



Book of Abstracts

21-22 July 2011
Ho Chi Minh City, Viet Nam

The First Meeting of
***Climate Change Adaptation Demonstration
Projects in the Lower Mekong Basin:***
sharing lessons and experiences

organised by

**Climate Change and Adaptation Initiative
Mekong River Commission**



Mekong River Commission (MRC)
Climate Change and Adaptation Initiative (CAI)

**The 1st Meeting of Climate Change Adaptation Demonstration Projects
in the Lower Mekong Basin sharing lessons and experiences**

**Lotus Ballroom, Rex Hotel
Ho Chi Minh City, Viet Nam
21-22 July 2011**

Introduction

Over the past few decades, the countries in the Lower Mekong Basin have witnessed a number of natural disasters. The assessment from the Mekong River Commission (MRC) on impacts of climate change and development in the Mekong flow regimes released in 2009 indicates that countries in the Mekong region are predicted to face difficulties concerning various forms of impacts from climate change. The results are similar to other scientific studies and climate models, which point out a wide range of anticipated impacts of climate change in the region. These include changing of temperature and rainfall patterns, sea level rise, increased intensity of storms, floods and droughts.

These impacts would affect the economy and development of the riparian countries as well as the people's way of life and livelihoods. Eventually, these would be contributing factors to exacerbate poverty and impeding the efforts to improve quality of life. Moreover, impacts of climate change do not lie within each sovereign national boundary. Thus, there is a need to exchange knowledge, experience, approaches on planning and implementation of adaptation to climate change, in order to benefit all the lives depending on the Mekong.

In the Lower Mekong Basin, there have been efforts from various organisations concerning climate change adaptation planning and implementation. These activities are carried out by government agencies, international organisations, local-based organisations as well as the vulnerable communities themselves.

The MRC has developed the Climate Change and Adaptation Initiative in order to assist the riparian countries in adaptation planning and implementation. Demonstration activities are one of the key activities aiming at building capacities through a learning and knowledge and experience sharing process involving local communities and local wisdom.



In this regard, the MRC Climate Change and Adaptation Initiative is organising the first regional meeting of climate change adaptation demonstration projects during 21-22 July 2011 in Ho Chi Minh City, Viet Nam. The main purpose of this meeting is to provide a platform for the practitioners to exchange experiences and learn from other existing and/or planned adaptation actions in the Lower Mekong Basin. The meeting expects to gather about 100-120 participants, comprised of senior government officials of the MRC's Member Countries and Dialogue Partners (Myanmar and China), climate change national focal points in LMB Countries, Development and Implementing Partners and especially practitioners who work on the demonstration projects in climate change adaptation in the Lower Mekong Basin. This meeting serves as the platform for practitioners engaged in climate change adaptation activities to come together to exchange and learn about the approaches, tools, challenges, and key adaptation options from other projects. This would contribute to the enhancement of adaptive capacity and facilitate replication of good practices throughout the region. Additionally, discussions on integrating climate adaptation into local development planning, possible replication and up-scaling of adaptation strategies would contribute to region-wide networking on climate change adaptation planning and implementation. Such regional networking of local climate change adaptation demonstration projects will provide an opportunity for testing, building capacity, demonstration and exchange as well as monitoring climate change in different settings throughout the basin. Eventually, it would help avoiding further aggravation of the adverse impacts on the lives and the assets in the region.

Main objectives

- 1) To provide an opportunity for the practitioners to share practices, tools, experiences, lessons learned and challenges as well as to exchange knowledge on planning and implementing adaptation activities to climate change within the Lower Mekong region; and
- 2) To provide networking opportunities that facilitate further cooperation, replication and up-scaling of climate change adaptation activities

Expected outputs

- 1) Improved knowledge and awareness on climate change adaptation activities and identification of adaptation approaches and practices with potential for replication and up-scaling;
- 2) Strengthened regional cooperation and network to enhance regional and national adaptation actions;
- 3) Inspiration and motivation on adaptation actions from good practices; and
- 4) A Technical Paper aimed at promoting continued debate and dialogue about climate change adaptation based on lessons, practices and responding to the challenges facing climate change adaptation demonstration projects in the Mekong Region.

Meeting Agenda

Time	Topics
<u>Day 1</u>	
08.30–09.00	Registration
09.00–09.30	<p>Opening Speech <i>by Dr. Truong Hong Tien</i> <i>Deputy Director General of Viet Nam National Mekong Committee</i></p> <p>Welcoming Address <i>by Dr. Tran Duc Cuong</i> <i>Officer-In-Charge of the Mekong River Commission Secretariat (MRCS)</i></p> <p>Meeting Overview <i>by Dr. Vitoon Viriyasakultorn (facilitator of the Meeting)</i> <i>Technical Coordination Advisor, MRCS</i></p>
09.30–10.00	<p>Keynote Presentation: Breaking dilemma on climate change adaptation planning <i>by Mr. Suppakorn Chivanno</i> <i>Southeast Asia START Regional Centre</i></p>
10.00–10.30	<p>Keynote Presentation: Adaptation: the culture of nurturing nature <i>by Ms. Dusita Krawanchid</i> <i>Stockholm Environment Institute Asia Centre</i></p>
10.30–10.45	Coffee break
10.45–11.15	<p>Keynote Presentation: Successful community-based approach: a combination of traditional knowledge utilization, community ownership and gender empowerment in Central Viet Nam <i>by Ms. Nguyen Thi Yen</i> <i>CARE International Viet Nam</i></p>
11.15–11.45	<p>Keynote Presentation: Agricultural productivity and food security in the lower Mekong Basin: Impact of climate change and options for adaptation <i>by Dr. Mohammed Mainuddin</i> <i>Surface Water Hydrology Program, CSIRO Land and Water</i></p>
11.45–12.10	<p>Building network of local demonstration projects and potential benefits to the Mekong River Basin <i>by Dr. Tran Mai Kien</i> <i>Climate Change and Adaptation Initiative (CCAI), MRCS</i></p>
12.15–13.30	Lunch + Market Place

Time	Topics
<u>Day 1</u>	
13.30–15.00	<p>Good practices 1: Impact and vulnerability assessment for Climate Change Adaptation</p> <ul style="list-style-type: none"> ❖ Assessments on Climate Change impacts in Kien Giang Province, Mekong Delta, Viet Nam by Dr. Nguyen Anh Duc, Vietnam National Mekong Committee ❖ Climate Vulnerability in Coastal Areas: The Case of Sihanoukville by Mr. Liam Fee, UN-HABITAT (Consultant) ❖ Local Climate Change Adaptation in Chiang Rai: Challenges and Opportunities by Dr. Pakamas Thinphanga, Thailand Environment Institute ❖ Community-based Vulnerability Assessment in Coastal Areas in Ben Tre Province by Mr. Bui Kim Huu, Oxfam Great Britain in Viet Nam ❖ North East Thailand Adaptation to the Climate Change Impacts: Direct Experiences and Key Messages from the Hardest-hit Communities by Mr. Rattaphon Pitakthepsombat, National Team of CCAI demonstration project in Thailand ❖ Progress of CCAI Demonstration Site in Prey Veng Province, Cambodia by Dr. Heng Chan Thoeun, National Team of CCAI demonstration project in Cambodia
15.00–15.30	Coffee break + Market Place
15.30–17.00	<p>Good practices 2: Identification and selection of adaptation options</p> <ul style="list-style-type: none"> ❖ Climate Change Affecting Land Use in the Mekong Delta: Adaptation of Rice-based Cropping Systems by Dr. Nguyen Hieu Trung, Can Tho University ❖ Identification and Selection of Adaptation Strategies: Integration in Development Planning in 8 Provinces by Mr. Sok Sakhan, Caritas Cambodia ❖ Community-based Vulnerability Assessment and Response Action Plan in Binh Giang Commune, Kien Giang Province by Mr. To Quang Toan, Southern Institute for Water Resources Research ❖ Integrated Commercial Farm for Small Farmers in Samrong District, Takeo Province by Mr. Yim Sok Sophors, Cambodian Center for Study and Development in Agriculture ❖ Lessons from the Field: WWF Experiences in Piloting Adaptation Options in the Plain of Reeds by Mr. Kevin Marks, WWF Greater Mekong in Viet Nam ❖ Building Can Tho City's Climate Change Resilience Plan by Mr. Ky Quang Vinh, Can Tho Climate Change Coordination Office
17.00–17.15	Wrap-up of the first day and brief description of the next day



