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Mekong Adaptation and Resilience to Climate Change (Mekong ARCC)

Annual Report—Year Two

October 2012 to September 2013

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Mekong Adaptation and Resilience to Climate Change (Mekong ARCC)

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Subcontractors:	International Centre for Environmental Management (ICEM) World Resources Institute (WRI)
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Table of Contents

1	Year Two Summary.....	1
2.	Program Overview/Summary.....	4
2.1	Program Description/Introduction.....	4
3.	Activity Implementation Progress.....	6
3.1	Implementation Status.....	6
	Task 1 – Regional Platform Partner & Knowledge Center.....	6
	Task 2 – Climate Change Impact & Adaptation Study.....	9
	Task 3 – Integrated Community and Ecosystem-based Adaptation Activities.....	12
	Task 4 – Valuing Ecosystem Services in the Lower Mekong River Basin.....	16
	Task 5 – Scaling-Up Successful Approaches.....	17
3.2	Implementation challenges.....	19
3.3	PMP Update.....	19
4.	Stakeholder Participation and Involvement.....	21
5.	Management And Administrative Issues.....	22
6.	Lessons Learned.....	24
7.	Key Activities Planner For Next Year.....	26
	ANNEX A: Progress Summary.....	28
	ANNEX B: Media Coverage of Climate Study Release.....	31

Tables and Figures

	TABLE I: Peer Review Organizations.....	11
	FIGURE I: Proposed Implementing Partner Sites & Ecosystems.....	14
	FIGURE 2: Field Activity Process & Deliverables Flow Map.....	15

I. YEAR TWO SUMMARY

Year 1 Brief Summary

The first year of Mekong Adaptation and Resilience to Climate Change (Mekong ARCC) program largely focused on relationship building with regional stakeholders and beginning the resource intensive basin-wide Climate Change Impact and Adaptation Study with our partner ICEM and a board of regional scientific experts. The program team laid the groundwork for holding media events to get the Study results out to the public, and marketed the program to potential implementing partners (IPs) working in priority provinces in the basin identified by the Mekong ARCC Climate Study.

Year 2 Summary

The second year of the Mekong ARCC program represented a shift from carrying out sound scientific analysis to a focus on interpreting the climate science for communication efforts and for identifying IPs for the project's field activity phase. In November 2012 and March 2013, the team held workshops with participation of actors from across the region to communicate the results from the *Climate Change Impact and Adaptation Study for the Lower Mekong* (Climate Study), considered to be one of the most comprehensive downscaled climate studies ever carried out in the Mekong River basin. The final workshop held in Bangkok in March, was attended by more than 120 participants working on climate change adaptation from across the four Lower Mekong countries (Laos, Thailand, Cambodia, Vietnam), providing an opportunity for the project to introduce its approach to a large audience and explain how it will add value to climate adaptation in the region. The structure of the workshop followed the approach of the Mekong ARCC project itself, with a focus on Science on day one, where research results were presented in detail, and moving to Action on day two, by exploring different organizational experiences in applying climate change research into decision making. Hans Guttman, the Chief Executive Officer of the Mekong River Commission, provided the key note address of the workshop, signifying the importance of the Study to major actors working to address climate change in the Lower Mekong. A large press event was held at the completion of the workshop, which generated significant media attention from media outlets both from the Lower Mekong countries and internationally that further disseminated and legitimized the results of the Study.

The Climate Study was designed to serve as a model approach. In order to lend credibility to its academic and scientific standards, as well as increase the utility of this research as a key reference for climate change adaptation policy, studies and activities in the region, a peer review process of the draft final report was initiated late in Year 2. Several organizations possessing specific and highly regarded sectoral expertise were identified and requests made for their participation in peer reviewing the Study. Their peer review comments were further supplemented by the addition of written feedback received from panel members from each of the technical sessions during the Final Results Workshop, as well as comments received on the

report during a period of public comment and from the USAID Mekong ARCC Contracting Officer's Representative (COR). A scientific editor was engaged to review the Main and Summary Study reports (six 'theme reports' were also prepared by the Study team and are currently being edited) and ensure that that the Study Team adequately addressed peer review and USAID comments. External critiques were addressed by the Study team and revisions incorporated into the final report, which was thoroughly edited prior to submission to USAID in quarter four.

With the Task 2 Climate Study moving towards completion, the Mekong ARCC team selected – with approval from USAID – sites for field activities, and developed Requests for Proposals (RfPs) covering adaptation initiatives with communities in Thailand, Laos, PDR and Vietnam. Tenders were widely distributed across the region and generated much interest – with 16 proposals received from across three countries (note: approval for field work in Cambodia was not received). A rigorous proposal review process led to the selection of IPs to be recommended for award to USAID. These organizations proposed community and ecosystem-based adaptation initiatives in Chiang Rai and Sakon Nakhon, Thailand (IUCN), Champasak (WWF) and Khammouan (IUCN) Lao, PDR, and Kien Giang Vietnam (Asian Management and Development Institute and the Vietnam Red Cross). In September 2013 at the close of Year 2, the team submitted a request for consent to subcontract IPs to carry out field work beginning early in Year 3.

As the Mekong ARCC Climate Study described the impacts on key livelihood sectors of the LMB including agriculture, capture fisheries and aquaculture, livestock, natural systems, and health and rural infrastructure, the Mekong ARCC team recognized that such an analysis generated a wealth of quantitative data that can be incorporated into a complementary assessment of economic impacts – one that assigns dollar values to values at greatest risk (VAR). World Resources Institute (WRI) initiated a preliminary VAR analysis to fill this role. The report's assessment will not be based on a detailed consideration of climate scenarios, but on a more tractable approach that considers existing economic values at risk based on the forecasts of the Climate Study, such as changes in the pattern of temperature, rainfall, and flooding in the LMB at a province level. The WRI analysis will provide a rough sense of the likely magnitude of economic values at risk implied by the Study data in order to inform the selection of cost-effective adaptation options to reduce that risk.

At the close of Year 2, the WRI team completed the compilation and analysis of spatial data layers on agricultural production and suitability, ecozones, flood risk zones, hydropower, population and public infrastructure. Spatial data layers were reviewed and applied to an analysis of climate change hot spots, coastal inundation zones, and inland flood zones to determine the precise number of hectares and resources at risk for a variety of uses that can then be valued in the study. Compilation and review of relevant literature to inform the "best practices" section of the report has also been completed. This report will be completed in the first quarter of FY 14, but preliminary assessment indicates the following:

- Using this VAR approach, the annual value of infrastructure services, worker productivity, agricultural output, hydroelectric power, and ecosystem services at risk from climate change in the MRB is estimated to be at least \$16 billion per year. In addition, the value of infrastructure assets at risk in areas expected to be inundated more frequently or permanently is estimated to be at least \$18 billion.
- The magnitude of these values at risk in the LMB justify significant investments in adaptation measures such as wetland restoration, eco-resilient cropping techniques, and early warning systems for changes in ecosystems critical for subsistence.

2. PROGRAM OVERVIEW/SUMMARY

Program Name:	Mekong Adaptation and Resilience to Climate Change (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)
Major Counterpart Organizations	None
Geographic Coverage (cities and or countries)	Lower Mekong River Basin countries- Cambodia, Laos, Thailand and Vietnam
Reporting Period:	Annual

2.1 Program Description/Introduction

The 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) and World Resources Institute (WRI). 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 systems, biodiversity, ecosystems, and livelihood options.

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. 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, history and culture. Lessons and experiences drawn from the national and community level will ultimately be feed up to regional actors working at the transboundary level to help ensure they are shared across the Basin.

The impetus for Mekong ARCC stems from the launching of the Lower Mekong Initiative (LMI). Announced by the US Secretary of State and foreign ministers from each of the LMB countries in 2009, the LMI emphasizes close cooperation between the United States and governments of Thailand, Cambodia, Lao PDR, and Vietnam to support regionally sustainable and environmentally responsible growth.

The primary goal of Mekong ARCC is: Increase adaptation capacity and resilience of communities to the negative impacts of climate change.

Objectives of the project include:

- 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
- Support and sustain regional learning networks to share and replicate best practices

Mekong ARCC is comprised of five major tasks 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.

Mekong ARCC is headquartered in Bangkok with project activities carried out in Thailand, Vietnam, Cambodia and Lao PDR.

3. ACTIVITY IMPLEMENTATION PROGRESS

3.1 Implementation Status

In the sections that follow, we highlight key activities and progress made under each of Mekong ARCC’s five tasks.

Task 1 – Regional Platform Partner & Knowledge Center

In Year 2, the project began to broaden our engagement with regional media through the release of the basin wide Climate Study, while also deepening our networks through social media messaging and interaction.

Develop & Disseminate Project Knowledge Products

The Mekong ARCC Website (<http://mekongarcc.net>) was the main mechanism utilized in sharing a variety of knowledge products about to the Climate Study—such as the draft final report, summary of key findings, and presentations, fact sheets, and workshop speeches. Mekong ARCC’s Facebook and Twitter feeds were used to update and promote relevant news and events on the website as well as create inbound traffic.



List Growth of E-mail Subscribers

Two project e-newsletters were distributed in 2013, one in January and the other in May. Project updates and relevant news items were also circulated periodically to the project mailing list, which comprises more than 260 relevant individuals from Mekong ARCC’s target beneficiary groups. The graphic on the left shows that by the end of FY2013 the number of e-mail subscriptions to Mekong ARCC newsletter increased to 94 subscribers. The Climate Study Final Results Workshop at the end of March 2013 brought the highest number of subscribers.

The innovative thinking of the Mekong ARCC Project in translating scientific study results into practical implementation was highlighted in the DAI Developments newsletter. An article entitled “Science into Actions: Turning Climate Studies into Decision-Making Tools,” was widely distributed in hard copy and via the DAI website and social media tools. The article can be

downloaded on the Mekong ARCC website: <http://mekongarcc.net/resource/daideas-science-action-turning-climate-studies-decision-making-tools>

Strengthen Engagement with Media

The March 2013 Climate Study workshop organized to present our Climate Change Impact and Adaptation Study results generated strong media attention. A press conference organized for March 29, 2013 was attended by 20 participants from both international and local media outlets – such as Voice of America, DPA News Agency, UN Newswire, Bangkok Post, Asia Connect, Thai TV3, Vietnam News, and The Cambodia Daily. A media packet was prepared and distributed which contained a media advisory and press release (both translated into Thai), project fact sheets, and the summary key findings, which served as the basis for many of the articles ultimately published. The March workshop helped generate more than 20 media stories from such outlets as The Guardian, the Climate Change Network, Reuters, and Voice of America. Number other print and web outlets reprinted/posted these original stories (see Annex B below for a full listing of articles).

In quarter four an interview was conducted by correspondent Thin Lei Win of Thomson Reuters Foundation of Mr. Alfred Nakatsuma, Director for the USAID Regional Environment Office for Asia and Mr. Paul Hartman, Chief of Party, Mekong ARCC. The Reuters story can be found in the Website: <http://mekongarcc.net/news/lower-mekong-basin-highly-vulnerable-climate-change-study>.

Such media coverage serves to assist USAID in disseminating important project results, such as those from the Climate Study, to large regional and global audiences. This helps to encourage use of project-generated results and elevates the status of USAID and helps legitimize the project as an important regional actor.

As an outgrowth of extensive media coverage of the Climate Study after the Final Study workshop in Bangkok, along with significant efforts to engage regional actors and sector experts over the life of the project, the Mekong ARCC Climate Study was cited in the recently released World Bank Report: **“Turn Down the Heat: Climate Extremes, Regional Impacts and the Case for Resilience.”** Reference to the Study served as a means to demonstrate in the World Bank report what scientifically derived analysis is projecting vis-à-vis climate changes in South East Asia, and to illustrate how these changes are expected to impact agriculture and aquaculture in the region. The inclusion of results and analysis from the Mekong ARCC Climate Study in this report – which has been downloaded more times from the World Bank’s website than any other report they have ever published – validates the rigor of the study’s science-based approach and increase its profile as both an important information resource to a broad range of food security and climate change initiatives in the Mekong basin, and as a model for similar studies in the Asia-Pacific region.

Citation of the Study in widely read publications such as this also furthers the likelihood that its findings and best practices reach a broad audience of practitioners in climate change

adaptation, including Lower Mekong governments, implementing organizations, and regional and multilateral actors, such as the Intergovernmental Panel on Climate Change (IPCC), where its inclusion in their upcoming fifth assessment report would ensure its application. The South East Asia section of the report where Mekong ARCC's Climate Study is cited can be downloaded here: http://mekongarcc.net/sites/default/files/wb-turn-down-the-heat-sea_1.pdf

Disseminate climate change adaptation information to relevant regional actors

During Year 2, Mekong ARCC presented key study findings from the "Climate Change Impact and Adaptation Study for Lower Mekong Basin" at a handful of key regional events, including:

- The Mekong ARCC Deputy Chief of Party (DCOP) presented in Can Tho, Vietnam at the 'Technical Innovation Symposium' organized by the South East Asia Regional Environmental Adaptation to Climate Change Training and Implementation (SEA: REACTi) Project implemented by The Adventist Development and Relief Agency (ADRA), Vietnam and ADRA, Lao PDR.
- The Mekong ARCC COP presented on 'Building Resilience in Rural Communities: Results from the Mekong Adaptation and Resilience to Climate Change Study' at a World Bank East Asia and Pacific team meeting entitled 'Agriculture Systems in Transition in East Asia.' This meeting was also held in Can Tho, Vietnam.
- 'Natural Wealth Mekong' workshop in Bangkok, organized by the: Asia Development Bank, Global Mechanism of the United Nations Convention to Combat Desertification, Poverty Environment Initiative of United Nations Development Programme (UNDP) and United Nations Environment Programme (UNEP), Food and Agriculture Organization (FAO), and World Wide Fund for Nature (WWF).
- ICEM presented a paper and poster on the Climate Study at the Mekong Environmental Symposium (MES) in Ho Chi Minh City, Vietnam, organized by the German Aerospace Center, the Ministry of Science and Technology of Vietnam, The Southern Institute of Water Resources Research, and the Vietnam Academy of Science and Technology.

In addition, the project developed a series of fact sheets (3 in English and 2 in Thai) to summarize key findings from the climate study, alongside large event posters (in English and Thai) that illustrate shifting agriculture in the LMB. The program has also engaged a scientific editor to help us review and translate the technical reports and findings into easy-to-understand terms that can be applied by the IPs.

Website knowledge products and information linked to existing platforms

In early October 2012, the Mekong ARCC Website (<http://www.mekongarcc.net>) went live. The site is a central element of program's knowledge management strategy, and is designed to host a categorized document library, repository of news articles, blog for presentation of lessons and observations by key participants, and a calendar of project events, among other functions.

The Mekong ARCC social media presence continued to grow in Year 2, primarily through Facebook (<http://www.facebook.com/MekongARCC>) and Twitter accounts (<http://www.twitter.com/MekongARCC>). At the end of FY2013, there were 138 likes of Mekong ARCC Facebook page, most of which are geographically based in Thailand, USA, Vietnam, Cambodia, Myanmar and Laos, respectively. For Mekong ARCC Twitter page, there are currently a total of 95 followers. These outreach communication tools are aimed to syndicate the information posted on Mekong ARCC Website and to create inbound links and traffic to the website. Apart from these tools, Mekong ARCC has started to use reach out to other online channels and platforms to promote and disseminate knowledge products and materials, and share news to targeted audiences.

Based on a review provided by Google Analytics from April 1 – June 30, 2013, the top 5 sources that led to web traffic were: (1) directly typing URL address, (2) Google Search, (3) news article referencing and providing a link to the Climate Study in the Guardian.co.uk, (4) Facebook, and (5) announcement and link to the Climate Study workshop results on climate-iiisd.org. Much of the other inbound traffic derived from links provided in the Mekong ARCC newsletter or referrals from climate platforms.

Task 2 – Climate Change Impact and Adaptation Study for the Lower Mekong

The Climate Change Impact and Adaptation Study was completed in Year 2, and the team held check point workshops with stakeholders both as the study was in development and at its completion.

Conduct baseline workshop

Mekong ARCC and Vietnam's Ministry of Environment and Natural Resources co-hosted a workshop in Hanoi from October 31- November 1, 2012 to discuss the preliminary findings of the Mekong ARCC project's "Climate Change Impact and Adaptation Study for the Lower Mekong Basin". The workshop was conducted at the study's mid-point and brought together more than 80 participants from across the four lower Mekong countries, including 27 government officials from Laos PDR, Thailand, Cambodia and Vietnam, as well as representatives of donor agencies, field practitioners, academics, and the private sector. The goal of the workshop was to review the Study methodology and provide expert input into baseline data collected and used for zoning and trend analyses.

Identify adaption options for most vulnerable zones

In the baseline phase of the Climate Change Impact and Adaptation Study, the team ranked ecosystems and agro-ecological zones in terms of their vulnerability to climate change including preparation of a map of the most vulnerable provincial “hotspots.” Based on this assessment, sector teams identified threats to specific livelihood sectors. Additionally, climate threat packages for Chiang Rai, Gia Lai, Ken Giang, Khammoun and Mondulkiri, Champasak, Kampong Thom, Sakon Nakhon and Strung Treng were developed and shared with USAID.

The Study team completed the final phase of the study through which they develop options for integrated adaptation interventions that link agriculture, animal husbandry, and fisheries with ecosystem services. These options were designed to inform the implementation of community and ecosystem-based adaptation initiatives that are part of the Task 3 of Mekong ARCC project. A complete listing of adaptation options can be found in the Final Draft Study Synthesis report, which can be downloaded on the Mekong ARCC project website:

<http://mekongarcc.net/resource/mekong-arcc-draft-final-report-ccia-study>

Conduct regional workshop to seek input on final report

Mekong ARCC and Thailand's Office of Natural Resources and Environmental Policy and Planning (ONEP) organized a Final Results Workshop on the project's Climate Change Impact and Adaptation Study for the Lower Mekong Basin in Bangkok, Thailand, on March 28-29. The Workshop brought together more than 120 expert participants from Laos PDR, Thailand, Cambodia and Vietnam, including more than 50 national government officials to review and comment on the Study's findings prior its finalization.

