced the estimated value reported in the summary table above.

Ecosystem Services

In their natural state, forest, wetland, and grassland ecosystems throughout the LMB provide a wide array of goods and services of significant economic value. Climate change threatens many of these ecosystem services and the livelihoods that depend on them through inundation, drought, fires, infestations by exotic species, and isolation and fragmentation of habitat. Climate change also will cause shifts in species distributions with potentially major effects on ecosystem structure, composition and processes. The VAR analysis considered only the ecosystems of highest vulnerability as identified by the Mekong ARCC Climate Study, and tallied the area of each ecozone at risk from either from flooding or adverse changes in temperature and associated impacts such as increased forest fires. Drawing on other studies that had estimated the total economic value of ecosystems and updating these values to 2013 dollars, the team developed a conservative estimate of ecosystem services values at risk of between \$780 million and \$1.6 billion, or an average of \$1.24 billion.

Valuing Ecosystem Services

The four draft country guides prepared by WRI for valuing ecosystem services are designed to show policymakers and other stakeholders how they can use estimates of the valuation of ecosystem services to inform and improve policies and development investment decisions. These reports provide a good overview of the different types of services that ecosystems provide: provisioning (i.e. water, food, energy); regulating and maintenance (i.e. flood control, biodiversity); and cultural (i.e. recreation). Values can be assigned to these services using several different methods such as:

- The actual value assigned the service in an organized market (Revealed preference) such as for non-timber forest products;
- Measuring non-market values such as through surveys that measure willingness to pay for a particular service or the willingness to accept compensation for foregoing an activity (Stated preference);
- Using historical cost data to quantify the costs society would incur if an ecosystem was lost or replaced with a technological solution (Cost basis); and
- Using values derived from detailed studies of similar areas or actions (Benefits transfer).

The report further outlines how government leaders, policymakers and other stakeholders can use ESV to assess development/adaptation strategies and investment options. Examples include:

- Evaluating the economic value produced by protected areas when considering whether to increase or reduce the size of a protected area or areas.
- Analyze and compare the economic benefits/values derived by converting natural forests, grasslands and/or coastal mangroves to commercial agriculture or exploiting them for extractive purposes (i.e. mining or logging) and comparing these values with the values these areas currently deliver in the form of NTFPs, clean water, flood control, etc.
- Hydropower development – comparing the economic benefits created by developing a new dam with any reductions in other environmental services (i.e. products lost to areas being flooded, projected declines in fishery production, etc.).
- Urban growth and green infrastructure – compare costs of different types of investments (hard versus green options) in building design, transportation, flood control, water supply and waste management.

The reports conclude with a discussion of different best practices for setting up and carrying out ecosystem services valuations.

Task 5 – Scaling-Up Successful Approaches

Key Accomplishments in Year Three

- Facilitated the uptake of data from the Climate Study for use in planning by important regional platform organizations such as the Mekong River Commission (MRC) and the Asian Development Bank (ADB).
- Co-organized an ADB Greater Mekong Subregion Adaptation Partner’s Roundtable discussion entitled *“Bridging the Divide: Linking Science-based Adaptation Approaches and Climate Change Policy-making in the GMS”*
- Organized one-on-one meetings and participated in regional conferences and roundtables to present Mekong ARCC studies, analyses, and approaches being taken with communities in Vietnam, Lao PDR and Thailand.

The Mekong ARCC project has a three-pronged strategy for scaling up climate adaptation initiatives across the LMB:

- Collect and disseminate good practices, lessons and technical methods for scale-up to adaptation implementers, governments and regional platforms;

- Support climate change initiatives of regional platform institutions
- Encourage greater investment by national governments in adaptation initiatives through their own budgetary resources and by mapping pathways accessing international financing

Through this strategy, the Mekong ARCC team expects to increase buy-in from regional stakeholders, increase the visibility of specific tested approaches, support a positive feedback loop for information sharing and knowledge transfer, and increase the prospects for long-term funding commitments by governments, donors and international NGOs for adaptation efforts.

Collect and disseminate good practices, lessons and technical methods for scale-up to adaptation implementers, governments and regional platforms

Building on the momentum generated in Year 2 of the project, the Mekong ARCC team continued to present findings from the Climate Study for the LMB to diverse audiences of donors, NGOs and national government agencies. This study continues to generate considerable interest. In addition, the COP has also presented to diverse audiences how Mekong ARCC is linking the “top-down” downscaled climate projections with “bottom up” community vulnerability analysis to inform adaptation planning at a local district/community level. Being a project that generates both science-based technical analyses and hands-on implementation experience at the local level has given Mekong ARCC considerable credibility and currency with regional and national organizations. Through these efforts, Mekong ARCC efforts have become known to:

- Representatives from the governments of Vietnam, Lao PDR, Thailand and Cambodia
- Donor representatives from the Nordic Development Fund, Asian Development Bank (ADB), World Bank, GIZ, UNDP, and USAID’s Climate Change team
- Members of international research Institutions and think tanks such as CGIAR research institutes including the International Center for Tropical Agriculture (CIAT) and Climate Change, Agriculture and Food Security (CCAFS), Commonwealth Scientific and Industrial Research Organization (CSIRO) and the Stockholm Environment Institute (SEI)
- Regional/International NGOs including Institute for Social and Environmental Transition (ISET), the International Union for the Conservation of Nature (IUCN)
- Other USG agencies such as the US Forest Service and Department of State; and
- Regional Networks including the Asia Pacific Climate Change Adaptation Network (APAN) and the Southeast Asia START Regional Center

Support climate change initiatives of regional platform institutions

During Year 3, the project focused efforts on supporting two regional institutions/platforms – the ADB’s Greater Mekong Subregion Environment Operations Center (GMS-EOC) and the Association of Southeast Asian Nations (ASEAN) - that offer opportunities for vertically driven scaling of climate adaptation.