Time	Topics
<u>Day 2</u>	
08.30–08.45	Recap the 1 st day and Introduction of the 2 nd day
08.45–10.15	<p>Good practices 3: Enhancing adaptive capacity</p> <ul style="list-style-type: none"> ❖ Enhancing Adaptive Capacity in the Kien Giang Biosphere Reserve by Dr. Karyl Michaels, GIZ Viet Nam (Consultant) ❖ Enhancing Local Adaptive Capacity in 7 Provinces in Cambodia by Ms. Hourn Ratana, Caritas Cambodia ❖ Community Preparedness to Address Climate Risks in An Giang Province, Vietnam by Mr. Aslam Perwaiz, Asian Disaster Preparedness Center ❖ Building Disaster Resilient Communities in Cambodia by Mr. Mom Sitha, Life with Dignity ❖ Building Community Resilience to Climate Change in Champhone District, Savannakhet Province, Lao PDR by Ms. Bounyaseng Sengkhammy, National Team of CCAI demonstration project in Lao PDR
10.15–10.30	Coffee break + Market Place
10.30–12.00	<p>Good practices 4: Participation and gender mainstreaming in Climate Change Adaptation</p> <ul style="list-style-type: none"> ❖ Participatory Methods and Resource Use Profiles for Informing Policy Development on Climate Change Adaptation: Lessons from Asian Rice Farmers by Dr. Clemens Grunbuhel, CSIRO Ecosystem Sciences ❖ A Community Meeting: Climate Change Vulnerability on the Agenda by Mr. Chhaya Hang, Khmer Institute of Democracy ❖ Climate Change Community-based Adaptation: a Case Study of Thailand by Dr. Supaporn Anuchiracheeva, Earth Net Foundation ❖ Vulnerability Reduction Assessment tool and Gender mainstreaming in Kratie and Preah Vihear by Mr. Ung Dararatmoni, UNDP Cambodia ❖ Lessons from UN Supports to Promote Gender Equality in National Programming on Disaster Risk Reduction and Climate Adaptation in Viet Nam by Ms. Bui Viet Hien, UNDP Viet Nam
12.00–13.30	Lunch

Time	Topics
<u>Day 2</u>	
13.30–13.45	<p><i>Synthesis of the good adaptation practices and its challenges in the Lower Mekong Basin</i> <i>by Dr. Vithet Srinetr</i> <i>Environment Programme Coordinator, MRCS</i></p>
13.45–14.45	<p>Panel Discussion: How to Overcome the Challenges and Build Capacity for Local Adaptation Actions Panelists consisting of;</p> <ol style="list-style-type: none"> 1. <i>Mr. Suppakorn Chinvanho (Southeast Asia START Regional Centre)</i> 2. <i>Dr. Bach Tan Sinh (National Institute for Science and Technology Policy and Strategy Studies)</i> 3. <i>Dr. Clemens Grunbuhel (CSIRO Ecosystem Sciences)</i> 4. <i>Mr. Rob Hulme (Bayer CropScience)</i> 5. <i>Ms. Nguyen Thi Yen (CARE International Viet Nam)</i>
14.45–15.00	Coffee break
15.00–16.00	<p>Panel Discussion: Replication and Up-Scaling of Good Practices in the Lower Mekong Basin Panelists consisting of;</p> <ol style="list-style-type: none"> 1. <i>Ms. Huong Huynh Lan (Vietnam Institute of Meteorology, Hydrology and Environment)</i> 2. <i>Ms. Dang Thuy Trang (WWF Greater Mekong in Lao PDR)</i> 3. <i>Dr. Kai Kim Chiang (Institute for Social and Environmental Transition)</i> 4. <i>Dr. Supaporn Anuchiracheeva (Earth Net Foundation)</i> 5. <i>Mr. Yim Sophors (Cambodian Center for Study and Development in Agriculture)</i>
16.00–16.15	Next step
16.15–16.30	<p>Closing ceremony <i>by Mr. Sourasay Phoumavong</i> <i>Director of Environment Division, MRCS</i></p>

Keynote Presentation



Breaking dilemma in climate change adaptation planning

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Abstract: Climate change will bring different future to society and mankind needs to adapt, in order to make their best out of future condition. However, climate change is a slow and complex process and it needs a rather long time to see clear change of climate pattern, even though the trend of changes in climate variability has started to be observed. Understanding future climate change would rely on long term climate projections, which in most cases are based on simulation technique using various mathematical models. For the fact that the simulation process produces precise result of future climate projection, it does not necessary mean that it neither is accurate nor represents truth of the future. It only provides precise picture of climate pattern in future as consequences of certain changes, especially change in atmospheric greenhouse gases concentration, of which the changes are based on assumptions. The uncertainty of future climate projections brings arbitrary and dilemma among planners in justifying actions to cope with future impacts of climate change, even though various techniques are proposed to deal with such uncertainty, e.g. the use of multiple climate projections, etc. This dilemma causes stagnancy in climate change adaptation planning. Worse, it leads to another extreme by using climate scenario as future forecast.

This presentation addresses different perspectives in climate change adaptation planning based on case study in Thailand as an effort to break such dilemma. Firstly, planning for climate change adaptation should shift from conventional impact-based approach, which focuses on understanding impact of climate change in the future and identifying options to deal with such impact as adaptation, to risk-based approach, which focuses on risk of system/sector/community from implementing various policies under different climate change conditions. In this regard, future climate change projections are used fully in the context of scenario planning exercise as test conditions for robustness of various policies and plans or resilience of community. This requires adjusting in mindset from focusing on what will happen if climate may change toward the new focus on risk, whether it would be too great to be neglected if such climate change occurs and adaptation is approach to manage the risk to be within acceptable level. Secondly, climate change adaptation planning should base on risk and risk management perspective with linkage to today's context and take adaptation planning as process in policy/strategy revising. In this regard, the adaptation measures would follow no-regret approach which aims at finding options to solve today's climate risk that also match future climate pattern from the projections. This leads to mainstreaming climate change into development planning. Adaptation in this context would be to ensure that the development plan/policy will not lead the system/sectors/community to new problem or such strategy to cope with today's climate risk will still be applicable in the future under climate change conditions, whatever it may become.



Adaptation: the culture of nurturing nature

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Abstract: Climate change adaptation has entered the lexicon and practice as some new necessity that requires the public's attention, then ultimately into public policy arenas and planning agendas. But adaptation is not so much a program or checkbox on budgets, but part of our way of life.

It's often quite easy for technicians, engineers, researchers and the like to help identify specific adaptation strategies for communities, and for funding agencies to assist with the discussions, planning and implementation especially now as adaptation and climate change responses are the flavor of the day. But adaptation is not like our historic approaches to natural disaster preparedness where we identified a level of risk threshold associated response then moved on. Climate change generally, and adaptation specifically, is a moving target. Whole new approaches to planning are required, and what were finding, the success of which hinges on the base level of understanding and commitment to environmental resources management generally. Even if communities still seek the one quick fix, they can't because it's not realistic. Thus it is important that a more solid environmental understanding generally is needed before any serious work can be undertaken on climate change adaptation.