The key note address by Mr. Hans Guttman, CEO of the Mekong River Commission Secretariat stressed the challenges of integrating climate science into decision making, which was a theme of the workshop. Potential climate change impacts highlighted by the Study include:

- Higher temperatures and more rainfall decrease the suitability of rain-fed rice growing in the lowlands of Thailand's northern Chiang Rai Province but increase it in the northeastern province of Sakon Nakhon.
- More rain in Cambodia decreases yields of cassava and rubber in Kampong Thom and Mondulkiri.
- As heat and rainfall increase, production of Robusta coffee in Lao PDR shifts to higher altitudes, for example from Champasak to the north of the country.
- Heat stress may limit production of freshwater prawn and flash floods cause a sudden drop in salinity, inviting disease into coastal shrimp ponds in Vietnam.
- Climate impact on feed crops like maize and cassava will have knock-on effects for livestock operations and production costs.

Complete final report of study and submit it to USAID

The draft final report resulting from the Climate Change Impact and Adaptation Study was submitted to USAID RDMA. Comments on the report were provided to the Study team by the USAID Mekong ARCC Contracting Officer’s Representative (COR). The Climate Study was designed to serve as a model approach.

In order to lend credibility to the academic and scientific standards of the Climate study, as well as increase the utility of this research as a key reference for climate change adaptation policy, studies and activities in the region, a peer review process of the draft final report was initiated late in Year 2. Several organizations possessing specific and highly regarded sectoral expertise were identified and requests made for their participation in peer reviewing the Study.

Table 1 below shows the organizations that agreed to provide formal comments and the sections of the report reviewed as related to their area of expertise. Of the seven organizations invited to participate, four submitted written comments for consideration by the Climate Study team—in some cases by multiple reviewers.

TABLE 1: PEER REVIEW ORGANIZATIONS

Organization	Technical Area for Comment
National Center for Atmospheric Research (NCAR)	Climate downscaling and modeling methodology
International Rice Research Institute (IRRI)	Climate vulnerabilities and impacts on rice
International Union for Conservation of Nature (IUCN)	Climate vulnerabilities and impacts on natural systems and protected areas
International Livestock Research Institute (ILRI)	Climate vulnerabilities and impacts on livestock
Food and Agriculture Organization (FAO) (detailed panelist review for Final Workshop)	Climate vulnerabilities and impacts on Fisheries

The peer review comments were further supplemented by the addition of written feedback received from panel members from each of the technical sessions during the Final Results Workshop, as well as comments received on the report during a period of public comment. These comments were addressed by the Study team in quarter eight and have been incorporated into the final report.

As mentioned in the summary of Task One results, a scientific editor, Shelley Gustaffson, was engaged on a short term contract to review the Main and Summary Study reports and ensure

that they were thoroughly edited prior to their submission for approval and that the Study Team adequately addressed peer review and USAID comments. Six 'theme reports' were also prepared by the Study team and are currently being edited by Ms. Gustafson for submission in quarter one of FY 14.

The project will next prepare short communications materials written in popular language that cover important results generated by the Study in order to reach a non-scientific audience. A list of the materials the project intends to produce in year three can be found in section 7 below.

Task 3 – Integrated Community and Ecosystem-based Adaptation Activities

In Year 2, the team spent considerable time preparing for the release of the Mekong ARCC Task 3 RFP and evaluation of proposals. This included multiple meetings with and communications seeking approval from bilateral Missions in the region to release the Mekong ARCC Task 3 RFP for all four countries and culminated with recommendations to RDMA for implementing partners to work in priority provinces identified by the Climate Study across the basin.

Select focal areas for climate planning proof of concept activities

A major output of the Study was the identification of climate change hotspots to better understand how climate change will alter ecosystems and impact the 'comfort zones' of key crops and other community livelihood and subsistence options. Comfort zones are ranges where temperature, rainfall and soil conditions create favorable conditions for production. As a result of climate change, conditions will become unsuitable from what are today thought of as ideal for certain crops, like the Central Highlands of Vietnam for coffee or Thailand's Chiang Rai Province for rice.

The 'hot spot' approach integrates and orients study findings and provides a scientific basis for the selection of focal areas for the community adaptation initiatives that will be undertaken by Mekong ARCC in the next phase of the project. Nine hot spot provinces (see list below) were selected and submitted to USAID for approval. The basis for selection of these focal provinces includes: 1) representative of the ecosystems found across the Basin, 2) contain a mix of staple and commercial crops, fisheries and livestock that are common to the LMB, 3) are projected to experience the greatest relative increase in average temperature and/or rainfall, and 4) where such shifts would significantly impact a small number of important livelihood/subsistence options for communities. The selected hot spot provinces, therefore, share common traits with other provinces in the LMB, which will increase the likelihood that the tested approaches to adapting and learning generated in field programs can be replicable and scalable throughout the Basin.

The draft final Climate Change Impact and Adaptation Study was submitted to USAID with the Hot Spot provinces listed below targeted as priorities for the provision of Mekong ARCC support

in carrying out Ecosystem and Community-based Climate Adaptation and Resilience Building Initiatives:

- Chiang Rai - Thailand
- Sakon Nakhon – Thailand
- Khammouan – Lao PDR
- Champasak - Lao PDR
- Mondulhiri – Cambodia
- Stung Treng- Cambodia
- Kampong Thom - Cambodia
- Kien Giang -Vietnam
- Gia Lai - Vietnam

While Mekong ARCC received approval from the Missions in Thailand, Laos PDR, and Vietnam, the Cambodia Mission responded to the RDMA request for site and RFP comment by indicating that it would not approve Mekong ARCC undertake field activities in country due to perceived overlap with initiatives of existing Cambodia Mission projects and a lack of absorptive capacity by NGOs in some of the target provinces.

Select organizations to undertake climate planning with communities in focal provinces

DAI issued two separate solicitations for the implementation of pilot projects in focal communities – one for Lao and Thailand released in May 2013 and one for Vietnam released in June 2013 – at dates corresponding with USAID approval of sites in each of the target countries (**note:** site approval and release of the solicitation for Vietnam was delayed pending USAID/Vietnam Mission concurrence of site selection and RfP review). Proposals in response to the Thailand and Lao RfP were received approximately two weeks prior to those for the Vietnam RfP, but all proposals were reviewed concurrently. Information about the two Mekong ARCC RfPs was distributed widely, including through posting on relevant web platform, placing ads in national newspapers, and via social media tools linked to the Mekong ARCC website. Firms, non-governmental organizations, research institutions, universities and other organizations were invited to submit proposals for the provision of support for the targeted provinces of Chiang Rai and Sakon Nakhon, Thailand, and Khammouan and Champasak, Lao PDR; and Kien Giang, Vietnam.

Implementing groups will carry out activities with communities that reduce vulnerability and build resilience to climate change, particularly related to community livelihoods and welfare, for approximately two and a half years. Proposed adaptation initiatives will have a maximum budget of US\$ 200,000 per site for the entire life of project.

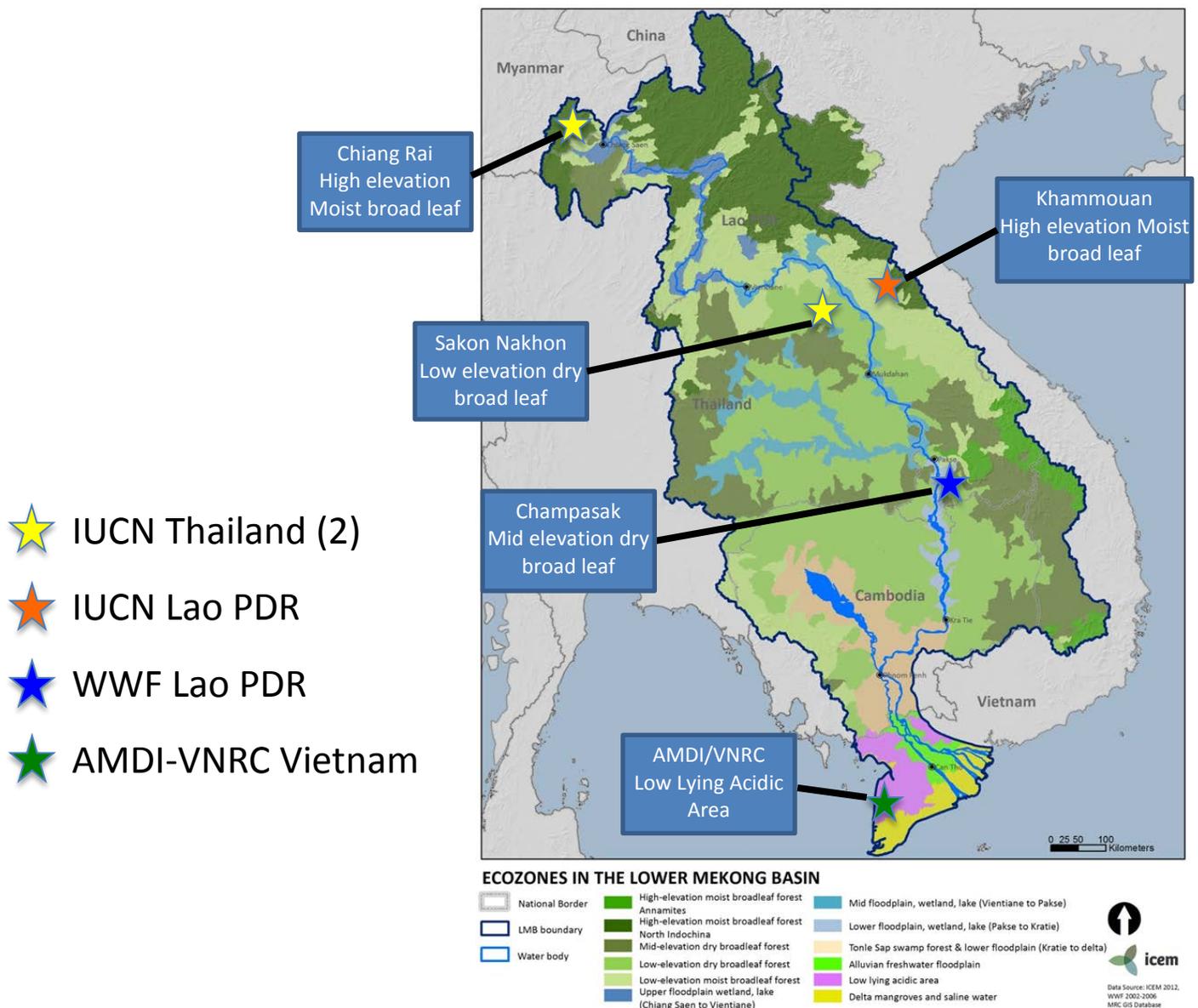
Following an open and competitive tender process, the project selected the following IPs:

- IUCN-Thailand: Chiang Rai and Sakon Nakhon
- IUCN-Lao: Khammouan

- WWF-Lao: Champasak
- AMDI-Vietnam Red Cross: Kien Giang

At the close of Year 2, Mekong ARCC submitted a request for consent to subcontract these IPs, with the intention of beginning field activities in early Year 3. A map showing the location and ecosystems where these partners intend to work can be found below.

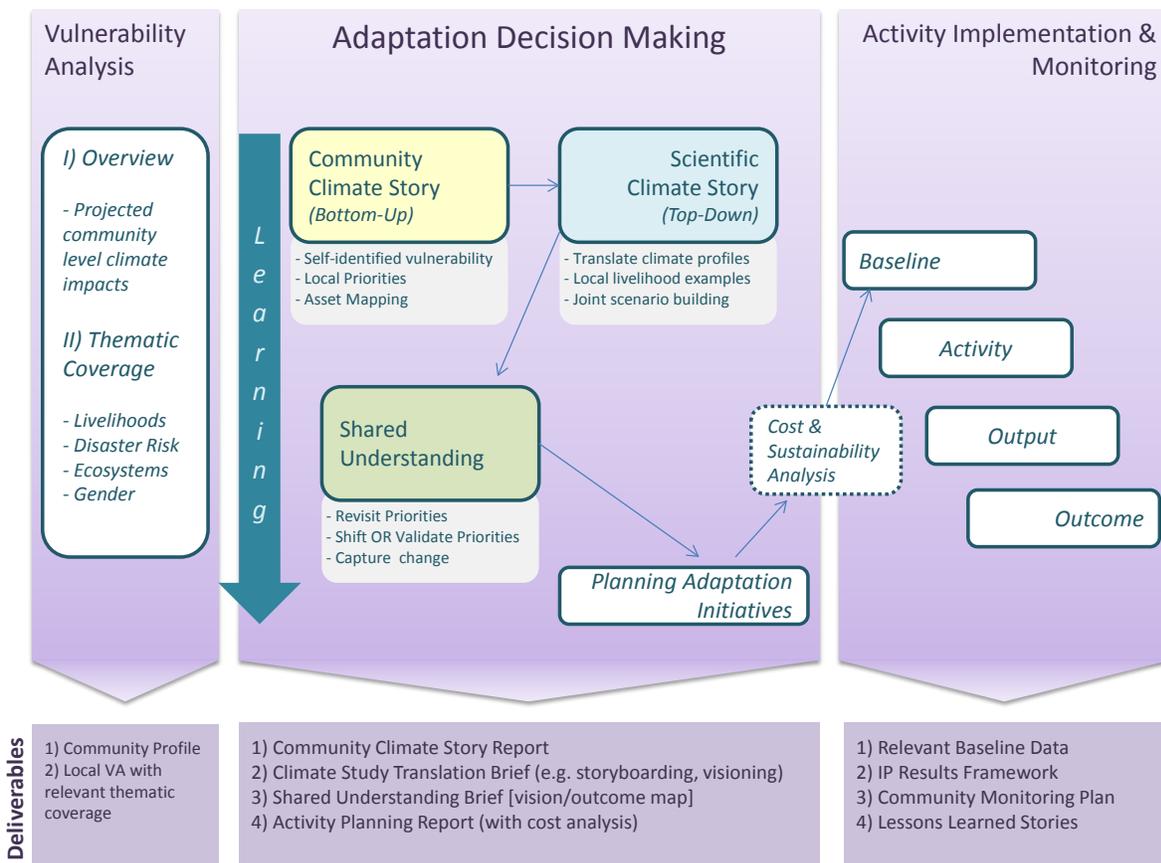
FIGURE 1: PROPOSED IMPLEMENTING PARTNER SITES & ECOSYSTEMS



To provide IPs clear guidance on process and deliverables, the project developed a *Field Guidelines* document (detailed in section 2.4 PMP Update, below) that includes the process flow graphic in Diagram 1 below.

The field activity guidance document and flow diagram reinforces to IPs that the key focus of the Mekong ARCC program is to test the concept that high level climate science can inform local level decision making. While the entire package – vulnerability to implementation – is critical to an adaptation program, the Mekong ARCC program is specifically tasked with understanding best practices around the Adaptation Decision Making segment of the program. Thus, we expect IPs to spend considerable effort documenting the decision making process, including methods used to translate the Climate Impact Study to local planning councils (scenario planning, climate storyboarding, etc.). By validating this proof of concept in Diagram 1 below, Mekong ARCC will be able to provide a replicable model for incorporating climate science in to local level decision making – a key goal of the development practitioners.

FIGURE 2: FIELD ACTIVITY PROCESS & DELIVERABLES FLOW MAP



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

In Year 2, the project began assessing how ecosystem service valuation could be incorporated into both high level policy communication and field pilot activities. A study was initiated by World Resources Institute (WRI) Natural Resource Economist and team leader for Task 4, Dr. John Talberth to assess the current day values at risk (VAR) associated with the impacts on key livelihood sectors of the LMB including agriculture, capture fisheries and aquaculture, livestock, natural systems, and health and rural infrastructure described in the Mekong ARCC Climate Study. The Mekong ARCC team recognized that the Climate Study generated a wealth of quantitative data that can be incorporated into a complementary assessment of economic impacts – one that assigns dollar values to values at greatest risk. WRI initiated a preliminary VAR analysis to fill this role. This assessment, along with field based ecosystem service valuations to be conducted at the Task 3 field sites, will serve as the basis for policy guidelines for national governments on national level ecosystem valuations that will be developed in year four of the project

Assessment valuing the impacts of climate change identified by the Climate Study

The Mekong ARCC COP met with World Resources Institute (WRI) Natural Resource Economist and team leader for Task 4, Dr. John Talberth, at (WRI) headquarters in Washington, DC in April 2013 to discuss how to proceed with this element of the program. After Dr. Talberth and his team reviewed the Climate Study reports and underlying data to identify all the relevant quantitative information, and began developing a ‘Values at Risk’ analysis for the basin.

The VAR assessment is not based on a detailed consideration of climate scenarios, but on a more tractable approach that considers existing economic values at risk based on the forecasts of the Climate Study such as changes in the pattern of temperature, rainfall, and flooding in the LMB at a province level. The WRI analysis will provides a rough sense of the likely magnitude of economic values at risk implied by the Study data in order to inform the selection of cost-effective adaptation options to reduce that risk.

At the close of Year 2, the WRI team completed the compilation and analysis of spatial data layers on agricultural production and suitability, ecozones, flood risk zones, hydropower, population and public infrastructure. Spatial data layers were reviewed and applied to an analysis of climate change hot spots, coastal inundation zones, and inland flood zones to determine the precise number of hectares and resources at risk for a variety of uses that can then be valued in the study. Compilation and review of relevant literature to inform the "best practices" section of the report has also been completed. This report will be completed in the first quarter of FY 14, but initial analysis generated through the VAR assessment includes the following:

- The economic impacts of climate change in the Lower Mekong River Basin (LMB) are expected to be wide-ranging, significant, and mostly negative. Of most concern are significant reductions in the yield of crops, fish, and non-timber forest products

critical for livelihoods of over 60 million people, damages associated with floods and sea level rise, and an increase in the incidence and severity of climate-related disease.

- Understanding the potential magnitude of these impacts over time is critical for making wise investments in appropriate adaptation measures, but the range of uncertainty in climate models downscaled to any particular region remains too great for reliable estimates.
- What is less uncertain is the existing economic value of resources in areas modeled to be at greatest risk from changes in temperature, rainfall, and sea level. An assessment of existing values at risk, rather than complex forecasts of economic costs over decades, strikes an appropriate balance between using climate models for what they are good at, and not using them where they are less reliable.
- Using this VAR approach, the annual value of infrastructure services, worker productivity, agricultural output, hydroelectric power, and ecosystem services at risk from climate change in the MRB is estimated to be at least \$16 billion per year. In addition, the value of infrastructure assets at risk in areas expected to be inundated more frequently or permanently is estimated to be at least \$18 billion.
- The magnitude of these values at risk in the LMB justify significant investments in adaptation measures such as wetland restoration, eco-resilient cropping techniques, and early warning systems for changes in ecosystems critical for subsistence.