The Mekong ARCC team developed strong working relations with the GMS-EOC that has translated into joint presentations at their annual climate change stocktaking roundtable discussions. These have proven excellent venues for sharing information and engaging with a diverse audience of stakeholders to discuss adaptation challenges and priorities in the LMB. This year’s discussions highlighted the gaps and challenges that exist when trying to link science-

based adaptation approaches with climate change policy. The VAR analysis and country guides for valuing ecosystem services offer specific information and tools that can help address this challenge.

ASEAN represents an opportunity to more directly engage with national government leaders and help shape investment priorities, particularly as the ASEAN Community's integration in 2015 will allow for freer movement of labor among ASEAN Member States (AMS). In anticipation, narrowing the development gap among its members has been a key ASEAN initiative, encouraging greater resources and capacity development support to lower-income Cambodia, Lao PDR, Myanmar and Vietnam (CLMV). Member States have expressed concern about how climate change could create potential security issues through increased climate migration within the region, particularly to the more developed ASEAN States. As such, ASEAN is actively promoting the integration of climate change adaptation into national development planning and budgeting among its Member States, particularly the CLMV countries.

This year, the Mekong ARCC team presented the findings of the Climate Study at the ASEAN Multi-Sectoral Framework on Climate Change (AFCC) partners' dialogue session. In addition, the Mekong ARCC team presented the project's approach to the ASEAN Working Group on Climate Change (AWGCC) and will make a presentation in November to the ASEAN Technical Working Group on Agriculture and Research Development (ATWGARD). These presentations have been well received and are familiarizing the ASEAN Secretariat staff and Member State representatives with the Climate Study findings, and country-level activities now being supported. AFCC Chairman Dato' Haji Raihan bin Sharif noted that Mekong ARCC's top-down research and bottom-up decision-making could serve as an excellent model for integrating science and on-the-ground approaches to help address climate change challenges particularly related to food security.

In addition to ASEAN and the GMS-EOC, the Mekong ARCC team has also met with representatives of the Asia Pacific Adaptation Network and the Center for International Agriculture in the Tropics (CIAT), and is exploring opportunities to post the Climate Study data and papers derived from the community climate adaptation work on the SouthEast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) and WEADAPT websites. The objective is to share both the project's data and lessons being learned by integrating climate science into community vulnerability analysis and adaptation planning with a broader audience of researchers and practitioners engaged in climate adaptation work.

Encourage greater investment by national governments in adaptation initiatives through their own budgetary resources and by mapping pathways accessing international financing

This year, the Mekong ARCC team focused on two approaches for encouraging more investment in climate adaptation. First, the Climate Change Study for the LMB has created opportunities to engage with ASEAN and the GMS-EOC. The Mekong ARCC team is using these opportunities to present the climate information and show countries through its experience how they can translate the climate science into local adaptation initiatives that protect economic assets and livelihoods. Secondly, Mekong ARCC continues to develop analyses and tools – the VAR study and the ESV guides that demonstrate approaches countries can use to better integrate climate adaptation planning into their longer term economic development plans. Combined, these approaches have provided a foundation that Mekong ARCC can build on in the coming year.

2.3. Implementation Challenges

On April 25, WWF requested the termination of its subcontract with DAI citing delays in receiving government approval to operate in Champasak, Laos. DAI agreed to terminate the WWF subcontract and is now working with USAID to explore other options for further work. MONRE in Laos has strongly recommended that the USAID Mekong ARCC project focus on a single community site in Khammouan and consider supporting capacity development of the MONRE Climate Change Division.

While engagement with the World Food Programme (WFP) in Cambodia is overall a significant, positive development for the project, the means by which the project can engage a UN agency in implementation has been a challenge. WFP expressed interest in implementing community adaptation initiatives in Kampong Thom Province with support from Mekong ARCC – which may help to absorb some of the contract monies set out of Champasak. Yet WFP isn't set up to serve as a subcontractor to any project, which has led to delays in finalizing the contracting mechanism. While negotiation of terms took several months to complete, it appears as if an accommodation has been made that will allow the subcontract to be signed in the first quarter of the next project year.

2.4 PMP Update

Throughout FY2014, Mekong ARCC prepared the groundwork for monitoring of field initiatives in order to ensure results reported by IPs meet USAID data collection standards. In parallel, the PMP has been revised for the third time to meet the definitional modification of one of the USAID standard indicators and to better capture field outputs as the community initiatives are being implemented.

Revising the PMP

After face-to-face meetings and several rounds of revision per USAID's comments to fine-tune the PMP, USAID COR and Strategic Information Specialist approved the third PMP in September 2014. Main modifications being made to the PMP are:

- For the indicator 4.8.2-26 "Number of stakeholders with increased capacity to adapt to the impacts of climate variability and change as a result of USG assistance", its two sub-indicators have been changed from "number of communities implementing adaptation strategies" and "number of communities implementing M&E systems..." to "number of community members" on both indicators. Consequently, the FY15 and FY16 targets of this indicator have been changed from communities to individuals.
- The childhood malnutrition indicator has been removed from the PMP.
- Two additional indicators have been added to the PMP including:
 - 1) Number of people aware of climate-resilient livelihood strategies
 - 2) USAID standard indicator 4.8.1-26: number of hectares of biological significance and/or natural resources under improved natural resource management as a result of USG assistance

These two new indicators will more closely capture the outputs of the community adaptation initiatives. The first indicator will show people’s knowledge and skills to employ adaptation strategies as community members need to know that there are alternatives in order to plan for adaptation. The second indicator will reflect the ecosystem-based adaptation approach of the community initiatives by capturing better management of natural resources. This is based upon the reason that well-functioning ecosystems enhance natural resilience and reduce the vulnerability of people to climate change impacts.