As the least developed countries, Bhutan and Nepal are one of the most vulnerable to climate change countries. Nepal ranks at 144 and Bhutan ranks at 132 according to the 2007 Human Development Index (UNDP 2009) Physiographic characters of both are mostly similar except there is a larger proportion of flatter, plains area in the southern Nepal. Agriculture is the main source of livelihood of their people and they follow traditional cultivation practices that rely on seasonal rainwater. Change in climatic conditions affecting rainfall pattern is having an adverse impact on livelihoods of most of these communities, thus increasing their risk of food insecurity.

In Bhutan, local communities, who rely on biological resources for their daily subsistence, are allowed to form a community forest management group (CFMG), of which consists of at least ten households. The CFMG needs to prepare the management plan to get approved by the district administration with the recommendation of the Divisional Forest Officer (DFO). The CFMG can grow firewood and construction timber for their own use and as a source of cash income.

Similarly, in Nepal, community forestry has allowed local communities to manage their forest resources under the forest community committee to facilitate community agreement on reforestation and harvesting forest products. The communities agreed that once they could sustainably manage their forest resources, they would think more of how these resources could bring them the most values in the long run rather than cut the trees down for timber and have nothing left for nurturing their livelihoods and prosperity. These communities are fully aware of the prospect of climate change and that they may need to adapt their management strategies because of it, but feel confident with a strategy in place to begin with, they are better prepared for the challenges and opportunities that may lie ahead.



In Thailand, significant changes in socio-economic conditions have already taken place and local communities already suffer pressures due to climate change. For instance, less labor in agricultural sector, higher price of agricultural inputs and more competitive market make it difficult for local communities. However, climate changes impacts such as shift in the onset rainy season, the rise in temperature and flash flood in stormy season are observed at local level exacerbate local communities' vulnerability. These communities have begun to implement water conservation strategies, but are well aware that this may be just a start. They are now looking further ahead, recognizing that such foresight about the environment lies at the heart of their ability to respond.

The principle is simple enough, but often we get lost and can't see the forest among the trees, or the evolution of a solid foundation for climate change adaptation, not to mention low carbon economies and climate change responses that can evolve from community forests programs, or virtually any other program where communities begin to play a more active role in tending to the environmental services they rely on.

While it's not surprising that we're finding that climate change adaptation hinges on the level of environmental awareness generally, what's important is working and understanding that awareness comes first, nurturing it, then incorporate adaptation discussions and actions that contribute to lasting culture of response.

Successful community-based approach: a combination of traditional knowledge utilization, community ownership and gender empowerment in Central Viet Nam

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Abstract: In September 2005, Typhoon Damrey, one of the most powerful typhoons hit Central Vietnam since several years, had devastated poor coastal communities' estates, demolished protective dykes. It becomes apparent after the typhoon that a belt of mangrove forests plays an essential role in preventing soil erosion and which protected dykes by slowing down the force of the storm wave. Seeing the important role of the mangroves in sustaining local residents' livelihoods and contributing to reduction of disaster vulnerability, CARE decided to support the Community Based Mangrove Reforestation Project in Hau Loc and Nga Son districts, Thanh Hoa province.

This project aimed to improve awareness and empower the local community to collectively manage the resource; to improve the quality and extent of the mangrove forests; to improve people's security as well as generate livelihoods from sustainable use of the mangroves; and to build awareness and acceptance by the local authorities for community forest management. The project supported Da Loc Commune in Hau Loc district and Nga Thuy in Nga Son district to plant 257 ha of new mangroves and developed efficient project mechanism including community base mangrove Management Boards (CMB) and farmers groups for sustainable management. As the project



facilitated the ownership of the local people, it has been successful in mobilizing them to participate in the planting and maintenance of the trees. Community planting, nursery establishment and protection groups have mobilized over 700 people a day for planting and maintenance of new mangrove areas in which 60-70% of them are women. The development of the community mangrove management system brought together mangrove users, community leaders and local authorities to agree rules and regulations for mangrove management and benefit sharing. Particularly, the project has experienced the changes in the confidence of women through livelihoods income generating and mangrove related activities. Recognizing the roles and experience of women in mangrove plantation and maintenance and livelihood activities, the project has encouraged 50% of women involved in the CMBs and shared their experience and opinions in the project meetings. Women were provided with technical training and supported to lead the organizing of planting and maintenance activities as well as duck and pig rearing activities in their villages. They were confident to share the project stories with other villages, the visitors and the journalists on TV show. Some of them have been elected to be the village heads, Commune People's Council or Women Union heads at the end of the project.

In addition, disaster risk reduction awareness raising and planning has been integrated to increase the local adaptive capacity given the climate change projection for Vietnam that this type of extreme events is likely to increase in the future. The success of the project has confirmed that a community based approach utilizing traditional knowledge while improve understanding and acceptance by local authorities is a good adaptation approach.

Agricultural productivity and food security in the lower Mekong Basin: impact of climate change and options for adaptations

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Abstract: We examine the impact of climate change (changes in maximum and minimum temperature, rainfall, radiation, wind speed, and CO₂ concentration) on the productivity of rainfed rice, dry season irrigated rice and maize of the lower Mekong basin using a crop growth simulation model called AquaCrop. These crops cover about 90% of the annual total harvested area of the basin. Future climate projection are based on IPCC SRES A2 and B2 scenarios as simulated by ECHAM4 Global Climate Model downscaled for the Mekong Basin using the PRECIS system. We divided the basin into 14 agro-climatic zones and selected a sub-catchment within each zone for the model and assessed the impact for the period of 2010 to 2050. In general, the results suggest that yield of rainfed rice may increase significantly in the upper part of the basin in Laos and Thailand and may decrease in the lower part of the basin in Cambodia and Vietnam. The impact is mainly due to the change in rainfall and CO₂ concentration in the atmosphere. The productivity of irrigated rice could be significantly higher all over the basin if increased irrigation requirements (11% for the



basin) due to increase in temperature is provided. Increased temperature slightly affects the yield of irrigated rice but increased CO₂ concentration offsets this impact and helps significant net increase. The productivity of maize is not affected at all adversely by any change in climatic parameters. Yield may increase significantly all over the basin due to increased CO₂ concentration in the atmosphere. For rainfed rice, we have tested widely used adaptation options such as changing planting date, supplementary irrigation and reduction of fertility stress and found that negative impact on yield can be offset and net increase in yield can be achieved. Analysis of the projected production considering population growth by 2050 suggests that food security of the basin in terms of total production is unlikely to be threatened by the increased population and climate change excluding the extreme events such as sea level rise, cyclones, etc.

Good Practice 1:
Impact and Vulnerability Assessment
for Climate Change Adaptation



Assessments on Climate Change impacts in Kien Giang Province, Mekong Delta, Viet Nam

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Abstract: Kien Giang province is located in the south-west of the Mekong Delta in Viet Nam, which is considered as one of the most vulnerable regions in the world to the impacts of climate changes. Kien Giang province has the total area of 6,300 km² and the population of 1.7 million. It is located in the flood-prone area of the Mekong Delta with the coastal line of 210 km. Climate change is a matter of urgency in Kien Giang as most people live in low-lying areas vulnerable to sea level rise and increasing frequency and intensity of natural disasters, such as storms; floods and droughts.

In this presentation, a comprehensive study on Climate Change risk and vulnerability assessments in Kien Giang Province is presented. The Decision Support Framework (DSF) of the Mekong River Commission is employed to model future scenarios in the Kien Giang Province, taking into account climate changes and upstream development conditions. Subsequently, based on the modelling results, assessments on climate change impacts are carried out on water quantity and water quality for different sectors (agriculture, aquaculture, infrastructure, forestry, navigation and others) with assistance of analysis and GIS tools. Finally, the preliminary action plan of Kien Giang province for climate change response in accordance with the national Target Plan is proposed.