Task 5 – Scaling-Up Successful Approaches

In Year 2, our scaling up focused on communicating the nuance around how the Climate Change Impact and Adaptation Study methodology is unique, going beyond providing high level projections to actually explaining how these subtle shifts in climate comfort zones might impact local livelihoods, ecosystems, and health.

Engage regional platforms as a means of strengthening them and scaling impact of project outcomes

Meetings were conducted with the MRC-CCAI, ADB GMS, and the World Bank as part of the continued effort to engage regional platforms. The opportunity to share information with the World Bank is important as they are planning a large investment in the Mekong Delta of Vietnam and indicated they would be interesting in applying results from the Mekong ARCC Climate Study and Ecosystem and Community-based Climate Adaptation and Resilience Building Initiatives as inputs into this future programming.

The Climate Study team shared data layers developed and applied in the Mekong ARCC analysis with the Mekong River Commission Climate Change Adaptation Initiative (MRC CCAI). MRC CCAI indicated that they will review the data in order to better understand how it can be applied to their future analysis and capacity building with the governments of the four Lower Mekong nations that are its members. It was agreed that MRC CCAI will formally request approval from USAID prior to use of any specific data set that will be applied to their on-going work.

Additionally, the Mekong ARCC vulnerability assessment was presented in Washington by DAI's Del McCluskey at a Climate Change Vulnerability and Risk Assessments Experts Meeting sponsored by USAID's Africa and Latin American Resilience to Climate Change (ARCC) project. The Mekong ARCC approach was received well, particularly the concept of 'comfort zones' as a means of conveying complex climate concepts in an understandable way to government and community leaders.

Finally, in the final quarter of the FY the Mekong ARCC Chief of Party, COR and Environment Office Director briefed the U.S. Ambassador to Thailand and the Deputy Chief of Mission on the climate impacts projected to impact Thailand.

Identify requirements for pre-feasibility studies

Pre-feasibility studies are preparatory studies enabling funders to undertake a successful feasibility study for a particular investment opportunity. Generally, such a study comprises sector investment options and priorities, initial scoping and costing of the identified investment project, and designing the governance and financing structures for implementation.

The USAID Mekong ARCC COR shared two World Bank produced reports with the COP that showcased possible approaches Mekong ARCC could apply to the development of the pre-feasibility studies. These reports are: 1) Community-driven development (CDD) in Post-Conflict And Conflict-Affected Areas: Experiences from East Asia, and 2) Economic Impact Analysis of Kecamatan Development Program Infrastructure Projects. A meeting with then held with the COR in quarter three to gain an understanding of how best to focus and carry out the pre-feasibility studies. USAID indicated that it would like to see Mekong ARCC carry out economic analyses of the adaptation activities undertaken by communities in the five targeted provinces identified in the Study and where community and ecosystem-based adaptation initiatives will be undertaken. These analyses will be couched as case studies in support of a 'proof of concept' on the value of community and ecosystem-based adaptation approaches. Pre-feasibility studies will be focused on ADB and World Bank funding mechanisms to promote their incorporation of the Mekong ARCC approach into existing and new climate adaptation, agriculture development and biodiversity corridor development/protection projects.

3.2 Implementation challenges

As a result of delays in completion of the Mekong ARCC Climate Study (see quarter six progress report for details) and receipt of approval for sites and solicitations, initiation of Ecosystem and Community-based Climate Adaptation and Resilience Building Initiatives has been delayed. These will likely start in the first quarter of FY 14 and run for less than the full three-year term originally envisioned in the project design. It is expected that implementation partners will still be able to meet required deliverables, as an existing enabling environment with communities and government already being in place is a requirement of the RFP, which should help to fast track activities and generate results.

An additional challenge has been the necessity to gain approval for implementation of site based work from each of the bilateral missions. It is clearly stated in the Mekong ARCC contract Scope of Work that the project must work in each of the four target countries. That approval of the bilateral missions by the project has been required ex post facto has not only delayed field implementation, but also in the case of Cambodia puts the project at risk of failing to meet contract deliverables. Future action by the RDMA will have to be taken to revise the Mekong ARCC contract to remove any requirement for deliverables related to work in Cambodia.

3.3 PMP Update

Based on the results of USAID/RDMA's data quality assessment and discussions with the COR, Mekong ARCC revised and submitted its Performance Monitoring Plan (PMP) to USAID in November 2012. Mekong ARCC received USAID approval for the PMP in Quarter 7. The PMP included six indicators to support reporting on four intermediate results for USAID. In addition to the revised PMP, Mekong ARCC continued on preparing the groundwork for monitoring of field initiatives in order to ensure results reported by IPs meet USAID data collection standards.

Development of the Internal Guide for the Monitoring and Evaluation (M&E) Specialist

A "Mekong ARCC M&E: Guide for the M&E Specialist" was created with the specific objective of ensuring a smooth transition in the monitoring and evaluation (M&E) process and procedures for the project to future M&E Specialists, as well as serving as a documentation of M&E practice for the project for reference by team members. The guide was used as an orientation document for the new M&E Specialist who joined the project in February.

Development of the M&E Manual for Implementing Partners

In early FY13, the M&E advisor from WRI developed the first draft of the "M&E Manual for Implementing Partners." The M&E Specialist continued to refine the manual. The purpose of this M&E manual is to provide a) an overview of Mekong ARCC M&E requirements for IPs, b) guidelines for measuring and reporting required performance indicators and c) guidance to meeting requirements for USAID data quality and verification criteria. The manual focuses on four of the six performance indicators that Mekong ARCC is required to report to USAID, as these are most closely linked to outputs from field adaptation initiatives:

- 1.1 Number of laws, policies, strategies, plans, agreements, or regulations addressing climate change adaptation officially proposed, adopted, or implemented as a result of U.S. Government assistance
- 2.1 Number of stakeholders with increased capacity to adapt to impacts of climate variability and change as a result of U.S. Government assistance
- 2.2 Percentage reduction in child malnutrition rates in target communities
- 2.3 Number of activities implemented by target communities to reduce gender-specific vulnerability to climate change

The manual is currently drafted to include six sections and two sets of annexes as follows:

- Section 1 describes the program M&E overview and the purpose of this M&E manual.
- Section 2 gives an overview of the Mekong ARCC program.
- Section 3 provides the definitions, protocols, and checklists of the performance indicators.
- Section 4 describes how the program will support IPs to establish field-specific M&E system.
- Section 5 details data collection, analysis and result reporting for the program.
- Section 6 explains ways to ensure data quality and prepare for USAID data quality assessment and evaluations.
- Annexes 1 are required tools for monitoring, data collection and reporting under Mekong ARCC.
- Annexes 2 are suggested M&E tools that IPs can use in establishing and managing its M&E system.

Mekong ARCC intends to complete the manual by the end of October. It will be introduced to IPs at the field initiative kick-off workshop – to be scheduled shortly after all subcontracts are signed. It will also be reviewed in face-to-face meetings with each IP prior to the start of their field work.

Development of the Guide for Field Activity Process, Deliverables, and Baseline Data Collection

In anticipation of making awards to IPs in October 2013, the M&E team developed a guidelines document to help clearly lay out Mekong ARCC's expectations for field activities. The document contains sections that detail:

- The Mekong ARCC field activity concept
- General Vulnerability Analysis framework and deliverables
- Adaptation Decision Making steps and deliverables
- Activity Implementation & Monitoring deliverables

This Field Guidelines document is intended to keep IPs across the five field sites focused on a common objective – testing the concept that high level climate science can inform local level

decision making. In particular, it emphasizes that adaptation is not simply carrying out technical field activities (livelihoods strengthening, watershed management, etc.) – the critical element of adaptation the Mekong ARCC program wants to capture are the best practices around Adaptation Decision Making.

The Field Guidelines document will be presented to IPs at the kick-off workshop in late 2013, where IPs will be able to provide feedback on the process and expectations.

4. STAKEHOLDER PARTICIPATION AND INVOLVEMENT

Following the completion of the final workshop for the Climate Change Impact and Adaptation Study held in Bangkok during quarter six, the Mekong ARCC COP and DCOP met with the Thailand Office of Natural Resources and Environmental Policy and Planning (ONEP). ONEP, which was the workshop's government co-convenor along with USAID Mekong ARCC, indicated that it was pleased with the results of the workshop and expressed interest in increasing its involvement in the Ecosystem and Community-based Climate Adaptation and Resilience Building Initiatives in Thailand, particularly in Chiang Rai. A draft of the solicitation was shared with ONEP for their review prior to release, and ONEP's comments, which were provided to Mekong ARCC at this meeting, were incorporated into the final draft of the RFP.

Late in Year 2, the Mekong ARCC team supported the Thai government in building climate change adaptation awareness at the Thailand Climate Change Adaptation Expo (September 26-28). This event was organized by the Office of Natural Resources and Environment Policy and Planning (ONEP), Ministry of Natural Resources and Environment, Thailand. Mekong ARCC's presence at the event reinforced our commitment to supporting ONEP, who has expressed keen interest in being engaged in the Year 3 field activity implementation work.

In addition, and as indicated above, the project engaged with regional stakeholders as follows:

- MRC CCAI in Vientiane, Laos through the sharing of data layers from the Climate Study – the MRC indicated that they will review the data in order to better understand how it can be applied to their future analysis and capacity building with the governments of the four Lower Mekong nations that are its members.
- The Mekong ARCC Deputy Chief of Party (DCOP) presented in Can Tho, Vietnam at the 'Technical Innovation Symposium' organized by the South East Asia Regional Environmental Adaptation to Climate Change Training and Implementation (SEA: REACTi) Project implemented by The Adventist Development and Relief Agency (ADRA), Vietnam and ADRA, Lao PDR.

- The Mekong ARCC COP presented on ‘Building Resilience in Rural Communities: Results from the Mekong Adaptation and Resilience to Climate Change Study’ at a World Bank East Asia and Pacific team meeting entitled ‘Agriculture Systems in Transition in East Asia.’ This meeting was also held in Can Tho, Vietnam.
- The Mekong ARCC COP presented at a session entitled ‘Climate Resilient Green Economy in the Greater Mekong Subregion (GMS): the role of ecosystem-based adaptation at the ‘Natural Wealth Mekong’ workshop in Bangkok. The session was a part of a public private dialogue on green growth in the GMS as organized by the: Asia Development Bank, Global Mechanism of the United Nations Convention to Combat Desertification, Poverty Environment Initiative of United Nations Development Programme (UNDP) and United Nations Environment Programme (UNEP), Food and Agriculture Organization (FAO), and World Wide Fund for Nature (WWF).

5. MANAGEMENT AND ADMINISTRATIVE ISSUES

In Year Two, the Mekong ARCC program became fully operational and continued to refine processes to ensure flexibility and responsiveness to program needs. Highlighted here are key activities undertaken by the program to improve the capacity of the program to deliver results. It was also a year of transition in management as in the fourth quarter the project’s DCOP was forced to remain in the U.S. following her R&R leave to tend to a family emergency.

Staffing and Recruitment

Three important staffing changes were made during the past year. First, a new M&E Specialist was recruited and hired to replace the individual who departed from the position. Second, a Field Coordinator was recruited and hired in September 2013 to work closely with the COP and Task 3 Manager for the oversight of field activities to be implemented by Task 3 subcontractors. Finally, as mentioned above, due to family medical reasons, the DCOP was unable to return to post after her scheduled R&R in August. DAI has begun to recruit for an Operations Manager and expects the selected candidate to mobilize in November 2013 pending USAID approval.

Legal Status of Key Personnel

With assistance from USAID, DAI successfully obtained “F” visas for both the COP and DCOP in early 2013. This visa status provides expat staff with a more secure and cost-effective legal status in Thailand.

Coordination with USAID, USG partners, and Donor Communities

Coordination with other USAID-funded projects and those of other donors continued to be priority for the Mekong ARCC team. Regular participation in REO partners meetings, as well as multiple meetings attended by Mekong ARCC team members with donors and leading NGOs within the region has enabled the project to maintain a robust inventory of all key USG and Non-USG partner contacts and activities related to climate change adaptation in Asia. Coordination efforts range from the sharing of operational information, to participation in regional workshops. The following list exemplifies the range of venues used by Mekong ARCC to coordinate with the wider climate change adaptation community in the region:

USAID and USG partners

- USAID Cambodia Mission and project partners Harvest and Supporting Forests and Biodiversity Project in Phnom Penh
- USAID Vietnam Mission and project partner Vietnam Forest and Delta Project in Hanoi and Thailand
- ADAPT- Asia Pacific for the specific purpose of how to best align the outputs of the Mekong ARCC funded pre-feasibility studies to be completed under Task 5 with the funding priorities of ADAPT-Asia Pacific stakeholders.
- Dr. Richard Friend was invited to present best practices and lessons learned from the USAID M-BRACE project as part of the climate change adaptation in action panel at the Mekong ARCC Final Climate Study workshop.
- USAID LEAD program to discuss appropriate gender strategies for climate change programs. The meeting was requested by the LEAD program and was used to share ideas, approaches and additional contacts for formulating a coherent gender strategy for the LEAD program.
- The Mekong ARCC COP presented the project and results from the Climate Study to members of the USAID Climate Team and representatives of US-based NGOs at a presentation at USAID headquarters in Washington, DC;
- DAI's Del McCluskey presented the Mekong ARCC vulnerability assessment w in Washington at a Climate Change Vulnerability and Risk Assessments Experts Meeting sponsored by USAID's Africa and Latin American Resilience to Climate Change (ARCC) project.
- The Mekong ARCC Chief of Party, COR and Environment Office Director briefed the U.S. Ambassador to Thailand and the Deputy Chief of Mission on the climate impacts projected for Thailand.

Donor Community

- The World Bank Sustainable Development team in Hanoi, Vietnam
- ADB EOC in Bangkok, Thailand
- MRC CCAI in Vientiane, Laos
- National Mekong Committee Cambodia in Phnom Penh, Cambodia
- ASEAN-FAO-GIZ-SDC Regional Expert Forum on Climate Change, Agriculture and Food Security. The Forum was organized to support the Multi-Sectoral Framework on Climate Change (AFCC) for ASEAN member states. The opportunity enabled Mekong ARCC to share information on best practices through small group and

plenary discussion, as well as identify opportunities for enhanced cooperation and collaboration.

- The Mekong COP presented Climate Study Results at the World Bank East Asia and Pacific team at the ‘Agriculture Systems in Transition in East Asia’ meeting in Can Tho, Vietnam.

Host Country Government

- Thailand Office of Natural Resources & Environmental Policy and Planning (ONEP) in Bangkok
- The Vietnam government’s Institute of Meteorology, Hydrology and Environment (IMHEN) in Hanoi.

NGO and Civil Society

- The Mekong ARCC COP presented the project at a session on the role of ecosystem-based adaptation in a climate resilient green economy in the GMS at the ADB co-organized ‘Natural Wealth Mekong’ workshop in Bangkok, Thailand;
- The Mekong ARCC DCOP participated in the Climate Change, Agriculture, and Food Security – South East Asia (CCAFS-SEA) in Hanoi. CCAFS is part of the CGIAR network and associated with the International Center for Tropical Agriculture (CIAT)

6. LESSONS LEARNED

Coordination Approaches with Bilateral USAID Missions

The challenges associated with gaining support for in-country activities from bilateral missions aren’t new to RDMA projects. As discussed in section 3.2 above (Implementation Challenges), in year two, Mekong ARCC faced difficulties in gaining Bilateral Mission support for field initiatives in Cambodia and Vietnam. Assistance provided by the RDMA in conveying the strategic value of the project and field work was integral in gaining approval from the USAID Mission in Vietnam. But while similar inroads were made by RDMA with the USAID Cambodia Mission, progress was not significant enough to gain acceptance for the project to implement field initiatives as laid out in the project design and required by the Mekong ARCC contract. These experiences generated two important lessons.

The first lesson relates to a need for RDMA to coordinate and advocate for its’ projects early and often, which clearly bore fruit in Vietnam. The second lesson is that a willing and interested party on the other end of attempts to coordinate has to be identified and cultivated if there is any chance for success. This was certainly important in moving things forward with the USAID Vietnam Mission, but was much less clear in the case of Cambodia, where there appeared to be resistance to the project from the start.

Supporting Regional Platforms

Additional lessons were drawn from challenges Mekong ARCC faced in formalizing engagement with the MRC CCAI, with whom the project has held several coordination meetings with and sought input and provided briefings on the Climate Study prior to its public release. At the Climate Study Final Workshop in Bangkok in March, the coordinator of the MRC CCAI informed the Mekong ARCC COP and DCOP that they wished to serve as a peer reviewer for the Study. However, in response to a formal peer review request sent by USAID, the MRC CEO indicated that they did not wish to review the report due to concerns about perceived negative comments made by a small number of government officials from Cambodia and one official from Vietnam at the Final Climate Study Workshop they had attended in Bangkok.

The MRC's decision not to undertake a peer review is indicative of the level of caution under which the institution must operate. Such caution has been evident in Mekong ARCC's engagement efforts on several occasions, making it very difficult to formalize the relationship – which to date does not exist. As a key role of the MRC is to serve as an advisory and facilitating body to its member countries, one can certainly understand the need for such caution, but as USAID looks to strengthen its ties to this regional organization it will be important to keep certain challenges in mind, such as:

- Engagement of the MRC in any formal fashion will not come easily if projects are not approved via an internal MRC process, which should happen during a project design phase so that they can gain buy-in by its member countries and senior staff;
- USAID should examine if that certain elements it often builds into its project design (e.g. need for transparency, results orientated, generating and publicizing results from objective scientific research and/or policy recommendations,) serve as an impediments to engagement with the MRC. In its support of member countries the MRC appears to dedicate more focus on process and consensus building than outcomes, and in its facilitator and advisor roles does not wish to be seen as attempting to influence nations in any specific way—such as through the appearance of supporting the results produced by Mekong ARCC report before they have been fully vetted by all members;
- As with any intergovernmental agency, the consensus building process takes time. MRC timescales may not fit within output requirements generally incorporated into USAID project design.

While Mekong ARCC will continue its efforts to support the MRC CCAI as an important regional platform, a lesson learned from some of the challenges in formalizing a partnership is that it's best not to pick just one 'winner' platform partner on which efforts are focused. As shown above in Tasks One and Five, and section 5 (Coordinate with USAID, USG partners and Donor community on opportunities to promote Mekong ARCC best practices and lessons learned), the Mekong ARCC project has reached out to several important regional and national groups. A wide array of opportunities are being explored to share results from the Climate Study and field adaptation initiatives as a means to support and strengthen regional platforms and national approaches, and broaden project impacts. The MRC is clearly worthy of Mekong ARCC efforts and project resources, but it hasn't been viewed as the only regional institution fitting this description.