Conducting M&E System Assessments with Implementing Partners

To understand each partner’s M&E system, the M&E specialist conducted M&E system assessments with AMDI, IUCN Thailand and IUCN Lao PDR early in the fiscal year. Most assessments were conducted through in-depth interviews, except for IUCN Thailand which emailed their answers to assessment questions. Overall, all partners have strong M&E systems and experience. Below are summaries of the results from each partner’s assessment:

AMDI has expertise in quantitative and qualitative research, attested by many research projects it has conducted. Under this project, AMDI has highly qualified staff members to perform M&E functions. AMDI seems more familiar with presenting research results than monitoring outputs and outcomes from project implementation. USAID Mekong ARCC will need to address AMDI to establish an M&E system that can track project progress for learning and reporting purposes.

IUCN Thailand has a strong track record in implementing and monitoring livelihood development and climate change adaptation projects. Its strengths are participatory programs and M&E approaches. A gap the project identified is IUCN Thailand’s relative lack of familiarity with USAID M&E and reporting requirements. USAID Mekong ARCC is taking the opportunity of IUCN Thailand’s proximity to provide the M&E support that it needs.

IUCN Lao PDR, like IUCN Thailand, is adept in participatory program implementation. However, IUCN Lao PDR also lacks USAID experience, so trainings and technical assistance from the project are crucial. The inaccessibility of the site during wet seasons might hinder project monitoring. USAID Mekong ARCC and IUCN Laos need to plan around these inconvenient times.

Submission of Implementing Partners’ M&E Plans and Indicator Targets

All partners submitted their M&E plans and indicator targets to USAID Mekong ARCC in February. The project team reviewed and provided comments for improving these deliverables, which partners accordingly revised and finalized. The M&E plans and targets are for the required indicators that the project reports to USAID in accordance with the PMP, comprising:

Indicator 1.1 - Number of laws, policies, strategies, plans, agreements, or regulations addressing climate change adaptation officially proposed, adopted, or implemented as a result of USG assistance (Standard Indicator 4.8.2-28)

Indicator 2.1 - Number of stakeholders with increased capacity to adapt to the impacts of climate variability and change as a result of USG assistance (Standard Indicator 4.8.2-26)

Indicator 2.2 - Number of adaptation activities or strategies designed and implemented by communities to reduce gender-specific vulnerability to climate change (Custom)

Indicator 2.3 - Number of people aware of climate-resilient livelihood strategies (Custom)

Indicator 3.1 - Number of climate adaptation tools, technologies, and methodologies developed, tested, and/or adopted as a result of USG assistance (Standard Indicator 4.8.2-8)

Indicator 3.2 - Number of hectares of biological significance and/or natural resources under improved natural resource management as a result of USG assistance (Standard Indicator 4.8.1-26)

The only indicator that the partners are not accountable for is “Indicator 4.1 – Number of regional platforms created or strengthened”, which the project reports directly to USAID.

Baseline Data Collection

Two baseline data collection components have been built into the community implementation phase to understand current livelihoods vulnerabilities and the capacity to adapt to climate change of target communities in Lao PDR, Thailand and Vietnam. The two components are the community profile and the survey of community members’ awareness on climate-resilient livelihood strategies or the awareness survey. To take stock of target communities for adaptation planning, the community profile template was intended to provide a summary of present geographic and socioeconomic conditions in the community, including current development and climate change coping activities undertaken. The awareness survey was aimed to understand the current community knowledge, attitudes and practices around climate change and to assess the baseline for the indicator 2.3, number of people aware of climate-resilient livelihoods strategies.

At the outset, Mekong ARCC trained the IPs on the baseline tools and distributed detailed guidelines on how to collect the data. The IPs completed data collection and reported findings to the project in May 2014. In the process, the Mekong ARCC M&E Specialist worked closely with the IPs to review the community profiles and check their awareness survey data for consistency and accuracy. The final community profile data of all target sites were then compiled and analyzed. The project procured statistical analysis software, STATA, and hired a short-term data analyst to conduct analysis of all the awareness survey datasets.

IUCN Laos presented its key findings to Khammouan villagers in July in the beginning of the Scientific Climate Story and Shared Understanding workshops. AMDI followed the same step with villagers in Thuan Hoa Commune, Kien Giang, in August. By providing feedback to survey respondents, the project not only showed responsibility to community members, who made the survey possible, but it was also a good opportunity to discuss, analyze and better understand the findings with them. The socio-economic and climate change awareness baseline report has been produced and presented to USAID on September 23rd, 2014. Some of the she results are summarized and presented earlier in this report.

In the end of the fiscal year, the project started preparing for the midterm awareness survey data collection including producing a midterm questionnaire and coordinating data collection schedules among the IPs.

M&E Technical Assistance to Implementing Partners

The project developed the M&E Manual for Implementing Partners, providing an overview of Mekong ARCC M&E requirements and guidelines for reporting the required performance indicators. The manual was distributed to the IPs after they were selected. The project M&E specialist further presented the M&E requirements and guidelines to the IPs in the beginning of the fiscal year.