Climate Vulnerability in Coastal Areas: The Case of Sihanoukville

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Abstract: This paper presents the findings of climate vulnerability assessment research conducted jointly by the UN-Human Settlements Programme (UN-HABITAT) and the Stockholm Environment Institute (SEI) in Sihanoukville, Cambodia.

The research set out to understand the unique nature of vulnerability to climate change in Cambodia's largest urban coastal settlement. It used a mixed mode of research, combining various secondary data and policy reviews with primary research in the form of semi-structured key informant interviews with local government actors and focus group discussions with community members.



The research challenged the orthodox assumption that climate change is a mere function of risk, sensitivity and adaptive capacity by hypothesizing that non-climate stresses, such as water and sanitation issues, governance problems (particularly, in this case, a lack of effective urban master planning) and economic problems, exacerbate current and future climate vulnerability.

The research found that awareness among the general population was critically low, particularly on climate change, but also on wider social, economic and environmental issues. In particular, many people weren't able to relate projected future changes in climate to their present livelihood practices. This would, in turn, suggest that autonomous adaptation alone is either insufficient or not taking place at all and that good leadership is required on planned adaptation interventions. However, capacity remains critically low at the local government level and climate change is not currently being integrated into local planning processes.

The research finds that, in order to build resilience, a wide ranging programme of interventions would need to take place, but central to these would be at the local government level; integrating climate change into the Commune and Provincial Development Plans on the one hand, while approving and implementing effectively a climate sensitive urban master plan on the other.

Local climate change adaptation in Chiang Rai: Challenges and Opportunities

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Abstract: The Chiang Rai Municipality took part in the Rockefeller Foundation supported Asian Cities Climate Change Resilience Network (ACCCRN) programme, led by the Thailand Environment Institute (TEI). The programme assisted the municipality in identification of key climate vulnerabilities, assessment of urban systems and development of robust urban climate resilience strategies and adaptation plans, through collaboration between local governments, experts and other city stakeholders, including private and business sectors and local NGOs. The municipality together with other stakeholders, collectively formed a Working Group, were actively engaged through a series of shared learning dialogues (SLD), a process that enabled exchange and discussion of local knowledge and scientific information among participants.

Chiang Rai City has a strong urban and rural linkage and depends largely on agriculture and tourism sectors to generate income. Water supply availability for household consumption and agricultural purposes is crucial for agricultural productivity and sanitation. Natural water sources are important for ecological preservation of natural tourist areas. The findings of vulnerability assessments show that water security is a key contributing factor in face of increased climate impacts among urban poor and farmers without irrigation. Climate data provided by SEA START further reveals increasing temperature in the summer and winter up to four degrees Celsius by the end of the century. Although rainfall is likely to increase in the rainy season, the rain will gradually start later thus prolonging the dry period. Increasing temperature, fluctuating rainfall and seasonal



shifts in the weather pattern will accelerate water supply shortage, leading to health and ecological impacts and agricultural and economic losses.

Based on the understanding of urban systems, coping capacity and climate vulnerabilities, the working group developed urban climate resilience strategies and planned specific adaptation actions to tackle water issues. Ecological management of selected natural water bodies to improve water quality and maintain biodiversity is prioritised, together with water management practices in agricultural areas without irrigation. These water bodies play an important role in urban flood prevention during heavy rainfall periods and serve as alternative water reserves and sources for nearby urban communities. Environmentally improved areas around water reservoirs also serve as urban green and recreational areas.

The Chiang Rai municipality was able to address complex climate adaptation issues using a multi-stakeholder approach for planning and decision-making through the SLD process. Experiences gained through participatory planning and identification of community needs and priorities enabled local governments to develop long-term resilience plans and will be able to tackle other climate related vulnerabilities. Lessons learned and good practices generated from the engagement with the Working Group will be disseminated and scaled up in other Thai cities by TEI.

Community-based vulnerability assessment in coastal areas in Ben Tre province

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Abstract: Ben Tre province is the area of Vietnam most exposed to climate change impacts, due to its low-lying, coastal geography. Sea levels are rising and storms are increasing in the area, bringing new challenges to predominantly people's living conditions, agricultural and aquaculture livelihoods of Ben Tre, in particular in coastal communes. Oxfam has conducted a number of research studies in Ben Tre Province from 2008 to examine: vulnerabilities to disasters and climate change impacts; current challenges; government support and plans; stakeholders working in Ben Tre and affected districts; the situation of women and their needs; and gaps and possible interventions. Oxfam and partners have conducted detailed assessments on Water, Sanitation and Public Health (WASH) and livelihoods, and collected specific gender and women related information. Oxfam has currently been implementing a small project in four communes of Binh Dai and Thanh Phu districts, Ben Tre province to conduct participatory capacity and vulnerability analysis, develop commune and district action plans, analyse disaster and climate risks and propose adaptation and risk reduction activities.

The paper highlights the starting point for reducing disaster risk and for promoting a culture of disaster resilience that lies in the knowledge of the hazards and the physical, social, economic and environmental vulnerabilities to climate change and disasters that the four target communes face, and of the ways in which hazards and vulnerabilities are changing in the short and long term,



followed by action taken on the basis of that knowledge. The objective of the vulnerability is to (1) identify and assess the potential effects of specific hazards and possible effects of climate change on people, livelihoods and structures in the community, (2) and based on the overall findings and strategies to make immediate, medium-term action plan to reduce the risk of disasters and climate change. Aside from assessing the living conditions of local communities, livelihoods, self-protection, social protection and governance, the project intended to use the assessment as a learning process by encouraging more input and participation from commune leaders, community members and other key stakeholders. This way, the assessment would reflect the perspectives and experiences of the people themselves as well as those of various stakeholders in managing and responding to disaster and climate change in the project areas.

North East Thailand Adaptation to the Climate Change Impacts: Direct Experiences and Key Messages from the Hardest-hit Communities

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Abstract: Northeastern (NE) features much vulnerable to climate change and variability impact. Climate change and variability become a critical stressor/hazard to local NE inhabitants, especially the farmland holders, who are residing in the flood/drought prone areas. **From the vulnerability assessment finding** in the project demonstration site in the Upper and Lower communities in Young River Basin, in cooperation with Climate Change and Adaptation Initiative (CCAI) of the Mekong River Commission (MRC), found that most farmers who grow cash crops; rice, cassava, and tapioca, often encountered water shortage during cultivation period due to climate variability impact. Many lowland rice farm owners also faced a serious problem with severe flood, which heavily damaged the rice paddy extensively. These farmers were therefore suffering from severe climate variability resulting not only insufficient food for family consumption but also more debt increased. The upland cassava and tapioca growers have much experienced drought impact during dry season; they have to buy expensive waters carried by many large trucks for spraying their crops across the farmlands.

The impact from climate variability hazard, in coupling with the world market price fluctuation, caused many NE farmers attempting to cope with such uncertainty while some of them migrated to non-farming job at the central and eastern seaboard industrial sites, the others remained but decided to diversify their cash cropland to integrated farming. The Thai government could assist those farmers at best by paying the money to those vulnerable households, through the ‘natural disaster relief scheme’, which cannot compensate the amount equal to their initial investment cost.

The most vulnerable group to climate change impact is small-scale landowners. These farmers are extremely sensitive to seasonal flood and drought disruptions. Experiences showed that the rain-fed small farm holders with less income faced much more difficulty, and eventually adapted



them to diversify their livelihood. Despite production of cash crops supplied to regional and world markets, they changed to grow mixed plants also with animal husbandry aimed for local demands. Some attempted to rebuild their farmland structure into organic garden so as to increase their products' value. At present, many new small farm holders (equal or less than 1 hectare) began to grow seasonal mix and rotating crops as well as raising animals, while found themselves are much relieved from the loan debt and food insecurity.