7. KEY ACTIVITIES PLANNER FOR NEXT YEAR

Task One

- Customized full main report and theme reports for policymakers, scientists, private sector, and implementing partners and reports are distributed via different tools.
- Document field implementation approach, challenges and successes through fact sheets, posters, web blogs, success stories, newsletter, etc.
- Customize information packet and disseminate results of the Economic Values-at-Risk analysis, including to the media.

Task Two

- Finalize edits on Climate Study Theme reports.
- Prepare and disseminate a variety of knowledge products based on the Climate Study including Updated Key Results, Country profiles, Priority province profiles, Summaries for Industry, Livelihood sector summaries.
- Disseminate data set from the Climate Study to key regional actors including platforms.

Task Three

With IPs, undertake the following activities as part of the Ecosystem and Community-based Adaptation Initiatives:

Administrative

- Gain approval by USAID of recommendations for award to proposed partners.
- Subcontract preparation and issuance.
- Roadshow to prepare IPs for management and technical expectations as a USAID project subcontract.
- Bring all IPs together for a kick off of meeting.

Technical

- Work with IPs on site-based work plan and M&E development and approval.
- Draft or refine existing vulnerability assessments to analyze impacts of climate change on community development and inform adaptation options [based on climate study].
- Undertake participatory stocktaking with communities to understanding community perception of climate impacts and adaptation options [community story].
- Communicate key results of the Climate Study and local vulnerability assessment for communities [science story].
- Identify priority climate change threats with communities [shared understanding]
- IPs develop adaptation options with communities.

- IPs prioritize adaptation options based on assessment of costs, benefits and sustainability post project and develops list of recommendations for activity implementation.
- Mekong ARCC reviews and approves adaptation options plans.

Task Four

- Finalize and submit WRI's Economic Values-at-Risk analysis.
- Broadly disseminate results including to regional and international press.

ANNEX A: PROGRESS SUMMARY

Achieved progress versus planned for the period disaggregated by gender, geographic area and other relevant factors (per table below). These indicators and targets will change for FY2014 reporting as DAI will submit a revised PMP.

Table 1(a): PMP Indicator progress - USAID Standard Indicators and Project Custom Indicators

SO4: Improved Response to Environmental Challenges in Asia											
Indicator	Data Source	Baseline data		FY 2013		Quarterly Status – FY 2013				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	0	0	0	0	-	-		
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	-	-		
Percentage of reduction in child	IPs	N/A	N/A	0	0	0	0	-	-		

malnutrition rates in target communities (CUSTOM)											
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	0	0	0	0	-	-		
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	4	6	4	0	0	2	150%	4 tools: CAM method and LUSET, AquaCrop and IWRM models tested by ICEM for projecting impacts of climate change within the basin. 1 baseline climate study 1 regional vulnerability assessment In Year 1, the project achieved 25% of the Year 1 targets (1 from 4) due to the delay in starting Task 2 Study. Some of the targets from Year 1, therefore, have been achieved in Year 2 resulting in this year's overachievement.
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	1	0	0	0	0	0	0%	In strengthening the MRC regional platform, Mekong ARCC had a number of discussions with them in an attempt to co-convene the Climate Study kickoff and

ANNEX B: MEDIA COVERAGE OF CLIMATE STUDY RELEASE

News Clippings

Mekong ARCC Climate Change Impact and Adaptation Study for the Lower Mekong Basin

Final Results Workshop and Press Conference 28-29 March 2013

Last update: 11-Oct-13

Contents

Thomson Reuters Foundation	4
The Guardian Observer	5
Climate News Network	6
Yubanet.com	8
Chiangrai Times.....	9
Local Phuket News	11
VOA News	12
FishBio.com	15
LaoTimes.com	15
Vientaine Times	17
UPI.com	18
The Phnom Penh Post.....	19
The Cambodia Daily	20
Cambodian – Chinese Friendship Radio (Cambodian).....	21
Natural Resources and Environment Newspaper at MONRE, Vietnam	22
SciDev.net	23
Asian Scientist	24
CleanBiz.Asia	25
Viet Nam News.....	26
Vietnam Net Bridge.....	27
Eco-Business.com.....	27
The Voice of Vietnam Online	28
TalkVietnam.com	29
Tuoi Tre Online (Vietnam).....	30
Bangkok Post.....	31
Mekong Fish Network.....	32
FishBio.com	32
Thai News and Blogs	32
AsiaOne.com	33
Isra News (Thai).....	34
FTA Watch (Thai).....	35
Green World Foundation (Thai).....	36

Kom Chad Luek Online (Thai).....	37
VoiceTV.co.th (Thai).....	38
NSTDA Blog Thailand (Thai)	39
Kapook.com (Thai)	40
Asia Connect - TV3 (News Clip in Thai)	41
MCOT.net (Thai).....	42
CH7.com (Thai).....	43

Lower Mekong Basin highly vulnerable to climate change - study

(26 June 2013)

<http://www.trust.org/item/20130626094850-b09gh/>

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Lower Mekong Basin highly vulnerable to climate change - study

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Photo: Steve Nelson with a woman walks in a narrow path in Thailand's southern Mae Eung (The Global 100) in the Lower Mekong Basin (left) | [View on Flickr](#)

BARCELONA (Thomson Reuters Foundation) - Climate change will bring higher temperatures and longer wet seasons to the Lower Mekong Basin, affecting the subsistence of 1.4 million farmers and the majority of 40 million who rely on it for food and income, reports say.

It is one of the most vulnerable watersheds in the world to the threat of global climate change, says Professor Owen, director of the Mekong Research and Innovation Centre for Climate Change (Mekong RICC), said Thomson Reuters Foundation.

The Mekong, flowing from the Tibetan plateau in the South China Sea through Laos, Vietnam, Thailand, Cambodia, Myanmar and Laos, is the world's 10th largest river.

More than four out of five people living in the basin's lower basin, which covers Cambodia, Laos, Myanmar and Thailand, are rural and highly dependent on the river. Experts say that and other agricultural areas provide between 60 and 80 percent of annual income in some areas.

An average global temperature increase of 2 degrees Celsius is seen by scientists as a threshold to dangerous changes in the Earth's climate. "It's according to a preliminary report by the Intergovernmental Panel on Climate Change (IPCC) released in March, the Lower Mekong Basin could see average temperatures rise between 1 and 3 degrees by the end of the century, with water pockets predicted to experience much larger increases.

This could affect commercial crops such as coffee and rubber, as well as food crops such as rice, the basin's most important crop, and cassava.

A decrease in average rice yields of just 4 per cent per hectare would have dramatic impact on Lower Mekong Basin food security and food production," said the draft report, which is currently being peer-reviewed.

WINNERS AND LOSERS

The key message is that the basin's future is uncertain, says Professor Owen, who says the study is helping countries prepare better.

"The better you can plan and prepare, and develop those products for governments, international and businesses, the better off you'll be in the long run," he added.

"Across the basin, the study indicates a 1 to 3 degree rise in average monthly daily temperature. And you're looking at an increase of more than 3 percent in peak daily rainfall across the entire basin."

The central hydrology of the basin, an important coffee-growing region, and Thailand's eastern plains will see the largest temperature rises across the basin. According to the study, annual precipitation is projected to increase between 1 and 10 percent across the basin.

Optimal growing conditions for rubber, coffee, cassava, maize and soybean will shift from lower altitudes to higher altitudes in southern Thailand and northern Laos, Professor Owen said.

Changes in crop patterns, temperature and drought conditions are also expected to affect the growing cycle of rice, leading to falling yields in some areas and increases in others.

For instance, flooded rice and irrigated rice on the Mekong will likely yield in some areas due to temperatures above 30 degrees during the growing stage, when southern Thailand can expect a higher yield of rice but not due to increased rainfall.

There are some winners and losers, some losers, how you adapt to climate change impacts will determine whether you're a winner or a loser," Professor Owen said.

DEVELOPMENT AIDS TO COEXISTENCE

Professor Owen said the next step for the Mekong RICC, which is funded by the U.S. Agency for International Development (USAID), is to use information from the study in a number of priority areas across the basin to help local communities strengthen their capacity to adapt to climate change.

It is also working with the Interregional Science Group (ISG) to coordinate economic research across the basin's regions.

Development activities in the Mekong - from renewable energy to population growth and forest restoration - are expected to now include the impacts of climate change.

"Things like hydropower dams will affect fisheries to a greater extent than climate change. But which one is the bigger threat for things, from the effect of the dam itself," Professor Owen said.

Plans to build a series of mega dams on the Mekong have been especially controversial, with activists warning they pose serious threats to food security and income for hundreds of thousands of people.

International Rivers said on Wednesday the Dam Safety Day at Laos would be "an environmental calamity" if small "community" dams the way they are regulated in the area. Farming systems, fish catchers and the livelihoods of people in the region, the U.S.-based organization said.

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THE REPORTS PROVIDE AN OVERVIEW OF THE STUDY THROUGH THE REPORT'S SUMMARY, WHICH WAS RELEASED IN 2012. A FULL REPORT IS AVAILABLE ON THE MEKONG RICCs WEBSITE. FOR MORE INFORMATION ON THE MEKONG RICCs RESEARCH, VISIT [WWW.MEKOINGRICC.ORG](#). THE MEKONG RICCs ARE A PART OF THE THOMSON REUTERS FOUNDATION'S RESEARCH AND ANALYTICS DIVISION.

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Climate change: how a warming world is a threat to our food supplies

(13 April 2013)

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Climate change: how a warming world is a threat to our food supplies

Global warming is exacerbating political instability as farmers brought on by food insecurity rise. With research suggesting the issue can only get worse we examine the risks around the world

Infographic: the impact of climate on food



When the Turkish street vendor, Mohamed Elmaghrabi, set himself on fire on 17 December 2010, it was in protest at heavy-handed treatment and harassment in the province where he lived. But a host of new studies suggest that a major factor in the subsequent protests, which became known as the Arab Spring, was food insecurity.

Drought, skyrocketing bread prices, food and water shortages have all heightened fears of the Middle East. Analysts at the Center for American Progress in Washington say a combination of food shortages and other environmental factors exacerbated the already tense political situation in the region. As the Observer reports today, an as-yet unpublished US government study indicates that the world needs to prepare for much more of the same, as food prices spiral and escalating agricultural practices are disrupted by climate change.

"We should expect much more political destabilisation of countries as it heats up," says Richard Howarth, a policy officer in the UK's most recent Food Programme climate change office. "What is different now from 20 years ago is that far more people are living in places with a higher climate risk. 650 million people now live in arid or semi-arid areas where floods and droughts and price shocks are expected to have the most impact."

"The recent crises in the Horn of Africa and Sahel may be becoming the new normal. Droughts are expected to become more frequent. Studies suggest anything up to 200 million more food insecure people by 2050 or an additional 2.4 million malnourished children, in parts of Africa we already have a protracted and growing humanitarian disaster. Climate change is a creeping disaster," he says.

The Mary Robinson Climate Justice Foundation is hosting a major conference in Dublin this week. Research to be presented there will say that rising incomes and growth in the global population, expected to create 2 billion more mouths to feed by 2050, will drive food prices higher by 40-50%. Climate change may add a further 50% to make prices and supply less to wheat, rice and oil seeds.

"We know population will grow and incomes increase, but also that temperatures will rise and rainfall patterns will change. We must prepare for the higher temperatures in all sectors," said Gerard Heffernan, a senior economist with the International Food Policy Research Institute in Washington.

All of the studies suggest the worst impacts will be felt by the poorest people. Robinson, the former Irish president, said "Climate change is already having a serious effect on food and nutritional security for the world's poorest and most vulnerable people. Child malnutrition is predicted to increase by 20% by 2050. Climate change impacts will disproportionately hit on people living in tropical regions, and particularly on the most vulnerable and marginalised population groups. This is the legacy of climate change – the worst of the impacts are felt by those who contributed least to causing the problem."

But from Europe to the US to Asia, no population will remain insulated from the huge changes in food production that the rest of the century will bring.

Frank Ripberger, head of the world's leading Cargill crop research division, said: "There's a lot of complacency in rich countries about climate change. We must understand that instability is inevitable. We already see a lot of refugees. Perhaps a lot of people come over on boats to Europe or the US that seek water therapy."

Asia and Oceania

China is relatively resilient to climate change. Its population is expected to decline by up to 400 million people this century, easing demand on resources, and it has the capacity to buy in vast quantities of food. But because more and more Chinese are demanding a more meat-based diet, its challenges will be land and cattle feed. Climate change will affect regions in different ways, but many crops are expected to require irrigation.

Crop losses are increasingly being caused by extreme weather events, insect attacks and diseases. The 2011 drought affected food prices worldwide. What is becoming harder to grow in some southern areas of China as the land gets drier and warmer.

A new study by US AID expects most of Vietnam, Cambodia, Laos and Thailand to see a 4°C temperature rise by 2050. The lower Mekong region of 100 million people, which is prone to weather extremes, could also see rainfall increase 20% or more in some areas, reducing the growth of rice and other staple crops. Many farmers will see food production decline significantly. The number of malnourished children in the region may increase by 10 to 11 million by 2050.

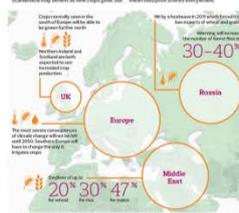
Extreme events will increasingly affect agriculture in Australia. Key food-growing regions in the south are likely to experience more droughts in the future, with part of western Australia having already experienced a 15% drop in rainfall since the mid-1970s. The number of record-breaking hot days in Australia has doubled since the 1950s, also affecting food output.

Europe
Climate change affects agricultural production through its effects on the timing, intensity and variability of rainfall and shifts in temperatures and carbon dioxide concentrations.

Crops normally seen growing in the south of Europe will be able to be grown further north. This would allow more greenhouses, grapes, sunflowers, soy and maize to be grown in Britain. In Scotland, livestock farming could become more viable. At the higher latitudes, warmer temperatures are predicted to lengthen and increase the intensity of the growing season. But more CO₂ and a warmer temperature rise could cut yields by around 10% later in the century.

Latest EU predictions suggest the most severe consequences of climate change will not be felt until 2050. But significant adverse impacts are expected earlier from more frequent and prolonged heatwaves, droughts and floods. Many crops now grown in southern Europe, such as wheat, may not survive high temperature increases. Southern Europe will have to change the way it irrigates crops.

EUROPE AND MIDDLE EAST



Impact of climate on food in Europe and the Middle East. Sources: Met Office, FAO, Oxfam, Oxfam, Photograph: Oxfam/Flickr
In Europe's high and middle latitudes, global warming is expected to greatly expand the growing season. Crops in Russia may be able to expand northwards but yields will be much lower because the soils are less fertile. In the south, the climate is likely to become much drier which will reduce yields. In addition, climate change is expected to make water resources scarcer and encourage weeds and pests.

In 2011, Russia banned wheat and grain exports after a heatwave. Warming will increase forest fires by 30-40%. This will affect soil erosion and increase the probability of floods.

In the Middle East and north Africa, declining yields of up to 50% are expected for rice, about 47% for maize and 20% for wheat.

Americas
The US is expected to grow by 100 million people by 2050. Government scientists expect more incidents of extreme heat, severe drought, and heavy rains to affect food production. The warming is expected to continue without serious problems for 50 years but beyond 2050 the effects could be dramatic, with staple crops hit.

California's central valley will be hard hit with sunflowers, wheat, tomato, cotton and maize expected to lose 10-50% of their yields, especially beyond 2050. Fruit and nut crops which depend on "winter chilling" days may have to relocate. Animals exposed to many hot nights are increasingly stressed. Many vegetable crops will be hit when temperatures rise only a few degrees above normal.



Impact of climate on food in the Americas. Sources: Met Office, FAO, Oxfam, Oxfam, Photograph: Oxfam/Flickr
Nearly 20% of all US food is imported, so climate extremes elsewhere will also have an effect. In 2011, 14.1% of US households did not have secure food supplies and 5.7% had very low food security.

Because few crops can withstand average temperature rises of more than 2°C, Latin America expects to be seriously affected by a warming climate and more extreme weather. Even moderate 1.2°C rises would cause significant damage to Brazil, one of the world's biggest suppliers of food crops. Brazilian production of rice, beans, manioc, maize and soy are all expected to decline, with coffee especially vulnerable.

Other studies suggest Brazil's massive soy crop, which provides animal feed for much of the world, could slump by more than 25% over the next 20 years.

Two major crops should do well: quinoa and potatoes.

Africa
Many African countries are already experiencing longer and deeper droughts, floods and cyclones. The continent is expected to suffer disproportionately from food insecurity, due to fast growing vulnerable populations.

Egypt expects to lose 15% of its wheat crop if temperatures rise 2°C, and 30% if the increase is 4°C. Maize crops are expected to remain stable up to about 2030, but then to drop quickly later. Most north African countries traditionally import wheat and are therefore highly vulnerable to price shocks and droughts elsewhere.

A new study of 11 west African countries expects most to be able to grow more food as temperatures rise and rainfall increases. But demand from growing populations may offset food prices. Climate change may mean Nigeria, Ghana and Togo can grow and export more sorghum, rather than grain.



Impact of climate on food in Africa. Sources: Met Office, FAO, Oxfam, Oxfam, Photograph: Oxfam/Flickr
Temperatures are expected to rise several degrees in regions close to the Sahel. In Burkina Faso, the sorghum crop is expected to decline by 20% or more, but maize yields may improve.

Other studies by IFPRI suggest crop yields across sub-Saharan Africa may decline 5-22% by 2050, pushing large numbers of people deeper into destitution.

A new IFPRI study suggests climate conditions in southern Africa will worsen. Climate models mostly predict an increase in annual maximum temperatures in the region of 1 to 2°C by 2050. This will favour some crops but shift others to higher ground or further north.

Both of Africa's staple crops, maize and sorghum, are expected to be badly hit by increasing severity of weather.

Oxfam warns that small-scale farmers in the Horn of Africa will bear the brunt of the negative impacts of climate change. Unpredictable weather here has already left millions semi-destitute and dependent on food aid.

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Melissa Levy, Washington, DC
Experts say we need to understand the impact of climate change on food production.