After the first M&E guidelines trainings, Mekong ARCC provided face-to-face and long distance support to the partners through many conference calls, meetings and trainings. The main technical support areas are the Mekong ARCC M&E system, baseline data collection and outcome mapping. An outcome map depicts short and long-term changes a community expects to happen along the way to its ultimate goal. It is the last step under the Shared Understanding process or the integration of both top down scientific information and bottom up indigenous knowledge. The map is crucial to adaptation planning as it helps to make long-term decisions in the changing climate context, and it is a living and changing framework, allowing for adaptive learning and accommodating uncertainties around climate change. From the map, community members will be able to identify progress markers or indicators, forming the basis of community M&E plans. Recorded below are trainings related to M&E conducted throughout the year:

November 2013	1. Training to IUCN Thailand on the Mekong ARCC M&E system and requirements
December 2013	2. Training to AMDI on the Mekong ARCC M&E system and requirements
February 2014	3. Training to WWF Lao on the Mekong ARCC M&E system and requirements 4. Training to IUCN Lao on the Mekong ARCC M&E system and requirements
March 2014	5. Training to the IUCN Chiang Rai Field Coordinator on the USAID Mekong ARCC M&E system and the baseline awareness survey data collection and reporting 6. Training to the IUCN Sakon Nakhon Field Coordinator on the USAID Mekong ARCC M&E system and the baseline awareness survey data collection and reporting
June 2014	7. Training to the IUCN Chiang Rai Field Coordinator on how to facilitate the outcome mapping process 8. Training to the IUCN Sakon Nakhon Field Coordinator and Mekong ARCC Field Coordinator on how to facilitate the outcome mapping process
July 2014	9. Training to the IUCN Lao field team including local government officials on how to facilitate the visioning and outcome mapping process
August 2014	10. Training to AMDI on how to facilitate the visioning and outcome mapping process in Bangkok 11. Training to AMDI and Vietnam Red Cross on how to facilitate the visioning and outcome mapping process in Kien Giang, Vietnam

3. INTEGRATION OF CROSSCUTTING ISSUES AND USAID FORWARD PRIORITIES

3.1. Gender Equality and Female Empowerment – N/A

Women and girls, who make significant contributions to household health and well-being, are disproportionately challenged by the impacts of climate change. As climate change threatens traditional sources of food and income, it makes daily chores such as securing sufficient water for household needs an even greater challenge. Surveys of several communities in the LMB show that women and girls already receive less formal schooling than men and boys resulting in significantly lower awareness and understanding of climate change among them. For example, of 370 women interviewed in the Socio-Economic and Climate Awareness Baseline surveys, only 20% had continued school beyond the primary grades compared to almost 40% for men. In terms of respondents who reported that they didn't know what climate change meant, 65% were women. This disproportionate access to education, including information about climate change, lessens women's and girls' ability to take actions that will reduce their vulnerability to climate change impacts. The following describes some specific vulnerabilities noted at each of the target sites.

- In Kien Giang, Vietnam, women have virtually no role nor say in commune governance. As a result, men dominate community planning and decision-making and thus, in their adaptation planning, may overlook many of the traditional areas where women contribute to household income and food supplies. For example, women from poor households often work as day laborers during rice planting and harvesting seasons. Projected declines in rice production due to rising temperatures and sea level rise will reduce income earning opportunities for many women. Many women also rely on the mangrove areas as sources of foods and products used in the home. Mangrove areas are expected to shrink in size with sea level rise which will put increased pressure on those areas that remain and likely reduce harvests. Many villagers are already experiencing shortages of water during the dry season. For women and girls, this translates into more time spent collecting water for household hygiene, cleaning and cooking. Finally, many households have noted an increase in disease and sickness that they attribute to the increasing temperatures. This puts additional burden on women as the primary caregivers in the household and lessens available time for employment and food gathering activities.
- In Khammouan, Lao PDR, women and girls in remote mountain villages have traditionally played an important role in rice cultivation, managing household gardens, raising poultry and pigs, collecting edible and medicinal NTFPs, and supplementing family diets by capturing aquatic animals. With increasing temperatures and more intense dry seasons, aquatic and forest habitats are changing and some water sources may disappear. These changes are impacting the supplies of plants and aquatic animals

that households have collected and are requiring women and girls to spend more time securing water for household needs.

- In both Chiang Rai and Sakon Nakhon Thailand, women are responsible for rice planting and harvesting, the collection of NTFPs, the production of handicrafts for sale in local markets, collecting water for household needs, and likely are involved in coffee and fruit harvesting. Climate change is already reducing the productivity of rice and corn, threatens the longer term viability of important cash crops like coffee, rubber and litchi, and is impacting the supply of NTFPs from nearby forests. All these impacts affect women whose livelihoods are tied to these crops and natural resources. In addition, women must go further afield to collect water for household needs, reducing the time they have for other household, economic and/or social pursuits.

By raising the awareness of both men and women of how current weather patterns are linked to longer term climate shifts, the Mekong ARCC program is helping villagers plan for and take actions that will better prepare them for a different climate future. The program can strengthen women's understanding of climate change and involvement in adaptation planning by:

- Strengthening outreach and information messaging to improve women's understanding of climate change.
- Supporting the institutionalization of information channels (i.e. using mobile technology, radio and/or pictorial information in public areas) that provides accessible weather information to both men and women.
- Ensuring women's representation in community adaptation planning sessions.
- Holding information sessions with men that highlight how climate change will impact those crops and activities where women currently play a lead role with the objective of broadening their understanding of how climate change will impact household income and food security.
- Facilitating and support the identification and testing of alternative strategies for addressing lower production of crops and products that women cultivate and/or collect for household consumption or to supplement household income.