From Tai Baan Research Adaptation knowledge, there becomes NE sustainable agriculture centers initiated locally, where interested groups can visit and study mainly for practicing sustainable farming purpose. Interestingly, it has been observed that many integrated farmland owners have applied their own local knowledge and experience in coping with climate uncertainty (flood/drought/storm) events. Some farmers redirect their farmland water management from relying on centrally supply dams/weir to building a small household pond/reservoir instead for their livestock and crop irrigation. A number of farmers show quite a good promising of making their own organic and compost fertilizer as well as biological pest control method for use on-farm. Many local newsletters also show that those farmers succeed in poverty reduction with better well-being livelihood, while family break-up problem for non-farming job migration becomes minimal.

Good Practice 2:

Identification and Selection of Adaptation Options



Introduction to the project “Climate Change affecting Land Use in the Mekong Delta: Adaptation of Rice-based Cropping Systems”

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Abstract: The Mekong Delta is Vietnam's main rice area and accounts for half of the annual rice production. The Delta's rice land use is divided into agro-hydrological zones which are controlled by the hydrology, especially the flood duration and depth, water availability and the salinity regimes. Over the last 30 years Vietnamese farmers have been adapting to the changing environmental conditions by modifying and diversifying their production systems and water management. But the recent and forecasted agro-hydrological changes threaten the viability of these farming and social systems and subsequently food security within South East Asia. Significant constraints which limit the ability of the farmers to adapt to the new hydrological regime include the availability of suitable cultivars, soil nutrient management options, the lack of knowledge of the potential threats from acid sulphate soil inundation and planning tools.

The overall aim of the project is to increase the adaptive capacity of rice production systems in the Mekong Delta Region (MDR). The immediate objective is to provide to farmers and management agencies the technologies and knowledge that will improve food security in the Mekong Delta. There are five main project objectives:

- improvement of salinity and submergence resilience of locally-adapted rice varieties and elite lines
- build capacity for quantification soil nutrient cycling, including the emissions of greenhouse gases, from rice fields
- develop integrated soil, crop, nutrient and water management options
- identify biophysical, social and economic factors determining the capacity of farmers to adapt to climate change
- in depth analysis for land use planning in coastal areas

The project builds on core work that has been undertaken by IRRI and its Vietnamese and Australian research partners on improved resilience in rice production and numerous nutrient-cycling projects in the region. The work is implementing in An Giang, Bac Lieu, and Hau Giang provinces to address environmental challenges in each of the agro-hydrological zones within the Mekong Delta.



Identification and selection of adaptation strategies: Integration in Development Planning

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Abstract: To enable the target community resilience and sustainable livelihood in 190 villages in 47 communes in 19 districts in 7 provinces of Kandal, Kampong Thom, Kampong Cham, Preah Vihear, Battambang, Siem Reap and Monduliri through integrated disaster risk reduction and climate change adaptation into development program.

Methodology: To integrate CCA and DRR in regional programs, CCA and DRR have to be prioritized in objective of integrated development program in each target provinces. Establish networking for preparedness (families and community preparedness) at different level in order to prevent and mitigate the effect of natural disaster and to assist and enable victims of natural disasters to live a normal living and restore their hopes. Local working group and Commune Committee for Disaster Management have worked together integrate DRR and CCA in commune development plan. Each VDA representative has been promoted to be in CCDM structure and worked together for disaster management and preparedness and response. DRR and CCA have integrated in all activities which include community empowerment, community organizing, health/water sanitation, community small infrastructures development, financial support, and non-formal education.

Results: The local communities have identified and build adaptive strategies based on different sectors in order to ensure water sources for agriculture, efficiency irrigation system and food security. The local people have changed agriculture techniques and improved adaptive mechanism such as seed selection (promotion of traditional/local seeds), used of organic agriculture, promote multiple cropping, reviews community cropping calendar, SRI, etc. They have developed livelihood alternatives which is not depend only agriculture products – such as small scale business. For example, community in 17 villages in 6 communes in 2 districts in Kandal province have change from doing one seasonal rice crop to two seasonal rice crops.

Limitations: Local staffs have limited knowledge/understanding on climate science, take time to change local habits.



Community-based action plan to adapt with Climate Change condition in Binh Giang Commune, Hon Dat District, Kien Giang Province

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Abstract: The Mekong Delta of Viet Nam (MDV) has a total area of 3.9 million hectares, of which 2.4 million ha is agriculture land. The Mekong Delta is very flat and low, an average of the elevation is about 1 m above the mean sea level. It is considered as the main rice bowl of Viet Nam, it contributes 40% of the national food product and more than 85% of annual exported rice product. MDV is considered as one of the most vulnerable regions in the world to the impacts of climate changes. Kien Giang province is located in the south-west of the Mekong Delta. In the situation with climate change and sea water level rise, Kien Giang province is considered to be severely impacted by floods; droughts and tidal inundation, this will affect to the life of the people in the province, especially the poor in a number of the provincial communities.

This paper presented the surveyed results on Binh Giang people knowledge on the change of climate condition in their place; their received information on climate change; evaluated result on the trend on land use as well as the way of life to adapt with natural condition; evaluated the impacts of climate change to Binh Giang; and initially proposed the Binh Giang community-based action plan to adapt with climate change condition.

Integrated Commercial Farm for Small Farmers in Samrong District, Takeo Province (ICM)

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Abstract: With funding support from UNDP GEF SGP, CEDAC was implemented the project titled “Integrated commercial farm for small farmers in Samrong district, Takeo Province (ICM)” in 16 villages across 5 commune in 1 district, Takeo Province from July 2009 to December to 2010. The project goal was to develop integrated commercial farm sustainable in their agricultural production compatible with climate change adaptation and habitats of biodiversity.

It is important to notice that the project was trying to solve several key issues including low agricultural productivity, unsustainable agriculture practices, extreme drought, food shortage, lack of irrigation facility.

After the project intervention, the target groups have adopted and adapted the agricultural innovations introduced by the project including, 33 integrated farming and learning sites were developed, 35 farmer families applied Ecological System of Rice Intensification (SRI), 34 households applied home gardening, 35 applied compost making technique, 5 chicken producer

groups and 6 organic rice producer groups were established, and dissemination mechanisms developed through training to 36 representatives of 14 CBOs to transfer their knowledge and skills to more than 160 farmers.

To increase farmers' adaptive capacity in dealing with the issue of climate change, the project has introduced the following agricultural innovations to the target farmers:

- 1) Organic soil matter is enhanced through crop rotation, composting, cover crops, SRI, mulching, home gardening, multi-purpose tree, fish raising etc.
- 2) Water Management through an integrated farming system (Multi-Purpose Farming) and establishing small scale irrigation systems including pond and canal.
- 3) Application of ecological pest management.
- 4) Conservation and improved quality of local seeds.

Through the project intervention, 60% of target families stopped using chemical fertilizers, rice productivity increased from 3 tons to 4 t/ha on average, cooperating farmers reduced expense on buying external foods for family consumption especially vegetables and meat, increased double household incomes to around 7 million riels per year, information dissemination mechanism developed through gaining high levels of leadership and agricultural skills and knowledge and developing demonstration farms, and the target farmers are able to produce foods for market supplies.

During the project implementation period, we have gained some lessons-learned as follows:

- Multi-purpose farming is an appropriate agricultural technique that helps farmers to adapt to climate change; the farmers not only increase the agricultural productivity, but also produce diversified agricultural products for household consumption and market supplies.
- Establishment of farmer group, farmer association and networking is an effective mechanism to ensure a good dissemination of agricultural innovations from farmer to farmer in the communities.
- Family development plan is helpful for the target household to improve their living condition. The family development plan should be developed jointly by men and women (husband and wife).

In conclusion, through the project intervention, the target farmers have improved their knowledge and capacity to apply sustainable agricultural technique/climate resilient agricultural technique; they increased agricultural production and productivity for home consumption and market supplies. In other words, the target farmers have gained capacity to generate more household incomes from farming activities. Last but not least, the cooperation and solidarity among the farmers have also improved through the establishment of farmer groups, farmer association and network, this would lead to a widely dissemination of agricultural innovations in their respective community.