Climate News Network

Climate Change Will Harm Mekong Basin Harvests

(1 April 2013)

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The screenshot shows the Climate Central website homepage. At the top left is the Climate Central logo, and to its right is the tagline "Researching and reporting the science and impacts of climate change". Below the logo are three columns of text: "WHO WE ARE" (describing the organization), "WHAT WE DO" (describing research and reporting), and "ABOUT OUR EXPERTISE" (listing staff expertise). A navigation bar contains links for Home, News, Blogs, Reports, Gallery, Videos, Library, States of Change, Topics, and What We Do. Below the navigation bar is an email update subscription form and a search bar. The main content area features a large article titled "CLIMATE WILL HARM MEKONG BASIN HARVESTS" with a sub-headline "AGRICULTURAL EXPORTS FEED MILLIONS". The article text states: "Study says within 40 years densely populated southeast Asia will be experiencing the full impacts of climate change ...". A "READ MORE" link is provided. To the right of the text is a photograph of farmers in a field wearing conical hats. At the bottom of the page are two buttons: "OUR PROGRAMS" and "NEWS & BLOGS".

Climate Change Will Harm Mekong Basin Harvests

(31 March 2013 by Alex Kirby)

<http://www.climatecentral.org/news/climate-change-will-harm-mekong-basin-harvests-15798>

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Climate Change Will Harm Mekong Basin Harvests

Published March 29, 2013

By Alex Kirby, Climate Policy Director

GOSSIP - One of the most fertile areas of south east Asia, the Lower Mekong Basin, faces a bleak future from the impacts of climate change, according to a U.S. study published today.

The lead author of the study, Dr. Jeremy Brown, said, "our sense of the challenges are 'very daunting'."

Warmer and wetter rainy seasons and drier long lasting the seasons in Cambodia, Laos, Thailand and Vietnam will jeopardize the region's reputation as one of the world's major producers of crops on which hundreds of millions depend. Climate change will also have a profound economic impact in the region.

"We're afraid that this region is prime to experience climate extremes in temperature and rainfall beyond anything that we expect," says Dr. Claire Ball.

The Basin is known for its production of rice and corn, the two grains with the highest worldwide production levels. Rice provides more than 40% of the calories consumed by humans. The study forecasts a loss of 40% of the calories consumed by humans in the Basin in part due to the Basin.

The U.S.AID funded Climate Adaptation and Impact Study for the Lower Mekong examines how changes in temperature and precipitation will affect growing conditions and yields for major crops including not only maize and rice but rubber, soybean, cassia and coffee, and how fisheries and livestock production will be affected.

There's a great international agreement that global average temperatures should if possible be prevented from rising more than 2°C above their pre-industrial level, although most climate scientists believe it's now too late to avert temperature rising further.

A global average rise of 2°C is expected to mean that parts of the tropics like the Mekong Basin will see to be between 4°C and 6°C in fall winter. The impacts will vary, but all the Lower Mekong countries are likely to see big changes in the suitability of land for important crops.

Protein source at risk

The study expects higher temperatures and more rainfall to decrease the feasibility of growing rice and corn in the paddies of Thailand's southern Chao Phraya but to increase yields in the north eastern provinces of Isan Thailand.

More rain in Cambodia is likely to reduce rice and rubber yields in the Kampong Thom and Mondul Kiri regions, while temperature and rainfall increases will result in coffee in Laos being to be cultivated at higher altitudes.

Warmer and wetter weather will affect the Central Highlands in Vietnam, including the areas most suitable for rubber but less so for maize and coffee.

The study also identifies "hot spot" provinces in the Basin where the impact of climate changes is expected to have serious effects on food security and livelihoods.

The results of the study will help with the reworking of laws and when the "harvest season" of the crops - areas where temperatures, rainfall and soil moisture create the right conditions for production - will occur, the ability to maximize planting and production in those areas is expected to decline.

For fisheries and livestock the impacts of a changing climate may also be serious (fisheries are a key source of protein in the Basin). Just especially concerns for is the presence of livestock production zones, no climate impacts on crops like maize and soybean will also damage livestock farmers.

In Vietnam, heat stress may limit the farming of freshwater prawns and fish ponds, could cause water bodies, drops in salinity, with disease spreading into coastal shrimp ponds.

International impact

The impact on agriculture will be accompanied by changes in the rest of the world, with more plant and animal populations and species likely to be lost to extreme temperatures and dry spells.

The study stresses that climate change is not about the environment alone. The reputation of the Lower Mekong Basin as major food exporters, and a warming climate will affect grain security in the region.

"Adaptation to climate change does not just mean adding more rice crop to another," says Paul Harrison, Director of the Bangkok based Mekong Adaptation and Resilience to Climate Change (MARRCC) project, the study responsible for the study. "It also means being aware of potential changes, building out for warning signs that those changes are beginning to occur, and being prepared to respond."

In another sign of concern at the implications of climate change for south east Asia, a senior US military figure identified it as one the world's top security issues.

Admiral Robert Lombard, who heads the U.S. Pacific Command, said significant concern related to the warming planet - "probably the most likely thing that is going to happen... then will impact the security environment, probably more likely than the other scenarios we all often talk about."

The Basin's risks reported here are only "We have been involved in our multilateral dialogue - now with China and India - the importance to build up our capacity to respond to the effects of climate change that will impact these massive populations."

"If it goes bad, you could have hundreds of thousands or millions of people displaced and their security will start to really come under threat."

John Doherty, a former BBC environment correspondent, is a founding member of Climate News Network, "Climate News Network is a news service led by four veteran British and international reporters and broadcasters. It delivers news and commentary about climate change for free to media outlets worldwide."

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(29 Mar 2013 - Reprinted from Climate News Network)

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Climate will harm Mekong Basin harvests

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By: Alex Kirby, Climate News Network



The fertility of the region around the Mekong will suffer Image: Thomas Schoch

LONDON, March 29, 2013 - One of the most fertile areas of south east Asia, the Lower Mekong Basin, faces a bleak future from the impacts of climate change, according to a US-funded study.

The lead author of the study, Dr Jeremy Carew-Reid, says some of its findings are "very shocking".

Hotter and wetter rainy seasons and more long-lasting dry seasons in Cambodia, Laos, Thailand and Vietnam will jeopardise the region's reputation as one of the world's major producers of crops on which hundreds of millions depend. Climate change will also have a profound economic impact in the region.

"We've found that this region is going to experience climate extremes in temperature and rainfall beyond anything that we expected", says Dr Carew-Reid.

The Basin is known for its production of maize and rice, the two grains with the highest worldwide production levels. Rice provides more than a fifth of the calories consumed by humans. The study forecasts fundamental shifts in the kinds of crops that can be grown in parts of the Basin.

The USAID-funded Climate Change Adaptation and Impact Study for the Lower Mekong examines how changes in temperature and precipitation will affect growing conditions and yields for major crops including not only maize and rice but rubber, cassava, soya and coffee, and how fisheries and livestock productivity will be affected.

There's general international agreement that global average temperatures should if possible be prevented from rising more than 2°C above their pre-industrial level, although most climate scientists believe it's now too late to stop temperatures rising further.

A global average rise of 2°C is expected to mean that parts of the tropics like the Mekong Basin will warm by between 4°C and 6°C by mid-century. The impacts will vary, but all the Lower Mekong countries are likely to see big changes in the suitability of land for important crops.

Protein source at risk

The study expects higher temperatures and more rainfall to decrease the feasibility of growing rain-fed rice in the lowlands of Thailand's northern Chiang Rai Province but to increase yields in the north eastern province of Sakon Nakhon.

More rain in Cambodia is likely to reduce cassava and rubber yields in the Kampong Thom and Mondul Kiri regions, while temperature and rainfall increases will result in coffee in Laos having to be cultivated at higher altitudes.

Hotter and wetter weather will alter the Central Highlands in Vietnam, making the area more suitable for rubber but less so for maize and coffee.

The study also identifies "hot spot" provinces in the Basin where the impact of these changes is expected to have severe effects on food security and livelihoods.

The results of the study will help with the monitoring of how and when the "comfort zones" of key crops - areas where temperature, rainfall and soil conditions create the right conditions for production - will move. The ability to continue existing crop production in these zones is expected to decline.

For fisheries and livestock the impacts of a changing climate may also be serious (fisheries are a key source of protein in the Basin). Feed typically accounts for 65-80% of livestock production costs, so climate impacts on crops like maize and cassava will also damage livestock farmers.

In Vietnam, heat stress may limit the farming of freshwater prawns and flash floods could cause sudden drops in salinity, with disease spreading into coastal shrimp ponds.

International impact

The impacts on agriculture will be accompanied by damage to the natural world, with more plant and animal populations and species likely to be lost to extreme temperatures and dry spells.

The study stresses that climate change is not about the environment alone. The countries of the Lower Mekong Basin are major food exporters, and a warming climate will affect every economy in the region.

"Adaptation to climate change does not just mean shifting from one crop to another", says Paul Hartman, director of the Bangkok-based Mekong Adaptation and Resilience to Climate Change (Mekong ARCC) project, the body responsible for the study. "It also means being aware of potential changes, looking out for warning signs that these changes are beginning to occur, and being prepared to respond."

In another sign of concern at the implications of climate change for south east Asia, a senior US military figure identified it earlier this month as a priority issue.

Admiral Samuel Locklear, who heads the US Pacific Command, said significant upheaval related to the warming planet "is probably the most likely thing that is going to happen... that will cripple the security environment, probably more likely than the other scenarios we all often talk about."

The Boston globe reported him as saying: "We have interjected into our multilateral dialogue - even with China and India - the imperative to kind of get military capabilities aligned [for] when the effects of climate change start to impact these massive populations."

"If it goes bad, you could have hundreds of thousands or millions of people displaced and then security will start to crumble pretty quickly." - Climate News Network

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Tuesday, April 9th, 2013 2: Posted by Editor

Climate Change Impact and Adaptation in the Lower Mekong Basin - USAID Report



Mekong River fish populations are the primary source of protein for over 60 million people.

BANGKOK – A new study on Climate Change Impact and Adaptation in the Lower Mekong Basin just released by the United States Agency for International Development (USAID) has revealed that the effects of climate change in the lower Mekong basin is worse than the global average.

Final results of the (USAID)-funded study, that were released at a regional workshop in Bangkok, indicate that changes in climate will likely trigger decreases in yields and in the suitability of key commercial and staple crops of the region.

The basic staple crop of the region – the rain-fed rice – would see a significant decrease in yield in seven out of eight provinces across the region that had been identified by the study as “hot spots.”

These included two provinces of Viet Nam in Gia Lai in the Central Highlands and Kien Giang in the Cau Long (Mekong) Delta.

The study, that falls under USAID’s Lower Mekong Initiative – down scaled the global climate models for this region that is not only highly vulnerable to the impact of climate change but also significantly dependent on its natural resources for livelihoods.

Apart from detailing climate projections and trends, the study examined how changes in temperature and rainfall would affect land suitability and species productivity for a range of livelihood sectors.

Speaking at the workshop, lead author of the study, Dr. Jeremy Carew-Reid of the International Centre for Environmental Management, said, “We’ve found that this region is going to experience climate extremes in temperature and rainfall beyond anything that we expected.”

The study projected that the annual average temperature in some parts of the Lower Mekong Basin, including the eastern plains of Cambodia and Tay Nguyen (Central Highlands) of Viet Nam, would increase by 4 to 6 degrees Celsius by 2050.

This figure, which is two or three times higher than the so-called “critical threshold” of 2 degrees Celsius, makes a climate catastrophe a realistic possibility.

The region is projected to have drier dry seasons that start earlier and wetter wet season which start later. Changes will be greatest in the wet season and the areas that will experience greatest change include the Sekong, Sesan and Sre Pok catchment areas of eastern Cambodia and the Cau Long (Mekong) Delta of Viet Nam and Cambodia.

While hotter climate and higher rainfalls may trigger shifts in crop suitability around the region, some areas in higher altitudes, such as northern Thailand or northern Laos, would be better adapted and will be able to grow a number of industrial crops such as rubber, Robusta coffee and cassava.



“Meanwhile, Robusta coffee which is now widely grown in the Central Highlands of Viet Nam would see reduced suitability in the future,” said Carew-Reid.

Coffee farmers in Vietnam, the world’s biggest producer of the robusta beans used by Nestle SA (NESN) in instant drinks, are limiting sales to seek higher prices and a drought that may reduce the next harvest.

Climate change is projected to cause an overall reduction in fish stocks in this export-oriented region, as the erratic rainfall would disrupt the Flood Pulse cycle of the Mekong River which in turn would harm fish migration and fish production.

The study found out that the greatest impact would be expected in fish farming. The region is already coping with the extreme limits of the aquaculture system and any additional stress could cause a collapse, Carew-Reid warned.

Flash floods occurring in a higher frequency would cause a sudden drop in salinity and invite diseases into shrimp ponds in Viet Nam’s Mekong Delta.

While the study’s main objective was to understand the impact of climate change, other participants at the workshop called for a more integrated approach that would take into consideration the development influences that are already going on.

For example, the current threat to fisheries, as some suggested, has to do more with the 30,000 dams and structures that are now in place in the region, which block various waterways for fishes.

Representatives from the Vietnamese agriculture ministry at the workshop, while welcoming the study, took its results with caution, arguing that the input for the study’s modelling should have been more comprehensive.

The Lower Mekong Basin, which covers parts or whole of four country Thailand, Laos, Cambodia and Viet Nam, is home to 65 million people, 70 per cent of whom are farmers and fishermen.

The report can be downloaded here: [Climate Change Impact and Adaptation Study for the Lower Mekong Basin.](#)

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(25 Mar 2013 by Sok Khemara)

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News / Asia Experts Warn Climate Change, Dams Threaten Mekong Region

By Sok Khemara March 25, 2013



WASHINGTON — The region of the Mekong Delta faces multiple threats from climate change and expanding hydroelectric dams that rely to fuel factories, crops and livestock, experts say.

Changes in temperature and rainfall will increasingly threaten agriculture in the region, according to early release of some findings of the USAID-funded "Mekong Adaptation and Resilience to Climate Change."

"The Greater Mekong Subregion is one of the most vulnerable regions in the world with respect to climate change and its effects on agriculture production systems, including fisheries," said Ulrich Apel, an environmental researcher for the Good Environment Facility.

Added to the potential threats of climate change are the many dams planned in Mekong countries, experts said.

The impact for 100 million people living on the Mekong River "could be disastrous," said Finis Anhol, campaign director for the U.S.-based International Rivers. "By blocking the transport of sediment, the dams will contribute to even greater erosion in the fertile Mekong Delta, which is already threatened by increasing saltwater intrusion as a result of rising sea levels."

The combined threats of dams and climate change could severely damage fish stocks, impacting food security for many people living along the river, particularly Cambodians, according to Zachary Dubel, a researcher at the Simon Center.

"The Mekong River is the world's most productive freshwater fishery, but it is being stressed by overfishing and fast population growth that looks to increase significantly over the coming decades," he told VOA News.

Cambodia, Laos, Thailand and Vietnam rely heavily on the Mekong River, and these countries spend millions of dollars annually to protect areas of the river. But experts warn they must find common solutions to the expanding problems.

The Global Environment Facility committed \$22 million for a four-year project that ends in 2014 aiming to mitigate the impacts of climate change, conserve biodiversity in the region and fight land degradation, Apel said.

But it is up to the Mekong countries themselves to "work together to tackle these issues," he said.

Climate change is a "transboundary" problem that requires a transboundary solution, Dubel said. The Mekong River must be viewed similarly, he said. "As a river that runs through six countries and provides a great number of environmental services to millions of people, it is vital that the river be managed collectively. That includes information sharing, as well as coordinated policies."

He added that currently it is not happening, and a number of dam projects are being developed by various companies with insufficient coordination.

Lack of cooperation on mainstream hydropower in the present has already created tension between upstream and downstream countries that threatens regional relations at a time when its bilateral cooperation on issues, such as adaptation to climate change, is extremely important," he said. "Furthermore, those dams that have been built already require increased coordination between themselves in order to effectively manage flows between them, particularly in light of the increased rainfall the region will receive in the future and threat of floods."

Long-range and comprehensive impact assessments are needed before such dams are built, he said.

International Rivers' Anhol urged Mekong governments to reconsider the dams. Countries of the region need to make sure they are taking on "no regrets" measures to ensure their economies are "as climate resilient as possible," she said.

"The proposed dams for the Mekong region are also not being designed with climate change in mind," she said, "with the result that some dams may be uneconomic, as there won't be enough water to generate power, and other dams may be risky, as they will not be built to withstand greater floods and extreme weather events predicted by climate change."

With 11 mainstream dams and scores of tributary dams planned, the impacts of climate change could be greatly increased, she said.

The Mekong adaptation report, whose full results will be issued March 29, found "shocking results," report author Jeremy Carver-Ried said in a statement. "We've found that this region is going to experience climate extremes in temperature and rainfall beyond anything that we expected."

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(29 March 2013 by Daniel Schearf)

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Scientists say Climate Change, Dams Threaten Mekong Livelihoods

Published March 29, 2013

Scientists meeting in the Thai capital have warned extreme weather caused by climate change will reduce fish stocks and major crops in the Mekong River Basin if countries in Southeast Asia fail to adapt. However, they also warn dam building, much of it for hydropower, is the largest single threat to fisheries that sustain millions of people. VOA's Daniel Schearf reports from Bangkok.

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News / Asia

Scientists say Climate Change, Dams Threaten Mekong Livelihoods

By Scott Simon | March 29, 2013



Aerial view of a dam on the Mekong River in Thailand. The image shows the concrete structure of the dam with several large spillways. Water is visible flowing through the spillways. The surrounding area appears to be a mix of natural and developed land.

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March 29, 2013 12:07 PM

I am sure that nothing will happen even if temperature becomes higher twice as fast as the global average. Do you really think that in that regime rate of population through over 30 years causes flooding, heavy rain and drought? It is nonsense. Scientists studying climate change should have a common sense before they study different equations.

to: J. Croffelin from USA
March 29, 2013 12:07 PM

Good to see that the US is not the only place cursed with both who cannot read or think, I could be so wrong you, and disaster will hit. I have found the answers are already handpicked. And for your info, GAV WILL happen. We have passed the point where mankind can stop it.

to: Renee Rose from Toronto
March 29, 2013 12:07 PM

How many people are going to die? "HELL" means only "night" happens and "HELL" happens... Science will say climate is not bad but science will not say climate change is as bad as a comet hit. Science has agreed to "cut" and "hold" science a minute since for 27 years of research. Almost all research says no effects not caused. I don't understand if both America those poor little kids. There were never religious to be the world as mentioned but called the carbon free movement, but will be same law.

Climate change does not even mention CO2 as the list of elements because of the lack of solid carbon trading, such markets exist by corporations and politicians. Science denied the danger of their carbon trading, chemicals and pollutants for decades. Science is not a tool of truth and history, they are not real consultants.