- 3.2. Sustainability Mechanisms – N/A
- 3.3. Environmental Compliance – N/A
- 3.4. Global Climate Change – N/A
- 3.5. Policy and Governance Support – N/A
- 3.6. Local Capacity Development – N/A
- 3.7. Public Private Partnership (PPP) and Global Development Alliance (GDA) Impacts – N/A
- 3.8. Science, Technology, and Innovation Impacts

This year, the Mekong ARCC team mentored teams of university students competing for Microsoft’s Imagine Cup Thailand 2014, a technology competition that encourages students to develop innovative technological solutions to a range of real-world challenges. The “Team Zero Gravity”, mentored by the project, was one of the winners for their “**Len Din**” app, which allows farmers to use their smartphone and an external measuring device to track soil moisture quality to determine optimal planting periods and fertilizer levels for their crops. Team Zero Gravity was awarded THB75,000 (about US\$2,420) as second runner-up and by popular vote, to continue their app development efforts.

4. STAKEHOLDER PARTICIPATION AND INVOLVEMENT

5. MANAGEMENT AND ADMINISTRATIVE ISSUES

In year three, Mekong ARCC undertook management of four additional implementing partners at five sites in four countries. Mekong ARCC fully immersed itself in these management responsibilities to ensure the partners delivered high quality and timely deliverables. The management of the sites and the Mekong ARCC process by each partner took considerable time and travel by the Mekong ARCC team, which was expected and budgeted for accordingly. Mekong ARCC's Field Coordinator attended each stage of the field work at the sites. The Mekong ARCC COP and OPM attended several workshops at the community sites and met with IP project managers throughout the year. We also provided trainings on community approaches and on operations under USAID rules and regulations to ensure that the financial and contractual management would be smooth.

Coordinate with USAID, USG partners and Donor community on opportunities to promote Mekong ARCC best practices and lessons learned

Coordination with USAID, USG Partners and other donors continued to be a priority for Mekong ARCC. The Mekong ARCC COP in particular travelled to numerous regional conferences to both present the project as well as learn from other practitioners in the field. These presentations are detailed in Task 1.

The project continues to collaborate with USAID/Cambodia and more specifically with the HARVEST project. The project OPM, travelled to Cambodia multiple times to work with WFP on both the CLEAR analysis and scoping communities for field work in Kampong Thom. The OPM met on a number of occasions with HARVEST technical experts to ensure that the site would align with HARVEST priorities and feel a need.

USAID Mekong ARCC project also coordinated with the U.S. Embassy in Laos to present to MONRE Laos in support of the MoU agreement process. The MoU is expected to come through in year four.

In Thailand, in year four, the project continued to meet with the Thailand Office of Natural Resources & Environmental Policy and Planning (ONEP) quarterly. Due to changes in political situation in Thailand this year however, Mekong ARCC was unable to meet with higher level government officials.

USAID and Mekong ARCC hosted an ADB roundtable discussion on July 30, 2014. The theme of the roundtable was on *“Bridging the Divide: Linking Science-based Adaptation Approaches and Climate Change Policy-making in the GMS”*. The roundtable generated significant interest and led to a number of follow up action items with potential scale up for Mekong ARCC including potential influence of the Environmental Ministers Meeting in January of 2015 in Nay Pyi Taw, Myanmar.

Staffing and Recruitment

With the departure of the DCOP at the end of year two, USAID Mekong ARCC brought on board an Operations and Program Manager, Shannon Dugan, on November 8, 2013. Ms. Dugan provides oversight of project operations and subcontract management as well as technical support and direction.

Over the year, Mekong ARCC recruited an independent consultant, Raji Dhital, with previous experience and knowledge conducting Vulnerability Assessments and Ecosystem-based Adaptation. Mrs. Dhital was recruited to review and ensure that the assessments submitted by the Mekong ARCC partners were comprehensive and accurately captured the scaled down climate science.

The project also engaged Dr. Alexander Smagjl who will assist in Task 5 activities. Dr. Smagjl has worked closely with the Mekong ARCC COP specifically on ADB and World Bank engagement as well as ASEAN in order to strategize project scale up goals. An independent consultant agreement is expected to be signed with Dr. Smagjl in quarter one of year four.

In quarter four, Del McCluskey, Project Management, Planning and Reporting Specialist conducted a three week STTA. Mr. McCluskey, assisted the Mekong ARCC team on writing the annual report and planning for year 4 activities. He also provided additional management support while the COP was on R&R.

6. LESSONS LEARNED

With the initiation of field work with implementing partners, an important lesson related to the level of guidance on tool use and methodology that the Mekong ARCC project team provided. It was initially thought that the IPs would have their own approaches to activities like vulnerability assessments and participatory approaches to working with communities in identifying adaptation options. As such, in our design of the field work approach, the Mekong ARCC project team chose to be less prescriptive on the mechanisms/tools to use and more detailed on desired outcomes. It was thought that as long as the outcomes were met the tool use would be left to the partners, who would be familiar with their own institutional and other regional approaches available in the climate change adaptation space.