Lessons from the field: WWF experiences in piloting adaptation options in the Plain of Reeds

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Abstract: Livelihoods are inextricably linked to ecosystems in the Mekong Delta (MD). Reliance on ecosystem services is particularly acute in areas that retain natural wetlands, like Tram Chim in the upper part of the MD; e.g. fishing is one of the main livelihoods strategies at Tram Chim and participation rates reach 80% (ActionAid, 2006). The ecosystems that support these natural resource based livelihood strategies are already stressed through overexploitation, infrastructure development, agricultural intensification, and mismanagement. These already damaged systems are being further stressed by climate changes.

Central to the strategy was thus to address the adaptation deficit (existing stresses that exacerbate climate change impacts) by rehabilitating ecosystem integrity. The healthier the system the more resilient it would be to stress, and the more stable the livelihoods based upon it.

In a first instance, the Plain of Reeds Wetland Restoration project addressed the deficit by rehabilitating ecosystem processes, organising communities, nuancing policy, and changing underlying perceptions. The second step was to monitor climate changes in the field and respond to manifestations and their impacts based on the evidence and in a timely manner. (Observed impacts at Tram Chim included: off-season rains, low floods, late floods, and a longer dry season).

WWF is now building further demonstration projects along the principal hydrologic profiles of the Delta (coastal/estuarine, main channel, secondary channel, floodplain) to permit upscaling and dissemination of best practices. It has already launched new adaptation projects in Ben Tre and Lang Sen.

Building Can Tho City's Climate Change Resilience Plan

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Abstract: Vietnam is among the group of 10 countries most affected by climate change. Can Tho city lies at the center of Mekong River Delta, which was identified by UNDP as one of 3 deltas most severely affected by climate change. Impacts of climate change would be exacerbated by development projects in upstream regions of the Mekong. Either directly or indirectly, they will more or less influence the downstream hydrological regime and have negative implications to



people's life and the environment in the Mekong delta of Vietnam. It is a reality many areas over the world run the risk of hunger because of the climate change happening in Mekong river delta.

Can Tho city's Plans to respond to Climate change for the period from 1011-2015 (the Plan) was developed by Steering Committee to respond to climate change, which is under Can Tho People's Committee. The Plan is supported by National Target Program to Respond to Climate Change (NTP), together with RF, international organizations such as ISET and CtC, and domestic organizations such as National Institute for Science and Technology Policy and Strategic Studies (NISTPASS), Southern Institute of Water Resources Research (SIWRR) and Can Tho University (CTU). The Plan was developed based on references to Climate change Local Resilience Action Plan for Can Tho (LRAP) by the World Bank (WB), and results from the research on climate change in the Mekong delta by Thailand Royal University and Hensinky University from Finland.

The plan was developed based on: hydrometeorological statistics of the last 30 years or so; results of the community survey interviews conducted in 2009 on historical changes and damages caused by climate change in Can Tho; and outcomes of the model on developments of weather and hydrological elements in Can Tho city in scenario of medium emission (B2) published by Ministry of Natural Resource and Environment (MONRE) in 2009.

Summary of materials and research data predicts demonstrations of climate change in Can Tho city such as: temperature to increase at least 2oC by the end of the 21st century, number of days with number of days over 35oC to exceed 240 days/year, water shortage due to more extreme droughts in dry seasons; high floods caused by sea level rises together with flood water from Mekong river in rainy seasons; more frequent extreme events; and together with these, deep saline intrusion into the city and landslides in rivers and ditches.

On the basis of this, proposed interventions include: (1) Non-construction activities: building awareness and capacity to respond to climate change; issuing guidelines, regulations, indicators to assess policy effectiveness to better support the responses to climate change. (2) Construction activities: Building capacity for health sector; developing hydrometeorology monitoring and early warning network; constructing river dykes; upgrading and construction of water storage, supply and irrigation network; storing rainwater with underground reservoirs; building multi-function houses to better sustain storms and floods; building a center for research of new crop varieties that better resist droughts and saline.

Difficulties: (1) Climate change is a too broad area; (2) Time is too limited for such a long-term effort; (3) Limited resources to deal with such a broad issue, relating to all sectors, communities and localities; (4) The direction confusion: top down instead of bottom up. There are many ministry-level programs to respond to climate change that started before local-level ones while it's local areas that are more severely affected; (5) It's is very difficult to evaluate the effects of climate change responses.

Good Practice 3:
Enhancing Adaptive Capacity



Enhancing adaptive capacity in the Kien Giang Biosphere Reserve

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Abstract: The Kien Giang Biosphere Reserve (KGBR) was established in 2006 and encompasses much of the coast line and adjacent marine areas of the Province as well as U Minh Thuong and Phu Quoc National Parks. The challenge for the Reserve is to balance sustainable economic development with conservation of the environment and particularly its unique biodiversity. The coastal wetlands, mangrove areas and Melaleuca forests, as well as the few remaining Dipterocarp forests of the KGBR are under mounting threat from population pressure, rapid provincial economic development and the effects of climate change.

Climate change adaptation in Kien Giang province is a matter of urgency in as most people live in low-lying areas vulnerable to sea level rise and increasing frequency and intensity of natural disasters, such as storms and floods. A 2 year pilot project (The conservation and Development of the Kien Giang Biosphere Reserve) combined Australia's resources and Germany's technical expertise - provided by GIZ - in partnership with the Kien Giang People's Committee and the provincial government in a united effort to assist local communities to adapt to potential climate change impacts.

The adaptive capacity of local communities has been enhanced by mainstreaming climate adaptation management across planning and development processes, by increasing resilience of infrastructure and livelihoods and by providing high quality information. Adaptation activities undertaken by the project have included assessing potential climate change impacts, the development and funding of new technologies including innovative fences for growing mangroves, new mangrove planting techniques in areas of high erosion and improved dyke design, construction and management, livelihood improvement through the promotion of alternative income opportunities and demonstration of sustainable farming practices for communities' dependent on coastal forests and the development and implementation of a comprehensive awareness raising campaign.

Enhancing local adaptive capacity in 7 Provinces in Cambodia

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Abstract: Purpose To build local adaptive strategies to climate change in target community in 7 provinces: Kandal, Kampong Cham, Kampong Thom, Siem Reap, Batambang, Preah Vihear and Mondokiri.



Methodology: To enhance local adaptive capacity, Caritas Cambodia has promoted advocacy program at national level and local capacity building at local level. In advocacy program, government, NGOs, private sectors and communities have joint action to conduct national farmers' forums to create a platform and dialog to address together the challenges, constraints and best practice for developing common adaptive strategies of farmers in the country.

Moreover, Caritas Cambodia has cooperated with National Committed for Disaster Management (NCDM) conduct training on "Community Based Disaster Risk Reduction and Climate Change Adaptation" (CBDRR and CCA) for local working group and commune committee for disaster management annually.

Results: Caritas Cambodia and other relevant stakeholders both government and non-government have already conducted two forums in 2010 and 2011 which focus on "Together Raising Awareness on Climate Change for Sustainable Agriculture" and "Together Help Small-Scale Farmers Adapt to Climate Change for Sustainable Livelihoods" which participated from 24 provincial farmers, relevant line ministries, international organization and local organizations together create platform for better adaptive strategies.

CBDRR and CCA have been conduct two times per province per year in target provinces to mainstream CBDRR and CCA to local community and they are capable to initiate DRR and CCA project for disaster risk reduction and climate risk reduction. They also are able to develop DRR and CCA planning in their local joint planning and actions.

Limitations: monitoring, evaluation and follow up activities of national forum are limited, community have time constraint to join training.