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(29 Mar 2013 by Sok Khemara)

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Environment

In Washington, 'Mekong Days' Puts River in Focus

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Sok Khemara
23 March 2013

Advocacy groups, environmentalists and policy-makers have wrapped up five days of events surrounding Mekong River issues in Washington.

"Mekong Days," a series of talks, films and other forums that ended Tuesday, highlighted issues in the region, where some 60 million people live.

The Mekong River, a major source of food for many in the region, is currently under increased pressure from hydropower dam projects and the potential impact of climate change. Environmental advocates say the dams could hurt fish stocks in the river, even as temperature and rainfall changes threaten agriculture and livestock.

But with the US diplomatic focus returning to Asia, the Mekong River could become even more important, advocates say. A recent study funded by USAID, "Mekong Adaptation and Resilience to Climate Change," found increasing threats to livestock, fisheries and other agriculture.

All of this makes Washington a good place to discuss the Mekong, said Wilfred Eckstein, director of the Goethe Institute, which helped organize the events. Washington has many foundations that are active and experienced in Southeast Asia, and they can move opinion and policies, he said.

"So I think the Goethe Institute can contribute as a platform to communication about what is going on in the world, first of all, and in this case that is the Mekong River basin in particular," he said.

More than 100 participants took part in the Mekong Days events, which were supported by US and European organizations.

Wahny Say, a Maryland resident who attended a film screening, said Washington was the right place for such discussions. "There are a lot of policymakers and influential people that can speak to the government about the issues," she said. This helps people get a better understanding of people who live along the river, often at subsistence levels, and how they are impacted by developments, including dams, she said.

She would have liked more information on Cambodia, however, she said. "They need to consider more of the people's needs," she said. "If they did that, they would have less problems, but they don't."

Filmmaker Douglas Vierchow said he produced "Mekong" to encourage dialogue on the river's issues, which cross national borders and are often politically sensitive.

For viewers like Elen Notar, of Washington, Mekong Days did just that. "I think the film just made us more aware of the difficulties in a huge region, and so many countries involved, and the life of the Mekong is so critical to these people," she said.

Cambodia filmmaker Chum Sophka, who produced "My River, My Fish, My Life," told VOA Khmer by phone from Phnom Penh that he was happy to have his film screened in Washington, where it won third prize for Southeast Asia. "The Mekong is just like the blood vein of life for people who live along the Mekong River," he said.

Kalyanee Mam, a Cambodian-American filmmaker whose documentary "A River Changes Course," won a Grand Jury Prize at the Sundance Film Festival this year, said the Mekong is facing a variety of threats, including hydroelectric dams, dynamic fishing methods and other overfishing.

"Our Mekong and Tropic Sap [rivers] have a lot of problems now, because the fish are getting less when they start building dams," she said. That can be devastating for many Cambodians, who rely on river fish as a major source of protein, she said.

At least 11 dams are currently planned for the lower Mekong, a major concern for fish populations that migrate up and down the river. China has built four dams upstream already, and Laos is in the process of building a dam in Xayaburi province, despite objections from Cambodian and Vietnam.

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(29 March 2013)

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Temperature to rise 2 degrees in next 20+ years: study

Bangkok, Thailand: The temperature will rise by 2 degrees Celsius sometime between 2030 and 2050 according to a specialist on Adaptation and Resilience Climate Change (ARCC) after a 10 month study of the lower Mekong Basin.

Ms Sengmanichanh Somchanmvong, a senior Integrated Water Resource Management Education Specialist in Laos, worked with ARCC research teams to study the impact of climate change on the Lower Mekong Basin countries.



Lao researcher Ms Sengmanichanh in Bangkok, Thailand, yesterday.

She reported the information yesterday at a two-day final result workshop on Climate Change Impact and Adaptation Study for the Lower Mekong Basin taking place in Bangkok, Thailand, from March 28-29.

Ms Sengmanichanh said the research teams working on the study came from the Lower Mekong Basin countries of Laos, Cambodia, Thailand and Vietnam.

"As we know from scientific reports on the area, the temperature will rise by two degrees by 2050, due to several factors. This will be very challenging to all countries in the area, including Laos, and will have a major impact on the livelihoods of our people and the success of our crops, livestock, fishery and water."

As an example, she said flooding will become more severe and last longer. Farmers will need to work out which crops can survive the higher temperature and which ones can't.

She said an increase of two degrees means there will be long periods of over 40 degrees in the future, but it will be a gradual process going up in small increments each year.

"This study is very important in informing us about the impact of climate change in the future. It is very important to help people in Laos as well as other Mekong countries to adapt and be well prepared to face the challenges that the higher temperatures will bring, especially in agriculture," Ms Sengmanichanh said.

She advised people in Laos who rely on or work with natural resources to make some preparations so that they have appropriate solutions for when the time comes. More than 110 experts from the Lower Mekong Basin countries and involved international organisations are attending the workshop, which was organised by the Mekong ARCC project.

A major aim of the workshop is to review the penultimate draft of the 'Climate Change Impact and Adaptation Study' for the Lower Mekong Basin. It is an opportunity for workshop participants to review and comment on the study findings prior to its finalisation.

The results presented will build on the study methodology and baseline data information shared at the interim result workshop held in Hanoi, Vietnam, last year.

The project is a five-year programme from 2011 to 2016. It is being supported by the United States Agency for International Development (USAID) and implemented by Development Alternatives Incorporation in partnership with the International Centre for Environmental Management and World Resources Institute.

The project focuses on identifying the environmental, economic and social effects of climate change in the Lower Mekong Basin and assisting exposed and vulnerable rural populations in ecologically sensitive areas to increase their ability to adapt to the impact of climate change on water resources, agricultural systems, biodiversity, ecosystems, and livelihood options. The Mekong ARCC is headquartered in Bangkok with project activities in Laos, Cambodia, Thailand and Vietnam.

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Climate Change to Affect Mekong Production

(1 April 2013)

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The screenshot shows the UPI.com website interface. At the top, there is a navigation menu with categories like Home, Top News, Entertainment, Odd News, Business, Sports, Science, Health, Photos, Columns & Blogs, and Analysis. Below the menu is a search bar and a 'Real Trading' advertisement. The main article is titled 'Climate change to affect Mekong production' and is dated April 1, 2013. The article text discusses the impact of climate change on the Lower Mekong basin, mentioning that it will have a significant effect on major industrial and food crops. It also mentions that the study was conducted by the Mekong Adaptation and Resilience to Climate Change Project for the U.S. Agency for International Development. The article includes a video player with a 'BOOK NOW!' button. On the right side of the page, there is a 'Most Popular' section with a list of five items, including 'CBS limits replay: Kevin Ware broken leg' and 'Omarosa Manigault fired on 'Celebrity Apprentice''. Below that is a 'Featured Galleries' section with images and captions for 'Pope celebrates Easter Mass', 'Beijing Fashion Week', 'Supreme Court Hears Prop 8 argument', 'NBA: Bulls end Heat 27-game win streak', and 'President Obama Visits Middle East'. At the bottom of the page, there is a 'Recommended Stories' section with a list of three items: 'China reinstates Salween dam plans', 'Laos breaks ground on Xayaburi Dam', and 'Laos going ahead with Mekong dam project'. The page also includes a footer with copyright information and social media sharing options.

Provinces set to feel the heat

(2 April 2013 by Abby Seiff)

<http://www.phnompenhpost.com/2013040264841/National/provinces-set-to-feel-the-heat.html>

The screenshot shows the Phnom Penh Post website interface. At the top, the masthead features the newspaper's name in Khmer and English. Below the masthead is a navigation bar with categories like Home, National, Business, Lifestyle, Sport, Columns, Special Reports, Real Estate, LIT, 7Days, and Sign Up/Logout. The main article is titled "Provinces set to feel the heat" and includes a photograph of a flooded village. The article text discusses a report on climate change impacts in Cambodia, mentioning rising temperatures, increased flooding, and the effects of extreme weather on agriculture and infrastructure. On the right side of the page, there are several promotional banners, including one for "SEVENDAYS" magazine and another for "Portfolio Survival Guide". The footer contains contact information for the newspaper, a list of sections, and social media links.

Mondolkiri, Kompong Thom Face Climate Threat

(4 April 2013 same as in the newspaper dated 2 April 2013)

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Mondolkiri, Kompong Thom Face Climate Threat

By Dene-Hern Chen - April 4, 2013

Mondolkiri and Kompong Thom provinces could suffer some of the most extreme effects of climate change in the Lower Mekong Basin region, such as a high incidence of flash floods and droughts by 2050, according to a new study.

Analyzing temperature and rainfall data from 84 provinces in the Mekong region—which includes Cambodia, Laos, Thailand and Vietnam—the study identifies Mondolkiri as a "primary priority hotspot" for vulnerability to climate change.

The province's maximum temperature will increase by as much as 5 degrees by 2050, while rainfall in the dry season will decrease by about 12 percent. This would put Mondolkiri at a "Very High" risk of "dangerous heat stress" during the dry season, and, during the wet season, there will be an increase in the duration and severity of flooding, flash flooding and landslides. Agriculture, livestock, non-timber forest products and fisheries will all be severely affected.

"Reduced rice and cassava yields are a threat to food security and health, as well as placing more pressure on exploitation of [non-timber forest products] for food. Reduced cassava yields would also reduce livestock feed availability," the study found.

Kompong Thom province will experience an 18 percent increase in precipitation during the wet season, while its maximum temperatures will increase by up to 4 degrees. This would lead to floods of longer durations, said the study's lead researcher, Jeremy Carew-Reid.

"It's not so much the depth [of the floods] if it lasts a couple hours, but if it stays sitting for several weeks, it is much more damaging to crops and livestock," Mr. Carew-Reid said.

The study's results are "surprising," as they show that the 4 to 5 degree increase in the Mekong region's projected temperatures will be double the global average increase in half the time, he added, pointing to waterway structures—such as hydropower dams, irrigation systems, culverts—and expanding road networks as the cause.

"So, in other words, we will be hitting temperatures well above the 2 degree mark which globally was projected by the end of the century... and we will be hitting them by 2030 to 2050," Mr. Carew-Reid said. "In general, the alarm bell for me is that many existing sector developments are undermining this region's climate change resilience."

To counteract these effects, the government and the affected communities should look into diversifying their crops, such as planting heat-tolerant or drought-tolerant varieties, the study says.

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(2 April 2013)

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The screenshot shows the homepage of the Ministry of Natural Resources and Environment (MONRE) of Vietnam. The header features the national emblem and the ministry's name in Vietnamese and English. A navigation bar includes links for Home, Q & A, Forum, Weblink, Mail, and Vietnamese. The main content area is titled 'HYDROMETEOROLOGY' and features an article titled 'Two hotspots of climate change in Vietnam' dated 02/04/2013. The article text discusses the impact of climate change on coffee cultivation in Gio Lai province and rice fields in Kien Giang province. A sidebar on the left contains various menu items such as 'ABOUT', 'GENERAL NEWS', 'LAND', 'WATER', 'GEOLOGY & MINERALS', 'ENVIRONMENT', 'HYDROMETEOROLOGY', 'SURVEY AND MAP', and 'SEA'. Below the article, there is a section for 'Các bài đã đăng' (Published Articles) with a list of recent news items. The footer contains contact information, a license notice, and copyright details for the year 2010.

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Two hotspots of climate change in Vietnam
Thứ ba, ngày 02 tháng 04 năm 2013 cấp nhậ lúc 00:06

At the conference announcing the results of research project named Mekong River Basin Climate Change Adaptation in Bangkok, Thailand, along with the seven provinces of Thailand, Laos and Cambodia, two provinces of Kien Giang and Gio Lai in Vietnam were recorded on the list of provinces most affected by climate change.

Accordingly, the increase in temperature in Gio Lai province will cause great impact on coffee cultivation. In Kien Giang, sea level rise will threaten to submerge hundreds of thousands of hectares of rice fields. The project has updated the assessment of the climate change impact on the environment, economy, society and especially the lives of about 60 million people in the four countries of the Lower Mekong Basin. According to Mr. Paul Hartman, Director of the project, the difference of this project is to support people to adapt to climate change.

L.Mh

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22 Ton Thai Thuyet - Cau Gray - Ha Noi
* Tel: (84-4) 37732731
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Mekong region facing six degree-warming, climate extremes

(2 April 2013)

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Mekong region facing six degree-warming, climate extremes

2 April 2013 | 134

[BANGKOK] Temperatures in South-East Asia's Lower Mekong Basin are set to rise by up to three times the global average temperature increase, according to a USAD-funded study.

Previous reports by the Intergovernmental Panel on Climate Change revealed that the basin would see increases in line with the global average of around two degrees Celsius.

But according to a preliminary report by the Mekong Adaptation and Resilience to Climate Change Project (Mekong ARCC) released last week (29 March), parts of the basin could see annual temperatures increase by as much as six degrees Celsius by 2050.

It also predicts that areas such as Mondul province in Cambodia could experience doubling of the number of days with heavy rainfall, up from just nine days annually.

The authors of the study – a complete version of which will be released in May – warn that if local communities do not adapt, their crop yields will fall significantly, causing severe food insecurity.

"We've found that this region is going to experience climate extremes in temperature and rainfall beyond anything that we had expected," says Jeremy Caron-Ried, the study's lead author and director of the International Centre for Environmental Management, one of the organisations tasked with implementing the five-year project.

The Lower Mekong Basin, which encompasses most of Cambodia and Laos, and parts of Thailand and Vietnam, is currently rural, with 70 per cent of its 60 million inhabitants working as farmers or fishermen.

But as temperatures increase, the region's suitability for certain crops and aquaculture will change. Farmers could find that yields from crops that once thrived, including staples such as cassava, will plummet.

In low elevation zones in Laos, for example, higher temperatures and more rain could make cassava less suitable for cultivation. In the higher elevation provinces of Cambodia, rainier wet seasons and more arid dry seasons could hamper the production of Robusta coffee, an important cash crop in the region.

Despite the gravity of their predictions, the Mekong ARCC team remain optimistic they could help local communities adapt to environmental changes by ensuring the study's information is made available to them.

"Our goal now is to take the science and link it to the changes that are taking place in Lower Mekong," says Paul Hartman, Mekong ARCC's chief of party.

"These communities have dealt with environmental shocks for ages, but we want to give them the best scientific information so they can start planning their future but without the scientists telling them whether to grow or not," he adds.

Oliver Joffe, an agriculture specialist at Mekong ARCC, says that creative methods could be used to adapt to climate change. He says Vietnamese coffee farmers could plant shade trees to protect coffee bushes from high temperatures, and recommends that cassava farmers in Cambodia avoid peak summer frosts by moving their growing season.

While some areas will have to struggle with the reality of a warming climate, others, especially in the north, could see the transition as a boon to their economies, the authors say.

For example, while the study forecasts that most provinces would see the yield of their rain-fed rice farms decline, in the Salween basin province of northeast Thailand, more rainfall could boost rice production by 2050.

This article has been produced by SciDev.net's South East Asia & Pacific desk.

[Link to the preliminary report](#)

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Mekong region facing six degree-warming, climate extremes

(9 April 2013 - Reprinted from SciDev.net)

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Mekong Region Facing Six Degree-Warming, Climate Extremes

By Science and Development Network | Featured Research | April 9, 2013



Temperatures in South-East Asia's Lower Mekong Basin are set to rise by up to three times the global average temperature increase, according to a USAID-funded study.

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AsianScientist (Apr. 9, 2013) — By Alexander Holz — Temperatures in South-East Asia's Lower Mekong Basin are set to rise by up to three times the global average temperature increase, according to a USAID-funded study.

Previous reports by the Intergovernmental Panel on Climate Change predicted that the basin would see increases in line with the global average of around two degrees Celsius.

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It also predicts that areas such as Mondulkiri province in Cambodia could experience doubling of the number of days with heavy rainfall, up from just nine days annually.

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The Lower Mekong Basin, which encompasses most of Cambodia and Laos, and parts of Thailand and Vietnam, is primarily rural, with 70 percent of its 60 million inhabitants working as farmers or fishermen.

But as temperatures increase, the region's suitability for certain crops and aquaculture will change. Farmers could find that yields from crops that once thrived, including staples such as cassava, will plummet.

In low elevation zones in Laos, for example, higher temperatures and more rain could make cassava less suitable for cultivation. In the higher elevation provinces of Cambodia, rarer wet seasons and more arid dry seasons could hamper the production of Robusta coffee, an important cash crop in the region.

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While some areas will have to struggle with the reality of a warming climate, others, especially in the north, could see the transition as a boon to their economies, the authors say.

For example, while the study forecasts that most provinces would see the yield of their rain-fed rice farms decline, in the Sakon Nakhon province of northeast Thailand, more rainfall could double rice production by 2050.

The report can be downloaded here: [Climate Change Impact and Adaptation Study for the Lower Mekong Basin](#).

Source: Science and Development Network.

Disclaimer: This article does not necessarily reflect the views of AsianScientist or its staff.

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Mekong region facing 6 degree-warming, climate extremes

Date: April 09, 2013
By: Alexander Hotz
Source: SciDev.net

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Figure 6.12: Increasing change in hydroclimate variables. The study assumes that over the next 30 years, the number of days with heavy rainfall will double in Cambodia and Laos, and that the number of days with heavy drought will also double.

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Mekong hit by climate change

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Mekong hit by climate change



Fish farms in the Mekong Delta province of An Giang. Climate change is likely to have a great impact on fish farming along the Mekong River as erratic rainfall will disrupt the flood pulse cycle of the river, predicts a new study. — VNA/VNIG Photo Huy Hung

BANGKOK (VNS)—A new study on Climate Change Impact and Adaptation in the Lower Mekong Basin released on March 20 has revealed that the effects of climate change in the basin is worse than the global average.

Final results of the United States Agency for International Development (USAID)-funded study, that was released at a regional workshop in Bangkok, indicate that changes in climate will likely trigger decreases in yields and in the suitability of key commercial and staple crops of the region.

The basic staple crop of the region — the rain-fed rice — would see a significant decrease in yield in seven out of eight provinces across the region that had been identified by the study as "hot spots."

These included two provinces of Viet Nam in Gia Lai in the Central Highlands and Kon Giang in the Cau Long (Mekong) Delta.

The study, that falls under USAID's Lower Mekong Initiative — downgraded the global climate models for this region that is not only highly vulnerable to the impact of climate change but also significantly dependent on its natural resources for livelihoods.

Apart from detailing climate projections and trends, the study examined how changes in temperature and rainfall would affect land suitability and species productivity for a range of livelihood sectors.

