National Council for Sustainable Development
General Secretariat
Department of Climate Change

Ministry of Environment

Climate Change Research and Practice in Cambodia

Knowledge-sharing Event Proceedings, Siem Reap, 05-06 December 2017

18 climate change policy research priorities were identified

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CAMBODIA CLIMATE CHANGE ALLIANCE

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ABBREVIATIONS AND ACRONYMS

CC	Climate change
CCCA	Cambodia Climate Change Alliance
CCCSP	Cambodia Climate Change Strategic Plan 2014-2023
CCTWG	Climate Change Technical Working Group
DCC	Department of Climate Change
DMC	Mulch-Based Cropping
DP	Development Partner
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GHG	Greenhouse Gas
GSSD	General Secretariat of National Council for Sustainable Development
ICEM	International Centre for Environmental Management
IPCC	the United Nations Intergovernmental Panel of Climate Change
ITC	Institute Technology of Cambodia
MCU	Mean Chey Universes
MOWRAM	Ministry of Water Resources and Meteorology
MoU	Memorandum of Understanding
NBP	National Biodigester Programme
NCSD	National Council for Sustainable Development
NFI	National Forest Inventory
NRM	Natural Resources Management
PNCA	Prek Leap National College of Agriculture
RUA	Royal University of Agriculture
RUPP	Royal University of Phnom Penh
REDD+	Reducing Emissions from Deforestation and Forest Degradation
Sida	Swedish International Development Cooperation Agency
SPCR	Strategic Program for Climate Resilience
UHST	University of Heng Samrin Tbong Khmum
WFP	World Food Programme

INTRODUCTION AND OBJECTIVES OF THE EVENT

This meeting is part of the regular initiatives of the Cambodia Climate Change Alliance (CCCA), a program funded by European Union (EU), United Nations Development Programme (UNDP) and Swedish International Development Cooperation Agency (Sida), and being implemented by the Department of Climate Change (DCC), General Secretariat of the National Council for Sustainable Development (GSSD).

CCCA is designed to help strengthen national systems and capacities to support the implementation and coordination of Cambodia's climate change response, contributing to the CCCSP vision. One critical component of the program is to provide support to scale up climate change research and innovation in support of a more effective CC response. It does it in multiple ways, including CCCA grant support to ministries and other stakeholders to implement climate change projects including research and innovation projects, and CCCA support to partnership building between the government and academic and research institutions to advance research and education in key areas of sustainable development, including climate change.

So far, eight research/innovation projects have been funded by the CCCA Grant Facility, which are now in their second year of implementation, and four agreements have been signed with national universities to promote their engagement in CC research, where the development and dissemination of policy relevant climate change research has been identified as a key area of cooperation.

The organization of meetings and conferences on policy oriented research on Climate Change in Cambodia, such as the present event, have been included in the agreements established with partner universities as they can accelerate the uptake of research findings into the policy processes.

DCC/CCCA, with the support from various partners, is also providing support to the development and implementation of key climate response measures and assessing opportunities for scale up. The dissemination of lessons learnt from these efforts is also critical to inform climate change related policy and decision making.

This second DCC/CCCA knowledge sharing event of 2017 brought together researchers, policy makers and practitioners to share policy relevant findings from previous and ongoing research projects and lessons learnt from the implementation of CC interventions, and to develop a common understanding of the key priorities for CC related research to support Cambodia's climate change response.

The main objectives that guided the design of this event were (1) to **share recent findings and lessons learnt** from climate change related research and practice from the implementation of CC projects, and (2) to **develop a common understanding on the priorities for climate change related research**, based on needs identified by policy makers and practitioners and on the areas of expertise of national research institutions and their partners. Furthermore, the meeting design also provided an opportunity to elicit from participants their recommendations on short term (low-cost) enabling actions to boost climate change related research in Cambodia.

This national meeting on CC policy oriented research was a precursor of future regular research conferences on CC in Cambodia intended to provide a forum for dissemination of policy relevant research findings from ongoing climate change related research programs, helping to bridge the gap between science and policy and to strengthen evidence based policy making.

SUMMARY

Department of Climate Change with support from Cambodia Climate Change Alliance organized a two-day knowledge-sharing event to share recent findings and lessons learnt from the climate change research and practice and to develop a common understanding on the priorities for climate change related research, bringing together researchers, policy makers and practitioners to share policy relevant findings from previous and ongoing research projects and lessons learnt from the implementation of CC interventions. The event was presided by H.E. Tin Ponlok, Secretary General of the National Council for Sustainable Development and counted with about 99 participants (21 women) from leading universities in Cambodia, government agencies, NGOs and CCCA's research grant projects.

As laid out in the event's agenda (annex 1), a sequence of sessions uncovered policy relevant findings and lessons learnt from CC project implementation and research in a wide range of topics in Cambodia. Participants had the opportunity to ask and comment on the twelve presentations on CC research and practice in Cambodia focusing on the policy relevant findings and lessons learnt from these CC projects. A field trip provided an additional opportunity for participants to learn about a smart agriculture project site at Krabey Real village, Siem Reap City.