What became clear over the first months of field implementation is that because climate change adaptation is a ‘new’ field for many of the implementing partner staff, requests for guidance on implementation strategies is more common than had been originally anticipated. Fortunately, good communications and trust had already been engendered with many of the partners such that identification of tools and support on delivery of project documents is jointly undertaken as part of a ‘one-team’ attitude shared between Mekong ARCC and implementing partner staff. Additionally, the Mekong ARCC project team devised and disseminated specific techniques on how to carry out both the Community Climate Story and the Scientific Climate Story that were used at various sites by the partners (see Annex C). In the case of the Scientific Climate Story approach, Mekong ARCC organized hands-on training for AMDI and VNRC prior to their engagement of communities, which generated an excellent result. In addition, and as mentioned above, the project’s Field Coordinator took part in almost all the community meetings at each of the sites and provide significant input and support to these processes, which was viewed as a positive contribution by implementing partners.

Mekong ARCC selected a diverse consortium of partners to conduct the community implementation and learned important lessons throughout the year. Mekong ARCC selected two large international nonprofit organizations (IUCN Thailand and IUCN Lao PDR), one local nonprofit organization (AMDI) and at the close of the year a United Nations international organization, World Food Programme. Each organization required slightly different management and communication depending on the organizations abilities, capacity and systems.

WFP in particular is a non-traditional partner for DAI. As mentioned above, partnering with a large UN organization took considerable time, effort, communication and understanding by both parties but we were able to come to a positive agreement.

Ultimately, the various profiles of the partners require Mekong ARCC management to adjust. Consistent communication and feedback is required to ensure the project continues positive relationships and to produce positive results across all the community sites.

7. PLANNED ACTIVITIES FOR NEXT YEAR

Task One

- Document field implementation of adaptation activities, challenges and successes through web blog, success stories, newsletter etc.
- Customize and disseminate products from the Economic Values at Risk report once USAID approval is received.
- Format the design layout for the Study and Theme Reports and distribute.

Task Two

- Complete scientific journal article focused on a specific theme from Mekong ARCC Study

Task Three

- USAID Mekong ARCC hosts annual meeting with IPs to discuss lessons learned from the field in year three and prepare for adaptation options and implementation in year five.
- Finalize and approve IP Scientific Climate Story reports.
- Finalize contract with WFP/Cambodia and assist in community stocktaking, implementation of adaptation making process and adaptation planning field work.
- IP's develop and finalize adaptation options with communities.
- USAID Mekong ARCC reviews and approves adaption plans.
- IP's and communities implement and monitor adaptation strategies.
- USAID Mekong ARCC conducts project Data Quality Assessment of sites.

Task Four

- Disseminate results from Economic Values at Risk report
- Produce country specific guidelines on policies to value ecosystem services
- Host a workshop to present guidelines and tools on ecosystem services valuation.

Task Five

- Strategize scale up options with regional and national counterparts
- Host Lao PDR Ministry of Natural Resources and Environment in a workshop designed to train officials on Mekong ARCC science and approach.

8. ADDRESSING COR COMMENTS FROM THE LAST QUARTERLY REPORT

There were no comments from the last quarterly report.

ANNEX A: PMP PROGRESS SUMMARY

Achieved progress versus planned for the period disaggregated by gender, geographic area and other relevant factors (per table below).

Table I(a): PMP Indicator progress - USAID Standard Indicators and Project Custom Indicators

SO4: Improved Response to Environmental Challenges in Asia											
Indicator	Data Source	Baseline Data		FY2014		FY2014 Quarterly Status				Annual Performance Achieved to Date (in %)	Comment(s)
		Year	Value	Annual Cumulative Planned Target	Annual Cumulative Actual	Q1	Q2	Q3	Q4		
Intermediate Result (IR): Enabling conditions improved											
Number of laws, policies, strategies, plans, agreements, or regulations addressing climate change (mitigation or adaptation) and/or biodiversity conservation officially proposed, adopted, or implemented as a result of USG assistance (STD: 4.8.2-28)	IPs, Mekong ARCC	N/A	N/A	19	14	0	0	0	14	73.7%	<p>14 vision maps (strategies) were developed by target villages including:</p> <ul style="list-style-type: none"> - 3 for Chiang Rai - 1 for Sakon Nakhon - 4 for Kien Giang - 6 for Khammouane <p>The unmet targets are community adaptation plans which could not be complete in the FY. They will be reported in the next FY.</p>
Intermediate Result (IR): Human and institutional capacity strengthened											

Number of stakeholders with increased capacity to adapt to the impacts of climate variability and change as a result of USG assistance (STD: 4.8.2-26)	IPs	N/A	N/A	0	0	0	0	0	0		
Number of adaptation activities or strategies designed and implemented by communities to reduce gender-specific vulnerability to climate change (CUSTOM)	IPs	N/A	N/A	4	0	0	0	0	0	0%	Due to the delay in implementation, adaptation activities/strategies addressing gender vulnerabilities to climate change will be identified and implemented in the next FY.
Number of people aware of climate-resilient livelihood strategies (CUSTOM)	Community members, IPs	2014	211 (base line for all sites)	150 (target for Vietnam only)	0	0	0	0	0	0%	The target is for AMDI Vietnam which originally planned to collect the midterm awareness survey data in FY2014. However, due to the delay in implementation, the data collection has been postponed to November 2014.
Intermediate Result (IR): Model actions demonstrated											
Number of climate change adaptation tools, technologies, and methodologies developed, tested, and/or adopted as a result of USG assistance (STD: REO)	Mekong ARCC, IPs	N/A	N/A	13	12	0	3	3	6	92.3%	<p>Q2: 3 thematic regional vulnerability assessments including 1) Agriculture, 2) Livestock and 3) Fisheries, which have been approved by USAID in February 2014</p> <p>Q3: 3 thematic regional vulnerability assessments including 1) Protected Areas, 2) NTFPs and CWRs and 3) Socio-economic which have been</p>