Speaking at the workshop, lead author of the study, Dr. Jeremy Carew-Reid of the International Centre for Environmental Management, said: "We've found that this region is going to experience climate extremes in temperature and rainfall beyond anything that we expected."

The study projected that the annual average temperature in some parts of the Lower Mekong Basin, including the eastern plains of Cambodia and Tay Nguyen (Central Highlands) of Viet Nam, would increase by 4 to 6 degrees Celsius by 2050.

The figure, which is two or three times higher than the so-called "critical threshold" of 2 degrees Celsius, makes a climate catastrophe a realistic possibility.

The region is projected to have drier dry seasons that start earlier and wetter wet season which start later. Changes will be greatest in the wet season and the areas that will experience greatest change include the Setong, Seban and Sre Pok catchment areas of eastern Cambodia and the Cau Long (Mekong) Delta of Viet Nam and Cambodia.

While hotter climate and higher rainfalls may trigger shifts in crop suitability around the region, some areas in higher altitudes, such as northern Thailand or northern Laos, would be better adapted and will be able to grow a number of industrial crops such as rubber, Robusta coffee and cassava.

"Meanwhile, Robusta coffee which is now widely grown in the Central Highlands of Viet Nam would see reduced suitability in the future," said Carew-Reid.

Climate change is projected to cause an overall reduction in fish stocks in this export-oriented region, as the erratic rainfall would disrupt the Flood Pulse cycle of the Mekong River which in turn would harm fish migration and fish production.

The study found out that the greatest impact would be expected in fish farming. The region is already coping with the extreme limits of the aquaculture system and any additional stress could cause a collapse, Carew-Reid warned.

Floods occurring in a higher frequency would cause a sudden drop in salinity and invite diseases into shrimp ponds in Viet Nam's Mekong Delta.

While the study's main objective was to understand the impact of climate change, other participants at the workshop called for a more integrated approach that would take into consideration the development influences that are already going on.

For example, the current threat to fisheries, as some suggested, has to do more with the 30,000 dams and structures that are now in place in the region, which block various waterways for fishes.

Representatives from the Vietnamese agriculture ministry at the workshop, while welcoming the study, took its results with caution, arguing that the input for the study's modelling should have been more comprehensive.

The Lower Mekong Basin, which covers parts or whole of four country Thailand, Laos, Cambodia and Viet Nam, is home to 65 million people, 70 per cent of whom are farmers and fishermen. —VNS

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Mekong hit by climate change

(8 April 2013 – Reprinted from Viet Nam News)

<http://english.vietnamnet.vn/fms/environment/70922/mekong-hit-by-climate-change.html>

The screenshot shows the Vietnam Net Bridge website interface. At the top, there is a navigation bar with the Vietnam Net Bridge logo and the text "บ้านกลางเมือง". Below this is a search bar and a menu with categories like HOME, SPECIAL REPORTS, VIETNAM IN PHOTOS, WHAT'S ON, and VIETNAM REFERENCE. The main content area features an article titled "Mekong hit by climate change" with a sub-headline "Vietnam Net Bridge – A new study on Climate Change Impact and Adaptation in the Lower Mekong Basin released on March 29 has revealed that the effects of climate change in the basin is worse than the global average." The article includes a photograph of fish farms in the Mekong Delta. The text of the article discusses the findings of a study funded by USAID, highlighting the impact of climate change on the Mekong Delta's agriculture and fisheries. The right sidebar contains a promotional banner for Universal Studios Singapore, a list of top stories, and a section for latest news.

Mekong hit by climate change

(10 April 2013 – Reprinted from Viet Nam News)

<http://www.eco-business.com/news/mekong-hit-by-climate-change/>

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Mekong greatly challenged by climate change



A new study on Climate Change Impact and Adaptation in the Lower Mekong Basin has revealed that the effects of climate change in the basin are worse than the global average.

- Mekong river basin strategy action plan in the pipeline

Final results of the United States Agency for International Development (USAID)-funded study, that were released recently at a regional workshop in Bangkok, indicate that changes in climate will likely trigger decreases in yields and in the suitability of key commercial and staple crops of the region.

The basic staple crop of the region – the rain-fed rice – would see a significant decrease in yield in seven out of eight provinces across the region that had been identified by the study as “hot spots.”

These included two provinces of Vietnam, Gia Lai in the Central Highlands and Kien Giang in the Cuu Long (Mekong) Delta.

The study – that falls under USAID’s Lower Mekong Initiative – downscaled the global climate models for this region that is not only highly vulnerable to the impact of climate change but also significantly dependent on its natural resources for livelihoods.

Apart from detailing climate projections and trends, the study examined how changes in temperature and rainfall would affect land suitability and species productivity for a range of livelihood sectors.

While the study’s main objective was to understand the impact of climate change, other participants at the workshop called for a more integrated approach that would take into consideration the development influences that are already going on.

Representatives from the Vietnamese Agriculture Ministry at the workshop, while welcoming the study, took its results with caution, arguing that the input for the study’s modeling should have been more comprehensive.

The Lower Mekong Basin, which covers parts or whole of four countries Thailand , Laos , Cambodia and Vietnam , is home to 65 million people, 70 percent of whom are farmers and fishermen.

VIAVOV online

TAG Lower Mekong Basin , USAID , Lower Mekong Initiative , climate change , natural resources

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Mekong greatly challenged by climate change

(8 April 2013 – Reprinted from VOV)

<http://talkvietnam.com/2013/04/mekong-greatly-challenged-by-climate-change/#.UXY7DKMc0SP>

The screenshot shows the TalkVietnam.com website interface. At the top, there are language options for Français and Español, and a notification for a contest: "CONGRATULATIONS You won a Samsung 65" 3D Smart TV or other cool brand name prizes*". Below the navigation menu, the article title "Mekong greatly challenged by climate change" is displayed, along with a "DOWNLOAD" button and a video player. The article text discusses a study on climate change impact in the Lower Mekong Basin, mentioning a yield decrease in rice and the impact on livelihoods. On the right side, there are sections for "Recent stories" and "Recent Comments".

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Mekong greatly challenged by climate change

Posted on APRIL 8, 2013 Written by VIETNAMPLUS

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- Vietnam supports Bogor Goals in 2020 – TalkVietnam on Vietnam joins APEC meeting in Indonesia
- Garment exports pick up – TalkVietnam on Garment business potential not yet fully tapped

Kiên Giang, Gia Lai là điểm nóng về biến đổi khí hậu

(29 March 2013)

<http://tuoitre.vn/Chinh-tri-Xa-hoi/540221/kien-giang-gia-lai-la-diem-nong-ve-bien-doi-khi-hau.html>

The screenshot shows the homepage of Tuoi Tre Online. At the top, there are navigation links for 'TUỔI TRẺ CUỐI TUẦN', 'TUỔI TRẺ CUỐI', 'TUỔI TRẺ MOBILE', 'TRUYỀN HÌNH TUỔI TRẺ', 'TUOITRENEWS', 'ÁO TRĂNG', and 'TỦ SÁCH TUỔI TRẺ'. There are also social media icons and a phone number '091.8033.133'. Below the navigation is a banner for 'tuoi tre online' with the tagline 'CƠ QUAN CỦA ĐOÀN TNCS HỒ CHÍ MINH TP HCM'. To the right of the banner are advertisements for 'Intel Xeon' and 'IBM System x3690 M4 Express'. A main menu bar contains categories like 'Chính trị - Xã hội', 'Pháp Luật', 'Thể thao', 'Kinh tế', 'Giáo dục', 'Nhập sống trẻ', 'Văn hóa - Giải trí', 'Thủ thuật', 'Nhập sống số', 'Du lịch', 'Bàn đọc', and 'Cần biết'. The main content area features the article title 'Kiên Giang, Gia Lai là điểm nóng về biến đổi khí hậu' with a sub-headline 'TT - Cùng với bảy tỉnh của Thái Lan, Lào và Campuchia, hai tỉnh Kiên Giang và Gia Lai của VN vừa được liệt kê vào danh sách các địa phương bị ảnh hưởng nhiều nhất bởi biến đổi khí hậu.' Below the title is a list of 'TIN BÀI LIÊN QUAN' (Related Articles) with titles like 'Việt Nam cần chạy nhanh hơn (16/04)', 'Giảm khí thải sẽ giảm nước biển dâng (15/04)', 'Thích ứng hoặc bị hủy diệt (15/04)', 'Đón đọc Tuổi Trẻ Cuối Tuần số 13-2013 (15/04)', and 'Cần giải pháp kịp thời trước tình trạng xâm mặn (31/03)'. The main article text begins with 'Thông tin này được đưa ra tại hội thảo quốc tế công bố kết quả nghiên cứu dự án thích ứng với biến đổi khí hậu vùng hạ lưu sông Mekong diễn ra tại Bangkok, Thái Lan ngày 29 và 29-3. Theo đó, sự gia tăng nhất độ ở Gia Lai sẽ ảnh hưởng lớn tới việc trồng cà phê trong khi đó nước biển dâng sẽ đe dọa, thậm chí nhấn chìm hàng trăm nghìn hecta đất trồng lúa của tỉnh Kiên Giang. Dự án đưa ra những đánh giá cấp nhất về tác động của biến đổi khí hậu tới môi trường, kinh tế, xã hội và đặc biệt là đời sống của khoảng 60 triệu dân bốn nước hạ lưu sông Mekong. Điểm khác biệt của dự án này, theo ông Paul Hartman - giám đốc dự án, bên cạnh nghiên cứu khoa học, dự án sẽ hỗ trợ người dân thích ứng với biến đổi khí hậu.' The author is identified as 'NHẬT HUY (từ Bangkok, Thái Lan)'. There are buttons for 'Quan tâm' (0 người) and 'Xem tất cả'. Below the article is a section for 'Ý kiến bạn đọc (0)' and 'Gửi ý kiến của bạn'. On the right side, there is a sidebar with a green abstract image and a 'Tuyển dụng' (Recruitment) section listing job openings at 'Công ty Hyphens Việt Nam', 'Công ty TNHH Liên Thành', and 'Công ty TNHH Maeve Furn'.

Mekong study predicts crop shifts

(9 April 2013 –Source: DPA News Agency)

<http://www.bangkokpost.com/breakingnews/344619/climate-study-of-mekong-basin-projects-crop-shifts>

The screenshot shows the Bangkok Post website interface. At the top, there is a navigation bar with links for Home, Help, Lite Version, Log in, Sign up, and Member benefits. The date and time are 22 Apr 2013 | 10:53 GMT+7. The main header features the Bangkok Post logo and the tagline 'The world's window on Thailand'. Below the header is a search bar and a navigation menu with categories like NEWS, BUSINESS, OPINION, FARMING, TECH, LIFESTYLE, TRAVEL, AUTO, PROPERTY, MULTIMEDIA, THAI AND BUICE, CLASSIFIEDS, and JOBS. The main content area displays the article 'Mekong study predicts crop shifts' published on 9 Apr 2013 at 10:55. The article text discusses a climate-change study on the Lower Mekong Basin, predicting shifts in crop suitability for coffee and other crops. A sidebar on the right shows 'Most Viewed' articles, including 'New N. Korea threats after US visit'. Below the article is a 'products online' banner and a 'Bangkok Post Economic Review year-end 2012 Turning Point' advertisement.

Mekong Fish Network

Mekong study predicts crop shifts

(9 April 2013 –Reprinted from Bangkok Post)

<http://www.mekongfishnetwork.org/mekong-study-predicts-crop-shifts/>

FishBio.com

Mekong study predicts crop shifts

(9 April 2013 –Reprinted from Bangkok Post)

<http://fishbio.com/fisheries-news/mekong-fisheries-news/mekong-study-predicts-crop-shifts>

Thai News and Blogs

Mekong study predicts crop shifts

(9 April 2013 –Reprinted from Bangkok Post)

<http://news.4amexpat.com/2013/04/09/mekong-study-predicts-crop-shifts/>

Mekong Delta suffering from climate change

(8 April 2013 - Viet Nam Times / Asia News Network)

<http://www.asiaone.com/News/Latest%2BNews/Science%2Band%2BTech/Story/A1Story20130408-414380.html>



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Mekong Delta suffering from climate change



Photo: AFP

Viet Nam Times/Asia News Network
Monday, Apr 08, 2013

BANGKOK - A new study on Climate Change Impact and Adaptation in the Lower Mekong Basin released on March 29 has revealed that the effects of climate change in the basin is worse than the global average.

Final results of the United States Agency for International Development (USAID)-funded study, that were released at a regional workshop in Bangkok, indicate that changes in climate will likely trigger decreases in yields and in the suitability of key commercial and staple crops of the region.

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These included two provinces of Vietnam in Gia Lai in the Central Highlands and Kien Giang in the

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วิจัยพบสภาพอากาศรุนแรงกระทบนิเวศน์ 4 ประเทศลุ่มน้ำโขงครั้งใหญ่ ไทย เวียดนาม กัมพูชา ลาว ผลผลิตภาคเกษตรลด เออาร์ซีซีจัดมีออปท.จังหวัดเสียงเตรียมความพร้อมชุมชน



โครงการเมกONG เออาร์ซีซี (Mekong ARCC) เน้นผลการศึกษาโครงการวิจัยผลกระทบและความสามารถในการปรับตัวต่อสภาพภูมิอากาศที่เปลี่ยนแปลงของประเทศไทยในกลุ่มแม่น้ำโขงตอนล่างประกอบไปด้วย กัมพูชา ลาว ไทย และเวียดนาม โดยระบุว่า 4 ประเทศแถบลุ่มแม่น้ำโขงกำลังเผชิญกับความเปลี่ยนแปลงของสภาพภูมิอากาศ ซึ่งก่อให้เกิดผลกระทบอย่างรุนแรงต่อผลผลิตทางการเกษตร เช่น ข้าว ข้าวโพด กาแฟ และยางพารา รวมถึงผลผลิตทางการประมงและปศุสัตว์

"นักวิจัยรายงานว่าภูมิอากาศลุ่มแม่น้ำโขงกำลังเผชิญกับสภาพอากาศที่เปลี่ยนแปลงอย่างรุนแรงที่นักวิจัยเคยคาดการณ์ไว้ทั้งเรื่องอุณหภูมิและปริมาณน้ำฝน" ดร.เจมส์ แครวฟอร์ด หัวหน้าโครงการวิจัย กล่าว

การศึกษานี้มีองค์การเพื่อการพัฒนาระหว่างประเทศแห่งสหรัฐอเมริกา (USAID) เป็นผู้ให้ทุนสนับสนุน ซึ่งระบุว่าอุณหภูมิเฉลี่ยของโลกที่เพิ่มขึ้น 2 องศาเซลเซียส อาจส่งผลให้ภูมิภาคลุ่มน้ำโขงตอนล่างต้องเผชิญกับอุณหภูมิที่สูงขึ้นถึง 4-6 องศาเซลเซียส ซึ่งจะก่อให้เกิดผลกระทบรุนแรงต่อวิถีชีวิตความเป็นอยู่ สุขภาพ และความมั่นคงด้านอาหารในชนบท รวมทั้งเศรษฐกิจระดับประเทศอีกด้วย ผลการศึกษายังแสดงให้เห็นถึงสภาวะที่อุณหภูมิและปริมาณน้ำฝนที่สูงขึ้นในบริเวณลุ่มแม่น้ำโขงตอนล่าง จะส่งผลกระทบต่อความอุดมสมบูรณ์ของระบบนิเวศ และแหล่งเพาะปลูกทั้งเพื่อการยังชีพและเพื่อการพาณิชย์

ข้อค้นพบที่รุกรานลุ่มแม่น้ำโขงของประเทศไทยจะมีความอุดมสมบูรณ์และปลูกข้าวได้น้อยลง ขณะที่ผลผลิตทางการเกษตรในภาคตะวันออกเฉียงเหนือและภาคตะวันออกของประเทศไทยมีปริมาณลดลง พื้นที่ปลูกข้าวในจังหวัด Kien Giang ทางตอนใต้ของเวียดนามอาจได้รับประโยชน์จากปริมาณน้ำฝนที่เพิ่มขึ้น แต่พื้นที่ปลูกข้าวในจังหวัด Gia Lai ทางตอนกลางของเวียดนามอาจได้รับความเสียหาย

ความอุดมสมบูรณ์และความเหมาะสมของดินเพื่อการเพาะปลูกพืชเศรษฐกิจ อาทิ ยางพารา กาแฟ และมันสำปะหลังในบริเวณภาคตะวันออกเฉียงเหนือและภาคตะวันออกของประเทศไทยมีจำนวนลดลง เกษตรกรชาวลาวจำเป็นต้องย้ายฐานเพาะปลูกพืชเศรษฐกิจ เช่น กาแฟ ไปยังบริเวณพื้นที่สูง เนื่องจากผลกระทบด้านปริมาณน้ำฝนและอุณหภูมิที่เพิ่มขึ้น

ทั้งนี้โครงการเมกONGเออาร์ซีซี เตรียมทำงานร่วมกับองค์กรท้องถิ่นในจังหวัดเสียงของแต่ละประเทศในลุ่มน้ำโขงตอนล่าง ที่คาดการณ์ว่าจะได้รับผลกระทบอย่างรุนแรงจากสภาพภูมิอากาศที่เปลี่ยนแปลง เพื่อเตรียมความพร้อมรับมือกับผลกระทบที่จะมีการแผ่ขยายผลกระทบวิจัยนี้ในวันที่ 29 มี.ค.56 เวลา 14.00-15.00 น. โรงแรมอีสตัน แกรนด์ สาทร กรุงเทพฯ .

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สรุปข่าวเด่นรอบสัปดาห์ 18 - 24 มี.ค. 56

สรุปข่าวเด่นรอบสัปดาห์ 18 - 24 มี.ค.



นายชานนท์ "ปลด รว.สส." เสนอญัตติ "ปรับลดเบี้ยกดขี่" กษ.มันใจจน.ออกกฎ "ปรับจำนำข้าวอายุสั้น" ไม่กระทบเกษตรกร "ดร.นิพนธ์" วิจารณ์โครงการ, สภาครว. กม.ประกันสังคมฉบับประช. แรงงานดก ขบ.ต้องการเงินเดือน มีกฎหมายใหม่, คปท.คท. กษ.กระจายอำนาจท้องถิ่น, ปชช.สำเนาข้อเสนอเปิดดำเนินาหาร, สสส.จัดมีออปท. มชช.มมท.สาธารณสุข เมื่อวิชา "ละครชุมชน" เป็นเด็กเป็นเด็กพัฒนาสังคม .