A separate session on the second day of the event was dedicated to the discussion of priorities for CC research and how research efforts could be scaled up in Cambodia. Participants were grouped into five thematic groups to identify priorities and actions aiming at stimulating CC policy oriented research in Cambodia.

As a result of these discussions, 18 policy research priorities were identified.

Area	Research priorities
Greenhouse Gas (GHG) Mitigation and Inventory	1. Research & Development of low-cost, low carbon, appropriate technologies for energy, industry and waste management (including policy and market frameworks)
	2. Decoupling development from carbon-reducing uncertainties in estimating national greenhouse gases (GHGs) emissions and removals from key emitting sectors (including energy, industry, agriculture, land use, land use change and forestry, waste management) and assessing and testing scalable cost-effective mitigation options to enhance energy security
	3. Improving activity data and emission factors for the key sources of national GHG Inventory
	4. Assessment of green building standard and clean city on GHG mitigation/resilient capacity
Adaptation	5. Climate resilience of food production systems for increased food security
	6. Policy-relevant health risk assessment from short and medium-term climate variability and the effects of gradual climate change (with a focus on vulnerable groups exposed to climate hazards)
	7. Understanding the role of social protection and early warning schemes in reducing vulnerability to climate variability and change (including analysis of the gender dimension)
	8. Developing bottom-up, participatory approaches to community/ecosystem-based adaptation

Area	Research priorities
	9. Developing methodologies for assessing adaptation technologies and the costing of adaptation measures for local level planning
	10. Quantifying ecosystem services – methodological contributions to the establishment of natural resource accounting systems in the context of climate change
	11. Effects of El Niño on water and sanitation in Cambodia
	12. Identify technology/method to reduce water loss for medium-large scale irrigation system
	13. Study on groundwater availability for sustainable use
	14. Research methodology and VA approaches cost-benefit / adaptation costs analysis
Adaptation/GHG Mitigation	15. Understanding the role of land use planning in climate change adaptation and mitigation responses
	16. Understanding urban resilience – technical and policy recommendations for low carbon urban resilient development (including governance, management, planning and design dimensions)
	17. Assessment of sustainable land use management
	18. Assessment of green building standard and clean city on GHG mitigation/resilient capacity

Inputs from this event will be used to guide further discussions on the formulation of a national research agenda in support of the national climate change response, which needs to be based on national policy priorities and existing gaps.

Way forward and recommendations

- Formulate a national research agenda in support of the national climate change response, based on national policy priorities and existing gaps
- Collect/gather existing research findings relevant to the research areas identified as priority
- Implement climate change partnerships with universities to define better mechanisms for research in Cambodia
- Improve knowledge management system so that all research findings are made available.

OPENING SESSION

Welcoming remarks were given by Dr. Huon Thavrak, on behalf of RUA rector and GSSD's university partnership in Cambodia, to the participants from CCTWG, CCCA's grantees from Window 3, other academia, Development Partners (DPs) and NGOs.

He noted that climate change needs to be integrated into university's curriculum as a main subject and prioritized in scientific research.

He also noted the recent signing of memorandum of understanding between NCSD and 4 universities including RUA and NCSD, aiming to promote research related to climate change, biodiversity, science and technologies, sustainable development and other cross-cutting issues in Cambodia.

In his final remark, he called for participants' attention to 1) building research capacity including policy research, 2) linking research findings with policy formulation and decision making, and 3) identifying priority research topics to improve climate change response in Cambodia.

WELCOMING REMARKS
Dr. Huon Thavrak
Director
Graduate School, Royal University of Agriculture

OPENING REMARKS
H.E. Tin Ponlok
Secretary General
National Council for Sustainable Development and
Director of Cambodia Climate Change Alliance

KEYNOTE PRESENTATION
Dr. Heng Chan Thoeun
Deputy Director
Department of Climate Change,
General Secretariat of National Council for Sustainable Development

Opening remarks were delivered by H.E. Tin Ponlok, Secretary General of NCSD, on behalf of H.E. Say Samal, Minister of Environment and Chairman of NCSD. He congratulated and thanked the efforts of DCC to coordinate CCCA partners to share their experiences and knowledge on climate change innovations including renewable energy, climate smart agriculture, water management, crop resilience as well as climate-responsive projects of line ministries.

He stressed the crucial role of NCSD in coordinating and supporting all government sector ministries, institutions and sub-national administration to achieve sustainable development in economic, social development, environment and culture, as part of the institutional modernization in Ministry of Environment.

Noting the limited alignment of climate expenditure with CCAPs and the underfunded CCAP activities, he addressed the challenge that NCSD needs to mobilize more domestic external resources (both technical support and finance) to support the implementation of sector climate change action plans (CCAPs), consisting 171 activities of 15 line ministries and requiring a budget of over US$ 800 million in total.

In this spirit, he regarded this workshop as a great opportunity for sharing experiences and lessons learnt on climate change responses, and identifying the climate change research priorities to better inform policy making.

The full text of speeches is attached in annex 2.