											approved by USAID in May 2014
											<p>Q4: 6 tools developed and tested including</p> <ul style="list-style-type: none"> - 2 tools, vulnerability assessment (VA) and scientific climate story and shared understanding process (SCS & SU) for Chiang Rai - 2 tools, VA and SCS & SU for Sakon Nakhon - 1 tool, VA for Kien Giang - 1 tool, VA for Khammouane
Number of hectares of biological significance and/or natural resources under improved natural resource management as a result of USG assistance (STD: 4.8.1-26)	Community members, IPs	N/A	N/A	0	0	0	0	0	0		
Intermediate Result (IR): Regional networks and institutions strengthened to replicate and sustain innovation											
Number of regional platforms created or strengthened (STD: REO)	Mekong ARCC	N/A	N/A	2	7	1	0	3	3	350%	<p>Q1: 1 platform, the Federation of Asian Bishops' Conferences (FABC), through sharing of the Climate Study results. FABC issued a discussion document stating its intention to promote the model of Mekong ARCC project.</p> <p>Q3: 3 platforms including:</p> <p>1) MRC Environment Programme through Climate Study datasets sharing and training of senior MRC</p>

											<p>climate modeler</p> <p>2) ADB GMS EOC shared the Climate Study datasets on its platform: http://www.gms-eoc.org/gms-mapping</p> <p>3) ADB Cambodia Climate Resilience & Provincial Road Improvement Project reported that they would use the Climate Study data for producing a Cambodian National Vulnerability Map.</p> <p>Q4: 3 platforms including:</p> <p>1) ADB Climate Risk Financing through sharing of the consolidated storm and cyclone data used in the Climate Study. The Climate Risk Financing effort has used the data in its assessment to identify climate risk financing opportunities in ADB biodiversity conservation corridor sites in Lao PDR, Cambodia and Viet Nam.</p> <p>2) The 3rd and 4th Roundtable Discussions on Climate Change Adaptation in the GMS that the Project co-organized with the ADB in July 2014. As a result of the discussions, Mekong ARCC will produce knowledge products and</p>
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											<p>contribute to the upcoming GMS Ministerial Meeting.</p> <p>3) The World Food Programme platform was strengthened through the use of Mekong ARCC data to develop resilience mapping of livelihoods. This mapping will influence high level programming decisions by the country office in Cambodia.</p> <p>The Project could achieve more than threefold of its target because the Climate Study generated significant interest of various platforms. Additionally, Mekong ARCC has put a great deal of effort to develop relationships with different platforms particularly with the ADB.</p>
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ANNEX B: DISSEMINATION OF KNOWLEDGE PRODUCTS