Community Preparedness to Address Climate Risks in An Giang Province, Vietnam

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Abstract: The link between climate change and disasters are now widely recognized; Climate change is escalating the severity and frequency of some hazards, increasing people's vulnerability and exposure to regularly experienced shocks and stresses, and intensifying the degree of uncertainty and the number of unexpected events (SCR Programme, 2010). Developing countries, particularly those in Southeast Asia, are vulnerable to climate related risks, such as tropical cyclones, floods, landslides, droughts, and sea level rise (EEPSEA, 2009). These risks can potentially increase due to predicted increase in intensity and/or frequency of many extreme weather events such as heat waves, tropical cyclones, prolonged dry spells, intense rainfall, and tornadoes (IPCC, 2007).

While there is a general understanding that climate change and disasters are interrelated, and that the approaches to mitigate, prevent, and adapt to these challenges are similar, very little connection and coordination has taken place in practice. This is partly due to the lack of interaction and institutional overlap among practitioners of the climate change and disaster communities (Schipper and Pelling, 2006). However,



another significant barrier to coordination is the lack of information, analysis, and clarification on the similarities and differences between disaster risk reduction (DRR) and climate change adaptation (CCA) in policy and in practice.

The Mekong River Commission (MRC) addresses the climate risks through its Flood Management and Mitigation Program (FMMP) as integral part of community based flood preparedness activities. Since the start of the project in 2004, the households and local authorities showed an active engagement in a series of activities at least a month before the storm and flood season. People would usually undertake repairs of residence, reinforcing infrastructure that expose to possible extremes. Bank of crop fields are consolidated to avert damage and losses. Harvested paddy is kept on elevated and safe storage. Animals are move to safer grounds. Emergency food, firewood and medicine are stocked. Local authorities, organizations, like the Women's Union and Farmers Association, and household groups may play a role in encouraging households to make such preparations. Priority project such as capacity building for community based flood risk management, community early warning system, swimming lesson, emergency kindergarten management, awareness through schools has been successfully implemented.

The perception study "Disaster Risk Reduction and Climate Change Adaptation: from the perspectives of national and local governments and communities in the lower Mekong basin" under the FMMP component 4 analyses that, for poor communities, adaptation approaches that are rooted in local knowledge and coping strategies, and in which communities are empowered to take their own decisions, are likely to be far more successful than top-down initiatives. Community driven approach and strengthening local capacities are key to build the resilience of communities to disasters, such as floods and drought, with the difference that it should also incorporate longer-term climate change and its predicted impacts into community-based planning.

To bridge the gap, the study suggests awareness and capacity building activities needs to be up scaled under the community based disaster risk reduction activities. The provincial planning mechanism must address the issue of climate change in the coming socio economic development plan for 2011-2015. Provincial planning department would need technical assistance in linking climate change adaptation related capacity building activities with the budgetary provision to each of the provincial line departments.

Enhancing adaptive capacity of local communities

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Abstract: Life with Dignity (LWD) is a national NGO localized from Lutheran World Federation (LWF), Cambodia Program. LWD, under the local leadership, continues working with all existing donors/partners and related government agencies to improve the livelihoods of the poor in rural Cambodia. The organization is implementing program to empower communities to manage



and use natural resources in sustainable ways and to manage and mitigate disaster risk, including climate change and adaptation.

The monsoon climate and uncertainty of rainfall in the country means that the communities are very vulnerable, and their crops can often be destroyed by the lack of water or flood. Water shortages in the target areas of LWD are having impact on the poorest people in the communities; both their own water needs as well as their agriculture practices. Hence, a project called “Building Disaster Resilient Communities in Cambodia” has been implemented in three provinces of Battambang, Kampong Chhnang and Kampong Speu where 2,462 households and 885 school teachers and students are benefited. The project aimed at increasing resilience and reducing vulnerability to extreme weather conditions by introducing concepts of disaster risk management and climate change adaptation; drought resilient agriculture techniques; water supply and irrigation systems. To sustain project activities, LWD complies with participatory approach, empowerment approach and right-based approach within the project. The concepts of disaster risk management and climate change adaptation result in local planning process and integration of the planning into commune development plan or commune investment program. The practices of drought resilient agriculture techniques have improved food security for household consumption and generated income from selling surplus on crops and animals production. Whereas the water supply and irrigation systems result in (1) improved access to water for families and their animals all year round; (2) better access to water and sanitation in schools and communities; (3) improved water storage to keep water during the rainy season to allow for water reserves during the dry-season and drought; (4) extended drainage for household consumption and relieving rice paddy fields.

However, more work needs to be done to increase awareness about the linkages between development, disaster risk reduction and climate change adaptation. For instance, the project is facing challenges such as, more frequent drought, presumably affected by climate change; limited capacities of communities and local leaders to cope with impacts of climate change and disaster; advocate duty bearers to assist vulnerable communities in disaster risk reduction and adaptation to climate change.

Throughout the project life cycle, we have learnt some valuable lessons along the way such as;

- (1) If we build strong grassroots organizations and networks, we are able to mobilize and strengthen mutual help when the community members face physical and financial crisis;
- (2) application of participatory action research approaches build the confidence of farmers to apply innovations;
- (3) high potential of drought resilience agriculture techniques in supporting disaster mitigation and adapting to climate change in Cambodia.



Building community resilience to climate change in Champhone District, Savannakhet Province, Lao PDR

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Abstract: Champhone district has been selected for demonstration of adaptation planning based on its present vulnerability to climate change, especially flooding and drought. It is the second biggest district of Savannakhet province located about 54 Km from Savannakhet. The district has a total land area of 1,114 square kilometers and a population of 105,415 (2008), consisting of 102 villages. Two main ethnic groups, namely Lao Loum and Lao Thueng are recorded. The main river in the area is Xe Champhone. Climate change assessment and adaptation activities were implemented in three villages namely Kangkok Nuea, Nakathang and Taleow, where flooding and drought are become frequent and intensive. The objectives of adaptation activities in the demonstration site were to: supporting capacity building training and climate change mainstreaming in local, provincial, and national planning and decision making process, study of potential climate change impacts, risks and vulnerability assessment and conduct adaptation planning, raising awareness of climate change and its impacts, and demonstrating implementation of adaptation options. There was introduction of flood tolerant rice varieties to farmers involved to test the flood resistant rice TDK-Sub1 and IR64 in 1 hectare of paddy field, extension of soil irrigation canal for improving efficiency in water use for rice field in dry season, and soil analysis study in area of 18 hectare of the silt-covered.

Good Practice 4:
Participation and Gender Mainstreaming
in Climate Change Adaptation



Participatory methods and resource use profiles for informing policy development on climate change adaptation: Lessons from Asian rice farmers

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Abstract: Adaptation research in Asian agro-ecosystems has largely concentrated on increasing more efficient input-output ratios and providing detailed forecasts for seasonal weather patterns (cf. Roth et al 2009). With a higher yielding farming system and more precise weather information, it was thought that the farmer would be empowered to adapt to an uncertain climatic future. More recent research has shown that (a) farming households weigh their options to make changes to the farming system against a full spectrum of on-farm, off-farm, and non-farm options (Giampietro 2004); (b) adaptation needs to be understood against the backdrop of resource constraints and opportunities (Sabates-Wheeler et al. 2008); and (c) participatory methods are essential in understanding farmer decision making (Grunbuhel and Williams 2011).

This paper aims at (1) introducing the development of a research framework, which integrates participatory methods with traditional cropping models; and (2) drawing preliminary lessons from the application of this framework in case studies conducted among rice farming communities across Asia. The paper devises the rationale behind the integrated research framework and how participatory methods fit (or not) to standard scientific methods. It looks into some of the prerequisites and epistemological difficulties in developing the framework as well as common theoretical foundations. It also questions the feasibility of such a framework by drawing from direct experiences in applying the framework in a project that engages in climate change adaptation research for policy development in four rice-farming nations in South and Southeast Asia representing a broad spectrum of farming systems (India, Bangladesh, Laos, Cambodia). The lessons derived specifically relate to the interfaces between standard scientific and participatory methods as well as how science must navigate between the different “grammars” of local knowledge, scientific empiricism, and information for policy development.