In his keynote presentation, Dr. Heng Chan Thoeun, deputy director of DCC, provided an overview of current government efforts guided by Cambodia Climate Change Strategic Plan (CCCSP). He noted that only around one fifth of CCCSP activities have been implemented, many of which were supported by

CCCA. As highlighted in CCCSP objectives, he underlined the importance of research and knowledge development in connecting climate science with climate-responsive policy formulation in Cambodia. Examples of the efforts of strengthening climate change research, knowledge and information management arrangements were also shared.

After presenting the tentative 11 priority research needs in the areas of GHG mitigation and inventory, adaptation, and adaptation/GHG mitigation, identified by the government in 2015, he requested participants to discuss and complement the agenda during the group discussion session of Day 2.

He concluded that to bridge the science-policy gap, work can only be done with efforts from policy, science and practices.

SESSION 1: SHARING POLICY RELEVANT FINDINGS AND LESSONS LEARNT FROM CC PROJECT IMPLEMENTATION AND RESEARCH IN CAMBODIA

PART 1

Develop Emissions and Removal Factors in Tonle Sap Flooded Forest

Mr. Kim Soben presented his study on emissions and removal factors in Tonle Sap flooded forest. He used National Forest Inventory (NFI) design to assess the forest structure and composition in 18 nested plots in flooded forest in Battambang and Kampong Chhnang. He sampled 28 trees for the species *Barringtonia acutangular*, where tree aboveground biomass (AGB), diameter at breast height (DBH), total height (H), crown area (CA), hole dimensions, dominance and wood density (WD) were measured.

Allometric equations were subsequently developed to relate tree biomass to their diameter, height, crown area and wood density, aiming to improve carbon stock estimates and emission/removal factors for the flooded forests.

For more information, download the presentation from the CC website.

Q: Regarding to the development of the emission factor of forest, do you count the chainsaw-dust in the calculation? (Mr. Sum Cheat, DCC/GSSD)

> A: Yes, we have to collect the chainsaw-dust in the calculation. However, from our calculation, there is a chainsaw-dust loss of 4 to 6%. There are two ways to include the chainsaw-dust in calculation.

MODERATOR

Ms. Khlok Vichet Ratha
Deputy Director
Department of Climate Change,
General Secretariat of National Council for Sustainable Development

SPEAKER

Mr. Kim Soben
Vice Dean of Graduate School
Royal University of Agriculture and
Director of Center for Agricultural and Environmental Studies

Mr. Pheap Sambo
Lecturer
Royal University of Agriculture

Mr. Peter John Meynell
Team Leader
International Centre for Environmental Management

Mr. Chea Chanthan
Project Manager
Food and Agriculture Organization of the United Nations

Assessing Soil Ecosystem Services for Resilient Farming

Mr. Pheap Sambo, presented a study on an assessment of soil ecosystem services for resilient farming in Battambang, Kampong Thom and Kampong Cham, where he introduced the project "Ecological Intensification and Soil Ecosystem Functioning (EISOFUN)" and showed the negative impacts of conventional plough-based cropping systems and the need for alternatives. EISOFUN aims to develop and implement a set of functional soil indicators to assess the impact of agricultural practices on agro-ecosystem performances and sustainability.

Results show positive impacts of direct seeding mulch-based cropping (DMC) management with:

1) more biomass inputs under DMC systems;

2) higher Permanganate Oxidizable Carbon (POXC) (at least 68% higher) and Soil respiration (2.5 times higher);
3) higher water infiltration (around 50% higher); and
4) higher soil aggregate stability. But nutrients and soil biota activity still need to be quantified.

For more information, download the presentation from the CC website.

Q1: What is the source/reference of soil map used in the presentation on soil classification? To my understanding, there are many existing soil classification maps, but the research project does not use those existing maps. It might create confusion among people working in soil and water management, like myself from MOWRAM. (Mr. Thach Sovanna, MOWRAM)

> A: The soil-map in the presentation is based on our study conducted in those three locations, not based on the classification. We focused on the status or quality of the soil in practice. One is in Chamkar Leur District, Kampong Cham, where the soil has more red oxisol content (more than 60%). The second one is in Battambang Province. And the third is in the Chinit River Dike.

Q2: Regarding to the reduction of plowing suggested in the presentation, it seems opposite to the common practices that more plowing increase soil fertility. For example, the guidance from MAFF to plow the rice field with the rice-straw because it could increase the nitrogen in the soil. (Mr. Phoung Dara, NBP)

> A: Regarding the reduction of plowing, in the farmer's mind, they always think that the looser the soil, the more fertile the land. Based on our findings in the three locations, where the soil productivity had declined, with a yield of less than 1 ton of rice per hectare, changing to less plowing increased the yield per hectare.

Q3: Why your study focuses on carbon in soil, not other nutrients in soil? Does RUA have recommendation to the farmers? (Mr. Phoung Dara, NBP)

> A: Regarding to the testing on other micro nutrients in soil, we are researching it still. But now we are focusing on the organic carbon content in the soil. We understand that our study is specific to the project sites, thus we cannot make recommendation to other farmers in different locations with different crops because in our study we studied the cast-crops only, i.e. rice, bean and cassava.