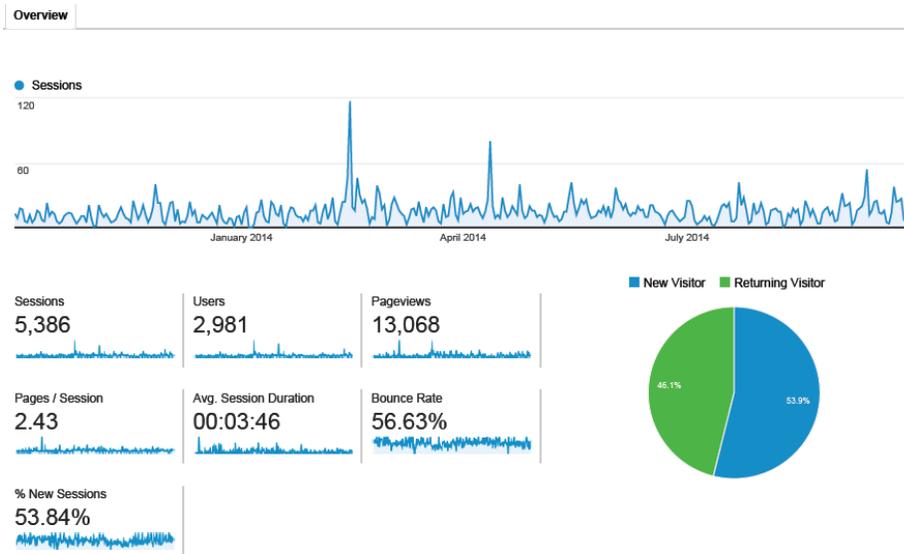


Figure 1 – Number of Total Sessions on the USAID Mekong ARCC Website in FY2014

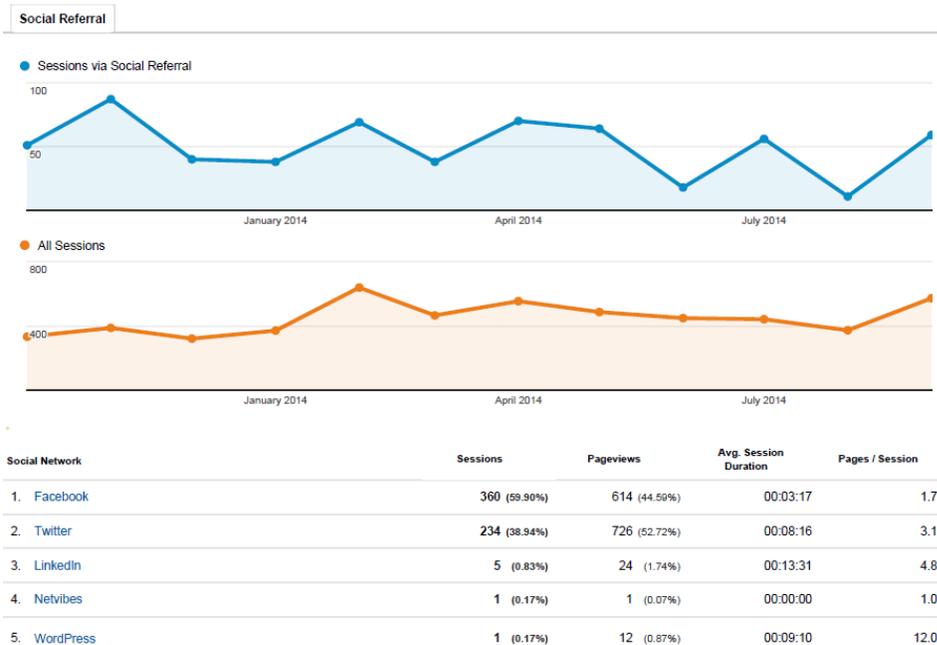


Figure 2 – Number of Sessions via Social Referral in FY 2014

ANNEX C: USAID MEKONG ARCC APPROACHES TO THE COMMUNITY CLIMATE STORY AND SCIENTIFIC CLIMATE STORY

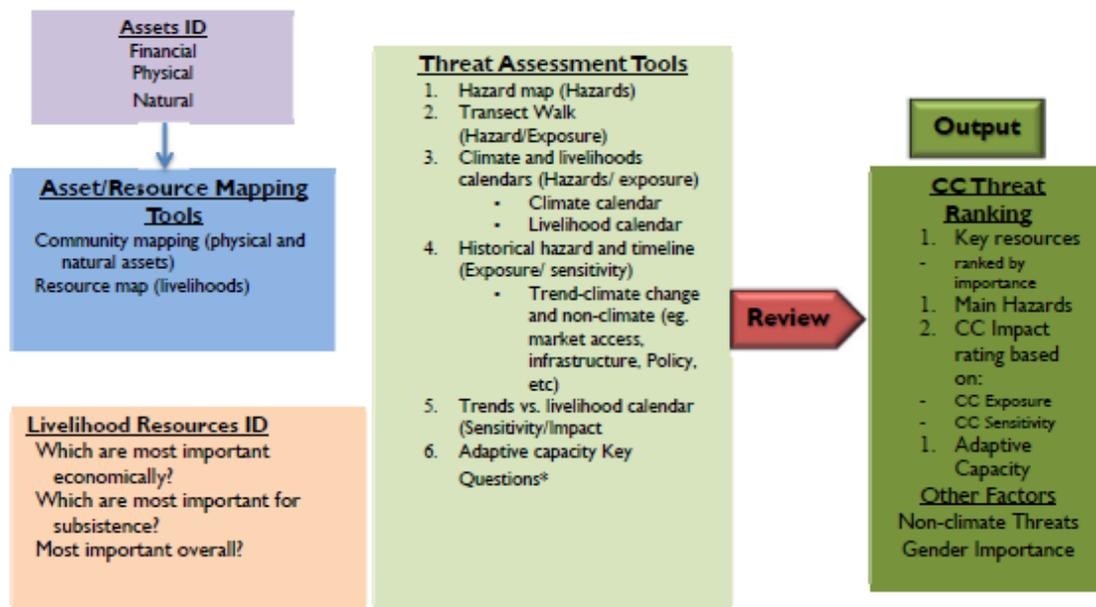


Chart 5 –Process for Community Climate Story

STEPS	REVIEW	EDUCATION	VALIDATION & SHARED UNDERSTANDING	SCENARIO DEVELOPMENT
Objectives:	<ol style="list-style-type: none"> 1) Explain Scientific Climate Story process 2) Explain importance of community view and scientific view (uncertainty) 3) Report back key findings from awareness survey (using charts and graphs) 4) Review weather hazards identified by villagers (from community climate story workshop) 	<ol style="list-style-type: none"> 1) Explain “weather” vs. “climate” <ul style="list-style-type: none"> • Videos (in local language if exist, if not explore ways to dub) • Q&A 2) Provide specific site based projections <ul style="list-style-type: none"> • Matching card games (threats, vulnerabilities, adaptation options) • Drawings/Comic/Booklet • Posters • Quiz Game 3) Wrap Up by asking <ul style="list-style-type: none"> • What do you need to know about the weather today? • In 5 years? • What do your children need to know about the weather in the future? 	<ol style="list-style-type: none"> 1) Compare community weather hazards vs. projection direction 2) Compare community vulnerabilities with projected vulnerabilities 3) Re-rank community vulnerabilities 4) Capture changes or validation 5) List out potential opportunities 	<ol style="list-style-type: none"> 1) Develop timelines with historical events from CCS (Past, Today, 2050) 2) Outcomes: What do they want to see and don't want to see— today and for their children. 3) Develop Vision 4) Discuss what they can do to achieve what they want to see in each period (today, 5years, children's life) <p>Q: What are they doing today? Q: What could they do better? Q: What else could they do? (Today, 5 years, Future)</p>
No. of day(s):	One day		1-1.5 days	
Expected results:	<ul style="list-style-type: none"> • Increase understanding of process • Increase awareness of projected impacts locally 	<ul style="list-style-type: none"> • Introduction of key climate change concepts • Reviewed scientific vulnerabilities 	<ul style="list-style-type: none"> • Prioritization of hazards and vulnerabilities based on community perception and scientific projection 	<ul style="list-style-type: none"> • Desired outcomes identified • Vision developed • Range of options identified

Chart 6 – Process for Scientific Climate Story Approach