A Community Meeting: Climate Change Vulnerability on the Agenda

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Abstract: A community meeting is an important approach as far as learning and sharing of information is concerned. If such meeting organization is done well, the grassroots community members would actively participate in such community discussion. Following the conducting of



rapid rural appraisal (RRA) on climate change, the Khmer Institute of Democracy mobilized up to five community meetings to discuss climate hazards and community actions to reduce harms brought by climate change in those five vulnerable communities which their geographical boundaries fall within the Mekong River Basin. The target communities are from Kampot, Kampong Speu, Kratie, Kampong Thom, and Svay Rieng provinces.

We selected those communities based on media, our own study and environmental NGO's reports as problematic areas in term of vulnerability and needed urgent intervention. For example, Kampong Speu province late and early this year because of droughts have caused water shortages. The ponds and rivers that people there have come to depend on to irrigate their farms and to drink have all dried up! We convened a meeting in Kampong Speu just to respond to the water issues, we discussed how to manage the problem together and to allay some of the environmental concerns people from that community have had. We discovered the impact on the community was that the children were attending classes late because they have to go and fetch water from far away.

The citizen advisor ("CA") or local citizen activist was charged to gather everyone to attend this meeting comprising of grassroots villagers, KID staff, donor, councilors, and commune and village chiefs.

Climate Change Community-based Adaptation (CC-CBA): A Case Study of Thailand

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Abstract: In 2007, farmers in Yasothorn Province, north-east Thailand, experienced the longest dry spell during a rainy season in decades. The dry spell, lasting from June until late August, reduced crop yields, lowering farmers' income and reducing their food security. However, statistics from the Meteorological Department suggest that the dry spell that occurred in 2007 is not a one-off phenomenon, but part of a gradual trend that has developed in the past decade, due to rising temperatures and changes in rainfall patterns caused by climate change. Most farms in Yasothorn are rain-fed, with no irrigation facilities. Jasmine rice is light-sensitive and has to be grown during particular months of the year; so when there is no rain, rice plants are left to wither in the scorching sun. When seasons start late and rain does not fall, the impact on rice yields is significant. Combined with rises in temperature, this means that Thailand's biggest production hub suffers greatly. Irregular weather in the form of hot and cold spells also causes pest attacks on rice crops and fungal disease, reducing the quantity and quality of the crops.

In addressing climate threats to safeguard livelihoods of farmers, ENF supported by Oxfam Thailand, implemented a one-year pilot CCA project for organic farming as a low regret adaptation option in 2008-2009. The project components consisted of; i) provision of climate-change information to farmers and conducting participatory decision making, ii) provision of loans to project participants as adaptation fund to implement of on-farm water management system, and iii) farmers as catalysts for change in sharing knowledge and experience with other farmers. Under the



first component, technical knowledge of climate change and its potential impacts, in cooperation with SEA START, was provided to build capacity of local authorities and people included female and marginal groups. The participatory approach was applied at all steps of implementation particularly on-farm water management system that reflected the needs of the main users – women and children. The last component provided opportunity to replicate/upscale the implementation of adaptation options by using experiences farmers as knowledge transfer catalyst to other farmers.

As expected and feared, 2008 saw Yasothorn hit by drought. The problem was exacerbated by rain during the harvesting months, which drowned many of the rice crops in the low-lying plains that had managed to survive the drought. The project, however, was able to provide satisfactory outcomes on improvement of local livelihood and food security through an on-farm water management system with gender responsive in the context of possible climate threats. Participation of farmers in each step of implementation contributed to this success. Besides, the project identified the needs of replication and upscaling of the adaptation options. Therefore, the stakeholder at government and the public sector should be engaged to mobilise resources and financial support that climate adaptation methodology can be a lesson learned for replication.

Vulnerability Reduction Assessment Tool and Gender Mainstreaming in Kratie and Preah Vihear

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Abstract: Cambodia's NAPA was developed and endorsed in 2006. The NAPA identifies 39 no-regret projects to be implemented. In 2009, one of these projects which focus on promoting climate resilience in agriculture and water resources management in the rural area started with funding support from the Least Developed Countries Fund (LDCF) of the GEF and UNDP. The project is implemented by the Ministry of Agriculture, Forestry and Fisheries (MAFF) in cooperation with the Ministry of Water Resources and Meteorology (MoWRAM), Ministry of Women Affairs (MoWA) and Ministry of Environment (MoE). The project has three outcomes: (1) Improved capacity within local institutions to manage agricultural water resources in a changing climate; (2) Locally appropriate adaptation options demonstrated to reduce exposure to climate change - induced risks; and (3) Lessons learned in project pilot sites replicated in other vulnerable areas of Cambodia. The presentation will focus on sharing progress and lessons learned from the adaptation options that have been piloted which include System of Rice Intensification (SRI), farmer-based organisation on rice seeds production and improvement of animal health and production. The project will also present the experience on undertaking "On Farm Adaptive Trial" with rice varieties resilient to droughts and floods and introducing vegetable seeds. The presentation will focus on sharing a "Vulnerability Reduction Assessment" tool in climate change adaptation projects and the approach of the project to integrate climate change into commune development plans using Decentralisation and Deconcentration procedures. Finally, the presentation will touch base on the project's experience in mainstreaming gender into climate change activities.



Lessons from UN supports to promote gender equality in National Programming on Disaster Risk Reduction and Climate Adaptation in Vietnam

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Abstract: Promoting gender equality and mainstream gender in Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) have significantly observed at both national and provincial policies and gradually influencing the expected changes of local planning process. Nevertheless addressing the gender inequality issues, either those that has been long identified or new, in the so-call “conventional male dominant” sector like disaster risk management, or in the expanding and emerging field of climate adaptation, is more or less having a loosely momentum.

Practical evidences to mainstream gender are available in different types of projects over the past decade. Both simple and tailored measures have been introduced and localized in practices with proven positive impacts. As simple as ensuring local DRR and CCA agenda and invitation is inclusive of the vulnerable, women and girls has gradually helped to change local behaviors of only men go to local meetings. Communication program for awareness raising on DRR and CCA through television, radio, soap opera, women group discussions, and local institutional meetings and events helped knowledge on DRR and CC accessible to the most vulnerable. More targeted interventions on vulnerable women have showed-case of the efficiency and benefits of having women participation (e.g. trainings for women on swimming and survival skills, introducing new livelihood alternatives after climate stresses, and formal planning , decision making processes and resource mobilization for DRR and CCA). Many women and men, girls and boys in these projects have fully engaged and aware of their equal important roles and opportunities for risk reduction and adaptation activities.

Investing in innovative options to promote women participation and gender empowerment in DRR and CCA are possible in Vietnam and the community benefits from these effective and sustainable risk reduction alternatives. However, there are uncertain of how the investment will be made and how resources will be mobilized to up-scale those good practices. In example, the national programme on community based disaster risk management (CBDRM) or National targeted programme respond to Climate change (NTP-RCC) has not yet made any detail objectives, budget and plan of actions to mainstream gender into its 5 year plans. Little investments are currently allocated from the two programmes, but rather more or less to re-inventing the process of developing training materials and guidelines rather than having sufficient attention on take up elements of the good practices for rolling out. Besides, certain challenges in operational design are there in utilizing the lessons and good practices also as the operational designs of those empirical practices were far different from adoption into the current government system (financially and institutionally). While good efforts are there, it is necessary and more efficient to ensure prior consensus of objectives and priorities to promote gender equalities in DRR and CCA between all stakeholders and make the process to be more up-front, particularly for those has high potential of alignment and up-scale in national DRR and CCA programmes.

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