Climate Change Adaptation Research – Findings and Needs from the SPCR Program

Mr. Peter John Meynell introduced the application of some products of the Strategic Program for Climate Resilience (SPCR) program, including climate change GIS toolkit, climate change screening tools, indicators of effectiveness, adaptation technology guides, feasibility studies, with some research gaps pointed out. He noted that Cambodia climate change toolbox is open to public, where the datasets (mapping, CC scenarios, and other information) related to climate change projections in Cambodia are accessible online. ICEM/SPCR analysis report materials are available on: http://icem.com.au/portfolio-items/mekong-arcc/.

For more information, download the presentation from the CC website.

Q1: What is the version of the projection tool and how to access it? (Mr. Meng Chanthoeun, WFP)

> A: At the moment, the projection tool is based on the IPCC4, but we are working on IPCC5 (Fifth Assessment Report) and it is not yet available. But its draft version is available only on ICEM website. We appreciate the feedback from community of users.

Q2: You have mentioned that the AR5 will be used in the downscaled projection tool? And when do you expect to finish the downscaling work? When will the different products (including technology guides and screening tools) be available for practitioners and public? All these should be shared with DCC/GSSD so that they can be disseminated through the climate change website. (Ms. Clara Landeiro, CCCA-UNDP)

> A: We will have a launch event of the downscaled projection tools, maybe in late January or February 2018. We will follow the official process of getting approval from the government on the screening tool as well as the GIS tool. And we will share the products with DCC/GSSD.

Micro Watershed Management

Mr. Chea Chanthan's presentation focused on adopting integrated micro-watershed management and climate resilient agriculture practices to ensure food security, thus building adaptive capacity of rural communities and reducing their vulnerability to climate change and variability. He stressed the need of adopting a landscape approach that unites features of broad stakeholder participation, negotiation around objectives and strategies, and adaptive management based on shared learning, in order to balance local needs and global challenges, addressing both environmental protection and food production goals.

The presentation discussed the general concept, approaches of watershed management, and its linkage with community livelihood particularly connection between nature/ecosystem and life.

For more information, download the presentation from the CC website.

Q: What are the characteristics, sizes, flow-rate, etc. of the watershed under the research project? Because only the concept of watershed management was explained, instead of the findings from the project. (Mr. Thach Sovanna, MOWRAM)

> A: Thank you Mr. Thach Sovanna for your comment on the quality of the presentation. I would like to clarify some confusions. The first reason is that the presentation focuses on the way forward regarding to CC in this workshop. This is not a research project, but it is an applied research or development activity that we did together with community. We have been collecting data for about one year, and we hope to gather more findings when finish data collection in the future, to show whether the applied aspects of landscape approach would be successfully implemented.

INCREASING THE KNOWLEDGE OF THE WATER CYCLE IN ORDER TO REDUCE VULNERABILITY TO CLIMATE CHANGE HAZARDS THROUGH AN INTEGRATED APPROACH

MODERATOR

Dr. Heng Chan Thoeun
Deputy Director
Department of Climate Change,
General Secretariat of National Council for Sustainable Development

SPEAKER

Mr. Lun Sambo
Lecturer
Ministry of Water Resources and Meteorology/Institute Technology of Cambodia

Mr. Yon Ma
Project Manager
Cambodia Rural Development Team

Dr. Nget Sovann
Deputy Director
Preventive Medicine Department,
Ministry of Health

Mr. Lun Sambo presented the update of the project called "Increasing the Knowledge of the Water Cycle" aiming at reducing vulnerability to climate change hazards through an Integrated Approach. It attempts to address the issue using a science-based response in order to mitigate climate change risks and consequences on vulnerable rural communities; it also attempts to reduce Climate Change impacts on Water User Communities through building capacities on climate change mitigation and strengthen the provincial department of water resources and meteorology related to the project results.

He presented some data on rainfall distribution, based on the existing monitoring network in 4 locations, and learning about water balance, including temporal and spatial variability. Follow-up case studies were also conducted including Groundwater vulnerability map, and Precipitation Runoff Modeling System (PRMS) in O'Tameng, Water supply in Chong Kal. The next step arrangements were also introduced.

For more information, download the presentation from the CC website.

Q: The presentation from MOWRAM is very good. However, I like to comment on the graphics in the presentation. For example, the graphics of groundwater has color legends and boundary. However, when the presenter presented about the impacts, he didn't show the boundary of impact. I suggest adding colors to the graphics to show boundary of impact. (Mr. Thach Sovanna, MOWRAM)

> A: Regarding to the boundary of map in the presentation, the beginning slide was about the catchment area. However, when we developed the drought map, we used the provincial administration map. Thus, we use the provincial administration map to map the groundwater for the study.

SMART AGRICULTURE IMPROVEMENT FOR CLIMATE CHANGE ADAPTATION WITHIN COMMUNITIES ALONG UPPER MEKONG RIVER, CAMBODIA

Mr. Yon Ma made a presentation on project summary, project goal and objectives, Cyclical Farming System, Solar Pumping for community water supply system, and Lessons Learnt.

He presented cyclical farming concept that build experimental farms for farmers, replicate business model to the other farms and farmer cooperative business, increase farmers net profit and decrease production costs through cycling internal resources, provide support for poor households to increase income, connection to solar power water supply and promote adaption and resilient techniques within farms.