อ่านทั้งหมด

สารคดีเสียงชุมชน

สิทธิมนุษยชน, คนลาวจีน

สารคดีเสียงชุมชน

สิทธิมนุษยชน, คนลาวจีน

สสส. นำเสนอสารคดีเชิงข่าว เรื่อง สิทธิมนุษยชนคนลาวจีน : ทูกรีนนี้ไทยยังมีปัญหา การละเมิดสิทธิมนุษยชน ผู้คนจำนวนมากยังถูกคว่ำบาตรจากกระทรวงมหาดไทยไม่เพียงบรรเทาความเดือดร้อนทางชนชั้นยังมีให้เห็นมากมาย ดังนั้นการสร้างความเป็นไปให้เกิดขึ้นใหม่จึงจำเป็นและมีความสำคัญ

ดู สารคดีทั้งหมด

ดร.สมชาย **ทรัพยากร-สิ่งแวดล้อม** วิจัยพบสภาพอากาศรุนแรงครั้งใหญ่ 4 ปท.ลุ่มโขง กระทบหนักความมั่นคงอาหาร

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Top

วิจัยพบสภาพอากาศรุนแรงครั้งใหญ่ 4 ปท.ลุ่มโขง กระทบหนักความมั่นคงอาหาร (1 April 2013 – Reprinted from Isra News) <http://www.ftawatch.org/all/news/32891>

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วิจัยพบสภาพอากาศรุนแรงครั้งใหญ่ 4 ปท.ลุ่มโขง กระทบหนักความมั่นคงอาหาร

วิจัยพบสภาพอากาศรุนแรงรอบปีรวม 4 ประเทศลุ่มน้ำโขงครั้งใหญ่ ไทย เวียดนาม กัมพูชา ลาว ผลผลิตภาคเกษตรลด เอลาร์ชี่จัมมีอ อปท.จังหวัดเสี่ยงเตรียมความพร้อมชุมชน

โครงการเมโขง เอลาร์ชี่ (Mekong ARCC) เผยผลการศึกษาในโครงการวิจัยผลกระทบและความสามารถในการปรับตัวต่อสภาพภูมิอากาศที่เปลี่ยนแปลงของประเทศไทยในกลุ่มแม่น้ำโขงตอนล่างอันประกอบด้วย กัมพูชา ลาว ไทย และเวียดนาม โดยระบุว่า 4 ประเทศแถบลุ่มแม่น้ำโขงกำลังเผชิญกับความเปลี่ยนแปลงของสภาพภูมิอากาศ ซึ่งก่อให้เกิดผลกระทบอย่างรุนแรงต่อผลผลิตทางการเกษตร เช่น ข้าว ข้าวโพด กาแฟ และยางพารา รวมทั้งผลผลิตทางการประมงและปศุสัตว์

"ข้าพเจ้าอยากขอร้องภาคลุ่มแม่น้ำโขงกำลังจะเผชิญกับสภาพอากาศที่เปลี่ยนแปลงอย่างรุนแรงเกินที่นักวิจัยเคยคาดการณ์ไว้ทั้งเรื่องอุณหภูมิและปริมาณน้ำฝน" ดร.เจอเร็มี แครวฟอร์ด หัวหน้าโครงการวิจัย กล่าว

การศึกษาที่มีองค์การเพื่อการพัฒนาระหว่างประเทศแห่งสหรัฐฯ (USAID) เป็นผู้ให้ทุนสนับสนุนนี้ ยังระบุว่าอุณหภูมิเฉลี่ยของโลกที่เพิ่มขึ้น 2 องศาเซลเซียส อาจส่งผลให้ภูมิภาคลุ่มน้ำโขงตอนล่างต้องเผชิญกับอุณหภูมิที่สูงขึ้นถึง 4-6 องศาเซลเซียส ซึ่งจะก่อให้เกิดผลกระทบเร่งต่อวิถีชีวิตความเป็นอยู่ สุขภาพ และความมั่นคงด้านอาหารในชนบท รวมทั้งเศรษฐกิจระดับประเทศอีกด้วย ผลการศึกษาค้นคว้าครั้งนี้ยังแสดงให้เห็นถึงสภาวะที่อุณหภูมิและปริมาณน้ำฝนเพิ่มขึ้นในบริเวณลุ่มแม่น้ำโขงตอนล่าง จะส่งผลกระทบต่อความอุดมสมบูรณ์และระบบนิเวศ และแหล่งเพาะปลูกทั้งเพื่อการยังชีพและเพื่อการพาณิชย์

คือพื้นที่ราบลุ่มตอนเหนือของประเทศไทยจะมีความอุดมสมบูรณ์และปลูกข้าวได้น้อยลง ขณะที่ผลผลิตทางการเกษตรในภาคตะวันออกเฉียงเหนือจะมีปริมาณสูงขึ้น, การอพยพของฝูงปลาบริเวณตอนล่างของลุ่มแม่น้ำโขงมีจำนวนลดลง, ความอุดมสมบูรณ์ของบริเวณสูงตอนกลางของประเทศเวียดนามลดลง พื้นที่ปลูกข้าวในจังหวัด Kien Giang ทางตอนใต้ของเวียดนามอาจได้รับประโยชน์จากปริมาณน้ำฝนที่เพิ่มขึ้น แต่พื้นที่ปลูกข้าวในจังหวัด Gia Lai ทางตอนกลางของเวียดนามอาจได้รับความเสียหาย

ความอุดมสมบูรณ์และความเหมาะสมของดินเพื่อการเพาะปลูกพืชเศรษฐกิจ อาทิ ยางพารา กาแฟ และมีลำไพลังในบริเวณภาคตะวันออกเฉียงเหนือและภาคตะวันออกของประเทศกัมพูชาจำนวนมากลดลง, เกษตรกรชาวลาวจำเป็นต้องย้ายฐานเพาะปลูกพืชเศรษฐกิจ เช่น กาแฟ ไปยังบริเวณพื้นที่สูง เนื่องจากผลกระทบด้านปริมาณน้ำฝนและอุณหภูมิที่เพิ่มขึ้น

ทั้งนี้โครงการเมโขงเอลาร์ชี่ เตรียมทำงานร่วมกับองค์กรท้องถิ่นในจังหวัดเสี่ยงของแต่ละประเทศในลุ่มแม่น้ำโขงตอนล่าง ที่คาดการณ์ว่าจะได้รับผลกระทบอย่างรุนแรงจากสภาพภูมิอากาศที่เปลี่ยนแปลง เพื่อเตรียมความพร้อมแก่ชุมชน โดยจะมีการแลกเปลี่ยนข้อมูลการวิจัยในวันที่ 29 มี.ค.56 เวลา 14.00-15.00 ณ โรงแรมฮิลตัน แกรนด์ สาทร กรุงเทพฯ

<http://www.isranews.org/%E0%B8%81%E0%B8%A3%E0%B8%B0%E0%B9%81%E0%B8%AA%E0%B8%8A%E0%B8%B8%E0%B8%A1%E0%B8%8A%E0%B8%99/%E0%B8%97%E0%B8%A3%E0%B8%B1%E0%B8%9E%E0%B8%A2%E0%B8%B2%E0%B8%81%E0%B8%A3-%E0%B8%AA%E0%B8%B4%E0%B9%88%E0%B8%87%E0%B9%81%E0%B8%A7%E0%B8%94%E0%B8%A5%E0%B9%89%E0%B8%AD%E0%B8%A1/item/20276-arcc280313.html>

ดูข่าวเพื่อชุมชน การค้าและการลงทุน

4 reads

เนื้อหาข่าวเป็นการรวบรวมเพื่อการศึกษาวิจัยเท่านั้น อันเป็นประโยชน์ต่อสาธารณะ มิได้นำไปเพื่อการค้าแต่อย่างใด

เมื่อเกิด วิกฤต เสนา:ชีวิตไม่ทิ้งกันจัดการค้าเสรีครั้งใหญ่




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- > ทรัพย์สินทางปัญญา
- > เขตเศรษฐกิจพิเศษ
- > มาตรา 190
- > เศรษฐศาสตร์ทางเลือก
- > โลกาภิวัตน์แบบไม่ถูกขาด
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"นักวิจัย" ชี้อีก 50 ปี อุณหภูมิโลกพุ่งอีก 4-6 องศา

(2 April 2013 – Reprinted from Bangkok Biz News Online)

<http://news.voicetv.co.th/thailand/66733.html>

The screenshot shows the VoiceTV website interface. At the top, there are logos for various channels: True Visions (ช่อง 64 หรือ 75), DTV (ช่อง 7), GMMZ (ช่อง 109), Sun Box (ช่อง 23 หรือ 25), and PSI (ช่อง 41). The main navigation bar includes 'PROGRAMME', 'LIFESTYLE', 'BLOG', 'LIVE TV', 'RADIO', 'VOICE SPACE', and 'ABOUT US'. The featured article is titled 'นักวิจัยอีก 50 ปีข้างหน้า อุณหภูมิโลกพุ่งอีก 4-6 องศา' (Another 50 years from now, global temperature will rise another 4-6 degrees). The article text discusses a study by the Hadley AMIP, Hadley Adaptation and Response to Climate Change, predicting a temperature increase of 4 to 6 degrees Celsius by 2050. It also mentions that the study is part of the Hadley Centre for Climate Prediction and Research, which is a part of the Met Office. The article is dated 2 April 2013 and is reprinted from Bangkok Biz News Online. The website footer includes 'EXPLORE VOICETV' with categories like NEWS, OUR PROGRAMMES, LIFESTYLE, BLOG, and SPECIAL. It also lists various partners and sponsors.

นักวิทยาศาสตร์โลกร้อนเข้าขั้นวิกฤติ อีก 40 ปี ร้อนขึ้นอีก 4-6 องศา
(2 April 2013)
<http://hilight.kapook.com/view/84152/2>

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- สัตว์ป่า สัตว์หายาก ร้อนระอุ
- เมล็ดพืชกับเมล็ดน้ำ งามกับน้ำได้
- พายุฝนเขตร้อน กับวิธีการป้องกัน
- ข้อควรปฏิบัติเมื่อเกิดภัยแล้ง
- 80 วัสดุโลกร้อน
- 80 วัสดุโลกร้อน (ตอนที่ 2)
- 13 5 อันดับ "โลกร้อน" ร้อนที่สุด
- 10 ประเทศการแก้ปัญหาจาก "โลกร้อน"
- "ภาวะโลกร้อน" ความจริงอีกโลก!

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- สำนักงานพัฒนาวิทยาศาสตร์และเทคโนโลยีแห่งชาติ (สวทช. / NSTDA)
- มูลนิธิกองทุนเพื่อสิ่งแวดล้อมไทย
- กรีนพีซ เอเชียตะวันออกเฉียงใต้
- Why world hot : ภาวะโลกร้อน

เรียนเรื่องข้อมูลโดยกระทัดรัด

ช่วงนี้เชื่อว่าหลายคนคงแทบจะไม่อยากก้าวออกจากบ้านหรือออกไปเดินเล่นกลางแจ้งวันแน่ ๆ เพราะสภาพอากาศที่ร้อนสุดทน ทำให้เลือกที่จะนอนเปิดแอร์เปิดพัดลมอยู่ในที่ที่อากาศเย็นสบายกว่า แต่สภาพอากาศสุดร้อนที่เรา ๆ เราชอบอยู่ตอนนี้ อาจจะไม่ค่อยดีเท่าไรนัก เพราะล่าสุด นักวิทยาศาสตร์ได้เปิดเผยว่า อีก 40 ปีข้างหน้า โลกจะเผชิญกับภาวะโลกร้อนแบบเต็มรูปแบบ อุณหภูมิอากาศจะร้อนกว่านี้ 4-6 องศาเซลเซียส และตอนนี้ แม้ว่าจะพยายามหยุดยั้งภาวะโลกร้อนแค่ไหน ก็ดูเหมือนจะสายเกินไปแล้ว

เมื่อวันที่ 29 มีนาคมที่ผ่านมา เว็บไซต์เดอะนิวยอร์กไทมส์ได้เปิดรายงานวิจัยเกี่ยวกับการเปลี่ยนแปลงสภาพอากาศในลุ่มน้ำโขงตอนล่าง ของคณะวิจัยที่นำทีมโดย ดร.เจเรมี แครว์ ฟอร์ด ที่ระบุว่า ภูมิภาคลุ่มน้ำโขงตอนล่างกำลังเผชิญกับการเปลี่ยนแปลงของสภาพอากาศที่ร้ายแรงกว่าที่นักวิทยาศาสตร์เคยคาดการณ์ไว้ และผู้คนในบางพื้นที่ อาจจะต้องปรับตัวไม่ทันเพื่อรับมือกับอุณหภูมิอากาศที่อาจสูงขึ้นถึง 4-6 องศาเซลเซียส ในอีก 40 ปีข้างหน้า

รายงานระบุว่า ประเทศที่ได้รับผลกระทบจากภาวะโลกร้อนแบบเต็มรูปแบบในอนาคต คือ ประเทศที่เป็นอ่าวอู๋น่า และแหล่งเกษตรกรรมของประเทศ ไทย ลาว กัมพูชา โดยอุณหภูมิจะร้อนขึ้นมากน้อยแตกต่างกันไปในแต่ละพื้นที่ ซึ่งผลกระทบนั้น นอกจากประชาชนจะต้องเผชิญกับสภาพอากาศที่ร้อนขึ้น ฝนที่ตกมากขึ้น และฤดูแล้งที่ยาวนานแล้ว ภาวะโลกร้อนก็จะส่งผลกระทบต่อสิ่งแวดล้อม การเกษตร และส่งผลต่อไปยังระบบเศรษฐกิจของประเทศ



ดร.เจเรมี แครว์ ฟอร์ด ได้เปิดเผยว่า "เราพบว่าภูมิภาคนี้กำลังจะเผชิญกับภาวะโลกร้อน ฝนตกหนัก และพายุ ซึ่งอยู่ในระดับที่ร้ายแรงกว่าที่เราเคยคาดการณ์ไว้"

สำหรับพื้นที่เกษตรกรรมในประเทศไทย ดร.เจเรมีคาดว่า อุณหภูมิอากาศที่เพิ่มขึ้น และปริมาณฝนที่เพิ่มมากขึ้น จะทำให้ผลผลิตจากการทำนาข้าวลดลง ในพื้นที่ราบต่ำที่จังหวัดเชียงใหม่ และผลผลิตทางการเกษตรในจังหวัดสุพรรณบุรีจะสูงขึ้น

ทั้งนี้ ปัญหาโลกร้อน กลายเป็นประเด็นใหญ่ที่ถูกนำมาพูดถึงกันอย่างคึกคักตลอด 10 ปีที่ผ่านมา หลังจากมีการศึกษาพบว่า ภาวะโลกร้อนที่เรารู้จักกันดีนั้นเคยเป็นมาในอดีต ซึ่งสาเหตุของภาวะโลกร้อน นอกจากจะมาจากคาร์บอนไดออกไซด์ที่โรงงานอุตสาหกรรมปล่อยออกมาแล้ว ยังมาจากการตัดไม้ทำลายป่า การปล่อยก๊าซคาร์บอนไดออกไซด์ในปริมาณมากอย่างต่อเนื่อง ซึ่งนำไปทำลายชั้นบรรยากาศของโลกที่เป็นเกราะป้องกันความร้อนจากดวงอาทิตย์ จนทำให้ชั้นบรรยากาศบางลง จึงทำให้โลกร้อนขึ้นอย่างไม่อาจยับยั้งได้ และมีแนวโน้มว่าโลกร้อนขึ้นต่อไปเรื่อย ๆ ด้วย

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ดารา



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นักวิทยาศาสตร์เผยผลการศึกษาสภาพภูมิอากาศ

By สำนักข่าวไทย TNA News | 29 มี.ค. 2556 17:14 | 628 views | [View Comment](#)

กรุงเทพฯ 29 มี.ค. - นักวิทยาศาสตร์เผยผลการศึกษาสภาพภูมิอากาศในลุ่มน้ำโขงตอนล่าง ระบุ 4 ประเทศ รวมทั้งไทย กำลังเผชิญกับสภาพอากาศที่เปลี่ยนแปลงอย่างรวดเร็วและรุนแรงกว่าที่เคยคาดการณ์ไว้

ทีมนักวิทยาศาสตร์ภายใต้โครงการเมโซเออร์ซีซี ที่สนับสนุนโดยองค์การเพื่อการพัฒนาระหว่างประเทศของสหรัฐ ได้ทำงานวิจัยซึ่งถือเป็นการศึกษาชิ้นแรกในภูมิภาคลุ่มน้ำโขง ที่มีการวิเคราะห์ผลกระทบของการเปลี่ยนแปลงอุณหภูมิและปริมาณน้ำฝนต่อผลผลิตทางการเกษตร เช่น ข้าว ข้าวโพด ยางพารา มันสำปะหลัง ถั่วเหลือง และกาแฟ รวมถึงการประมงและปศุสัตว์พบว่า 4 ประเทศลุ่มน้ำโขงตอนล่างประกอบด้วย ลาว กัมพูชา ไทย และเวียดนาม กำลังเผชิญกับสภาพอากาศที่เปลี่ยนแปลงอย่างรุนแรงเกินกว่าที่การวิจัยเคยคาดการณ์ไว้ ทั้งเรื่องอุณหภูมิและปริมาณฝน โดยจะร้อนขึ้นและปริมาณฝนมากขึ้นอย่างเห็นочень แต่จะแตกต่างกันไปในแต่ละพื้นที่ หลายพื้นที่อาจเผชิญกับอุณหภูมิที่สูงขึ้นถึง 4-6 องศาเซลเซียส ภายในปี พ.ศ.2593 ซึ่งจะกระทบต่อประชากร 60 ล้านคน โดยส่วนใหญ่เป็นชาวนาและชาวประมง

ผู้กำหนดนโยบายจึงจำเป็นต้องเตรียมวางแผนรับมือกับสถานการณ์ที่จะรุนแรงขึ้นในอนาคต โดยโครงการเมโซเออร์ซีซี จะช่วยส่งเสริมการวางแผนเพื่อความมั่นคงทางอาหารและการพัฒนาเศรษฐกิจ โดยใช้หลักการทางวิทยาศาสตร์มาช่วยลดความเสี่ยง และสามารถรับมือกับผลกระทบจากอากาศเปลี่ยนแปลงที่จะมีต่อผลผลิตทางการเกษตร ซึ่งทีมนักวิทยาศาสตร์จะลงพื้นที่ไปทำความเข้าใจ วางแผนการปรับตัวร่วมกับประชาชน เช่น ในประเทศไทย จะไปที่ จ.เชียงราย และสกลนคร. - สำนักข่าวไทย

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