The challenges of smart agriculture applied by farmers were also presented. They are:

- The model farmers have difficulties in replicating model techniques to other farmers.
- They are hesitant to form/join agriculture cooperatives
- The farmers are not proffered to sell agricultural products to district or provincial market
- Lack of caring for their products
- If they grow vegetables, they only expect to sell even if they do not have their own vegetables to eat
- No creativity

For more information, download the presentation from the CC website.

VULNERABILITY & IMPACT RESEARCH TARGETING USABILITY AND EFFECTIVENESS (VIRTUE)

Dr. Nget Sovann presented the VIRTUE project. The project aims to increase knowledge of potential health impacts of climate change in Cambodia, identify factors contributing to the vulnerability to health impacts and high risk areas/groups, and improve monitoring and/or evaluation of health sector climate change adaptation projects. The updated key results were shown such as literature review, vulnerability index and adaptation assessment tool, while challenges and lessons learnt were also specified.

For more information, download the presentation from the CC website.

Q: To my understanding, MOH's case is the same to MOWRAM's case, where adapting to climate change means adding more cost to the project or service. MOWRAM is implementing climate change projects without being aware of its contribution to addressing climate change. For example, planting grass along the dike can reduce soil erosion. (Mr. Thach Sovanna, MOWRAM)

> A: I agree with the comment from MOWRAM that a higher quality to respond to climate change would increase the cost of project and service delivered to the people. For example, we have installed insulation to reduce heating in the building. The problem is that in the national budget there is no budget line for increased quality of buildings in order to respond to the heating or increased the resilience of buildings to climate hazards.

MEDIUM SCALE BIODIGESTER INNOVATION FOR SMART ENVIRONMENT

Mr. Him Sambath gave a presentation introducing the implementation of 3 medium-scale biodigester plants with biogas electricity generators at 3 pig farms, under the project called "Medium Scale Biodigester Innovation for Smart Environment (MBI-SE)". It aims to advance research and development on viable medium-scale biodigester technologies contributing to climate change mitigation.

The progress presented includes the development of feasibility medium scale models, the selection of voluntary farm owners, and the construction of biodigester plants and electricity generators. Challenges and next steps were also mentioned.

For more information, download the presentation from the CC website.

CLIMATE-SMART AGRICULTURE: THE FINDINGS OF THE AGRICULTURE SERVICES PROGRAMME FOR INNOVATION, RESILIENCE AND EXTENSION (ASPIRE)

Mr. Kim Soben provided presentation on IFAD working components, climate-smart agriculture (CSA) concept, principles and key techniques to apply CSA effectively.

CSA principle is to increase agricultural productivity and income sustainably, adapt and build resilience to climate change, and mitigate or eradicate GHG onsite as much as possible. He also shared some examples of the CSA techniques such as drip system, DMC, and rotate copping, ect.

For more information, download the presentation from the CC website.

MODERATOR

Ms. Khlok Vichet Ratha
Deputy Director
Department of Climate Change,
General Secretariat of National Council for Sustainable Development

SPEAKER

Mr. Him Sambath
Technical Manager
National Biodigester Programme

Mr. Kim Soben
Vice Dean of Graduate School of Royal University of Agriculture and Director of Center for Agricultural and Environmental Studies

Mr. Sorn Chanmonyphalla
Vice Chief Office
Stung Treng Provincial Department of Environment

Dr. Louise Gallagher
Researcher
University of Geneva

Mr. Jeff Silverman
Senior Technical Advisor
Wildlife Conservation Society

VULNERABILITY ASSESSMENT OF LOCAL PEOPLE LIVING IN AND NEAR RAMSAR SITE TO CLIMATE VARIABILITY AND CHANGE

Mr. Sorn Chanmonyphalla presented a vulnerability assessment study to be used in the development of an adaptation plan addressing the most vulnerable area within Stung Treng Ramsar Site. He presented details on the climate change vulnerability assessment of four communes, as well as male and female-headed households in the site. Detailed methodology including sampling procedure, the usage of livelihood vulnerability index, and applied climate scenarios was also presented.

Results of projected climate including temperature, precipitation were interpreted into vulnerability index for the four study communes. Based on the three aspects of vulnerability index, adaptive capacity, exposure and sensitivity, Preah Rumkil is the most vulnerable commune, followed by Koh Sneang, Samaki and O'Svay. The potential causes of vulnerability were also analyzed with recommendations produced.

For more information, download the presentation from the CC website.

USING DYNAMIC MODELLING TO FACILITATE COMMUNITIES' DISCUSSIONS OF POLICY CHOICES UNDER CLIMATE CHANGE

Dr. Louise Gallagher introduced a new approach for integrating bottom-up information into the analysis of how national policy might affect local economies and livelihoods, and to help understanding cross-sectoral connections, risks and solutions. This approach was tested in a project called Linked Indicators for Vital Ecosystem Services (LIVES) to study the effects of infrastructure development to future economic outcomes in Kratie and Stung Treng Provinces under climate change.

Detailed research process and methodologies, including participatory system dynamics model development, stakeholder-led "values and threats" analysis, semi-structured interviews, secondary data collection & analysis, and scenario analysis were introduced.

Trends and options for local economic development policies in Kratie and Stung Treng provinces were used to build different scenarios. For example, in the scenario analysis for the Stung Treng Dam, access to electricity increases through the expansion of power generation capacity (with the construction of the dam). However, the analysis showed that although economic growth rate increases in the short run (local labour is used and if local energy supply increases), growth rates will decrease in the long run because of increased pressure on traditional sectors like fisheries. I.e. economic growth, under the current development model, will happen at the expense of natural capital. With the construction of a hydropower dam and with reduced water availability due to climate change, local employment and food security are threatened as agriculture productivity is reduced. Solutions, especially on crop choice (with varying water requirements) were analyzed.

For more information, download the presentation from the CC website.

BIG DATA AND CLOUD COMPUTING – GEOSPATIAL TOOLS FOR NRM

Mr. Jeff Silverman presented the advanced technologies for remote sensing for natural resources management. He showed how the emergence of big data and the cloud help scale up remote sensing, enabling us to have a broader, more precise observation with faster processing time. In particular, LOCA 0.1 was introduced as an earth imaging acquisition and visualization tool. Different functions including multispectral, indices, composites, digital elevation, fire monitoring, deforestation monitoring, radar were explained.

For more information, download the presentation from the CC website.

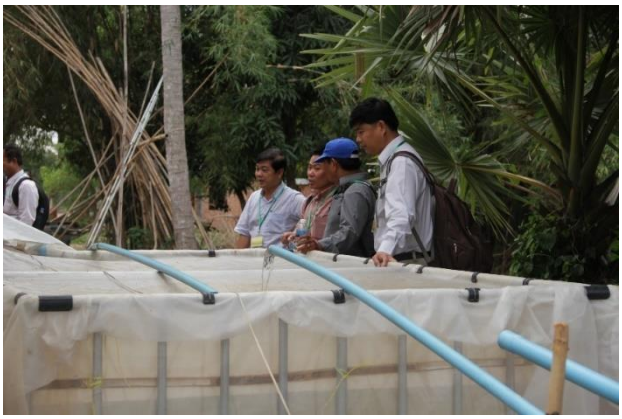
SESSION 2 FIELD VISIT

CLIMATE-SMART AGRICULTURE PROJECT SITE AT KRABIY REAL VILLAGE, SIEM REAP CITY, SIEM REAP PROVINCE

In the afternoon of the 1st day of the event, participants visited a Smart Agriculture Project site in Krabey Real Village, Siem Reap city. The project is called Farmer Group Development for Improving Vegetable and Fruit Production Standards, which is facilitated by the provincial department of agriculture and the faculty of agriculture, Ubon Ratchathani University (UBU). It aims to establish farm product standards ensuring consistent local market supply at reasonable price, and sustain it by setting up farm models for knowledge sharing at community level.

The site used a solar pumping engine, a net to cover the land plot, botanical pesticide, and small irrigation for saving water and fuel. The proper management resulted in a yield increase, good market price and less waste due to disease.

The farm is covered by the net and equipped with irrigation



Water storage pumped to water the vegetable farm

SESSION 2 DISCUSSION: HOW TO STIMULATE CC POLICY ORIENTED RESEARCH

In the second afternoon of the event, after all the presentations were delivered, a group discussion on how to stimulate climate change policy oriented research was conducted. Participants were divided into groups of 5 themes/sectors, including (1) Agriculture, forestry (2) Water, sanitation, health, Rural infrastructure (3) Information management, awareness raising, education, Vulnerability assessment (4) mitigation, energy (5) Urban management, housing, waste management, to discuss and report back to plenary.

Groups were asked to discuss and identify (1) research priorities needed to support climate change policy making (both in the short and long term), (2) projects relevant to the 3 top priority research topics identified by the group; (3) potential institutions who could conduct needed research for the 3 topics identified; (4) enabling activities needed to support research, and to provide additional recommendations.

The group discussion took 105 minutes and was followed by 80 minutes of group's presentations and discussion in plenary, with plenary discussion moderated by Mr. Sum Thy, Director of DCC. A summary of the results from the discussion are presented below.

Participants have identified 18 CC policy research priorities, complementing the research gaps identified by the government in 2015, and made recommendations on short term enabling actions to boost the CC research in Cambodia.

RESEARCH PRIORITIES

Area	Research and Innovation Focus	Additional item	Priority
Greenhouse Gas (GHG) Mitigation and Inventory	1. Research & Development of low-cost, low carbon, appropriate technologies for energy, industry and waste management (including policy and market frameworks)		Yes
	2. Decoupling development from carbon-reducing uncertainties in estimating national greenhouse gases (GHGs) emissions and removals from key emitting sectors (including energy, industry, agriculture, land use, land use change and forestry, waste management) and assessing and testing scalable cost-effective mitigation options to enhance energy security		Yes
	3. Improving activity data and emission factors for the key sources of national GHG Inventory		Yes
	4. Assessment of green building standard and clean city on GHG mitigation/resilient capacity	Yes	Yes
Adaptation	5. Climate resilience of food production systems for increased food security		Yes
	6. Policy-relevant health risk assessment from short and medium-term climate variability and the effects of gradual climate change (with a focus on vulnerable groups exposed to climate hazards)		Yes

	7. Understanding the role of social protection and early warning schemes in reducing vulnerability to climate variability and change (including analysis of the gender dimension)		Yes
	8. Developing bottom-up, participatory approaches to community/ecosystem-based adaptation		
	9. Developing methodologies for assessing adaptation technologies and the costing of adaptation measures for local level planning		
	10. Quantifying ecosystem services – methodological contributions to the establishment of natural resource accounting systems in the context of climate change		
	11. Effects of El Niño on water and sanitation in Cambodia	Yes	Yes
	12. Identify technology/method to reduce water loss for medium-large scale irrigation system	Yes	Yes
	13. Study on groundwater availability for sustainable use	Yes	Yes
	14. Research methodology and VA approaches cost-benefit / adaptation costs analysis	Yes	Yes
Adaptation/GHG Mitigation	15. Understanding the role of land use planning in climate change adaptation and mitigation responses		
	16. Understanding urban resilience – technical and policy recommendations for low carbon urban resilient development (including governance, management, planning and design dimensions)		
	17. Assessment of sustainable land use management	Yes	Yes
	18. Assessment of green building standard and clean city on GHG mitigation/resilient capacity	Yes	Yes

STOCK-TAKE THE RELEVANT RESEARCH PROJECTS

Participants were asked whether they know of any research projects that are relevant to the research topics the group prioritized.

Priority Research	Relevant Research Projects	Contact
1. Research & Development of low-cost, low carbon, appropriate technologies for energy, industry and waste management (including policy and market frameworks)	Low Carbon and Appropriate Technology	NBP UNDP UNDP DST/NCSD DCC/NCSD DST+DGE/ NCSD MME TK University RUA/ MAFF MIH
2. Decoupling development from carbon – reducing uncertainties in estimating national greenhouse gases (GHGs) emissions and removals from key emitting sectors (including energy,	Emission factor from livestock, agriculture, waste and industry	MIH MOE Academy (RUA, RUPP, TK Universities, ITC)

industry, agriculture, land use, land use change and forestry, waste management) and assessing and testing scalable cost-effective mitigation options to enhance energy security		
3. Improving activity data and emission factors for the key sources of national GHGs Inventory	Develop emission removal flooded forest and upland forest	FAO, RUA
	Develop emission removal mangrove forest and flooded forest	US Forest Service
	Waste sector (liquid + solid) / IPCC guideline 2006	NIS NIS, MOE NIS, MME/MOE MAFF/MOE
4. Assessment of green building standard and clean city on GHG mitigation/resilient capacity	(Not identified)	(Not identified)
5. Understanding the GHG emission from various sources in selected cities	3rd national communication	UNEP/CCD
	GHG emission inventory and mitigation plan for the route, transport sector in Cambodia	MPWT Siem Reap
	Urban water project: CH4 emission from landfill	ITC-GCA
6. Climate resilience of food production systems for increased food security	Scaling Up Climate Smart Agriculture (ongoing)	IFAD USAID RUA Center Excellency
	Resilience rice (drought) ongoing	CARDI
	Participatory land cover monitoring of Cambodian Landscape	WCS
7. Policy relevant health risk assessment from short and medium-term climate variability and the effects of gradual climate change (with a focus on vulnerable groups exposed to climate hazards)	CC and health assessment (VA in 5 provinces)	MoH, ADB
	Ecosystem service in agriculture in Battambang	RUA
8. Understanding the role of social protection and early warning schemes in reducing vulnerability to climate variability and change (including analysis of the gender dimension)	Soil suitability for agricultural crops	FAO
	Land Use Planning (ongoing)	MLUPC/GIZ
	State land registration and IP land registration	ADB/MoE MRD/GIZ
	Supporting forest and biodiversity	USAID
9. Effects of El Niño on water and sanitation in Cambodia	(Not identified)	(Not identified)
10. Identify technology/method to reduce water lose for medium-large scale irrigation system	(Not identified)	(Not identified)

11. Study on groundwater availability for sustainable use	Water infrastructure study: existing ground water studies and groundwater use in Cambodia	WFP, 2016
12. Research methodology and VA approaches cost benefit / adaptation costs analysis	LIVES project	U of Geneva, RUPP, RUA, WWF Kratie Stoeng Treng
	Oxam water and water governance programme	Kratie and Stung Treng
	Bridge project, water management cc component	IUCN
	Share resource and join solution	SRJS, IUCN, Ratanak Kiri, Preah Vihear, Kampong Thom
	Investment analysis	WWF, Mondul Kiri, Kratie, Stung Treng
	Econsystem analysis in Tonle Sap	CI
13. Assessment on sustainable land use management	GIZ - Urban planning in some cities: Battamabng, Sihanouk Ville, Siem Reap?	GIZ/MLMUPC?
	Multi-purpose urban management in SHV	MOE, MLMUPC, MOT
14. Assessment of green building standard and clean city on GHG mitigation/resilient capacity	Public awareness of climate change in tourism sector	MOT/CCCA

POTENTIAL RESEARCH INSTITUTIONS

Potential research partnerships and cooperation for CC research were discussed as below:

Priority Research	Potential Research Institutions	Potential Research Partners	Potential Government Institutions
1. Research & Development of low-cost, low carbon, appropriate technologies for energy, industry and waste management (including policy and market frameworks)	NBP DST+DGE/ NCSD TK University RUA/ MAFF	UNDP	MME DST/NCSD MIH
2. Decoupling development from carbon – reducing uncertainties in estimating national greenhouse gases (GHGs) emissions and removals from key emitting sectors (including energy, industry, agriculture, land use, land use change and forestry, waste management) and assessing and testing scalable cost-effective	Research institute		NIS NIS, MOE NIS, MME/MOE MAFF/MOE

mitigation options to enhance energy security			
3. Improving activity data and emission factors for the key sources of national GHGs Inventory	Center for agricultural and environmental study (CAES)/RUA	FAO, USAID, US forest service, FA, FiA, GDANCP	MAFF MoE MLUPC
			NIS NIS, MOE NIS, MME/MOE MAFF/MOE
4. Assessment of green building standard and clean city on GHG mitigation/resilient capacity			
5. Understanding the GHG emission from various sources in selected cities	ITC, RUA, MCU		NCSD, MPWT, MME, MAFF
6. Climate resilience of food production systems for increased food security	General Directorate of Agriculture(GDA)	CARDI, PDAFF, IRRI, FAO, RUA, PNCA, CSUK, USHT, MCU,	MAFF MoEYS MoE
7. Policy relevant health risk assessment from short and medium-term climate variability and the effects of gradual climate change (with a focus on vulnerable groups exposed to climate hazards)			
8. Understanding the role of social protection and early warning schemes in reducing vulnerability to climate variability and change (including analysis of the gender dimension)	MAFF (agriculture, forest, fisheries)	FAO, USAID, ADB, EU,	MAFF
	MLUPC (urban planning, construction, land registration)		MLUPC
	MRD (IP land)		
9. Effects of El Niño on water and sanitation in Cambodia	RUPP ITC	WHO WFP Plan International	MRD MOWRAM
10. Identify technology/method to reduce water lose for medium-large scale irrigation system	ITC		MOWRAM
	RUPP	University of Manchester, UK	MRD
		DPs, (e.g. ADB, KOICA, JICA…)	

11. Study on groundwater availability for sustainable use	ITC RUPP, NPIC	WHO WFP UNICEF WB Plan International	MOWRAM MRD MIH MoP/NIS
12. Research methodology and VA approaches cost benefit / adaptation costs analysis			
13. Assessment on sustainable land use management	ITC, RUA, Meanchey University	UN Habitat	MLMUPC, MAFF
14. Assessment of green building standard and clean city on GHG mitigation/resilient capacity	ITC, RUA, Meanchey University		MME, MOT, MLMPUC

CHALLENGES AND OPPORTUNITIES FOR CONDUCTING CC POLICY ORIENTED RESEARCH

Challenges	Opportunities
• A lack of policy and strategies in place to support CC research • A lack of science-based policy development • No priority research agenda • Limited human resources for each topic • A lack of research facilities (equipment, materials) • Methods and tools are outdated for research. A need for modern technology (soft and hard) • Inadequate numeration at project sites • Limited data availability and quality of data collection • Limited available information • A lack of cross-checking with the existing researches • Limited coordination among research partners and institutions • Limited law enforcement	• Government's support on CC policies • Can use research to inform policy and strategy makers • Can provide comprehensive data for policy making and planning • Availability of research-oriented grants from development partners • A growing interest from young researchers • Can provide Problem-based solutions • Contributed to GHGs tool for UNFCCC • Can exchange and share findings with stakeholders, network

SHORT AND LONG-TERM ACTIONS TO CONDUCT CC POLICY ORIENTED RESEARCH

Short-term actions	Long-term actions
• Provide more policy support with a stronger political will • Conduct need assessment	• Conduct research on the priority topics above and scale up

• Identify scope of work • Do site selection / Create criteria to identify project locations • Do stakeholders mapping, especially at sub-national level • Organize consultative meeting / scoping study with stakeholders • Do capacity mapping, institutional mapping • Identify research persons • Make work plan • Initiate financial support for pilot research • Allocate program budgeting for research activities • Provide institutional supports, allowing technical staff to involve/engage in research project • Providing training on specific skill needed for human resources development • Capacity building should include new methods, skills of presentation, facilitation and communication • Cooperate with relevant stakeholders • Join global sharing on research • Provide technical assistance • Improve inter-institutional coordination • Mandates / interests / authority	• Make policy recommendation to policy makers • Implement strategies and policies • Monitoring, evaluation and learning on the CC research • Integrate the climate change research into academic curriculum • Allocate national research fund into CC research

ADDITIONAL RECOMMENDATIONS

- Conduct a stock taking on the existing researches / studies in Cambodia
- Strengthen the coordination mechanism for research collaboration

CONCLUSION AND WAY FORWARD

Mr. Sum Thy, DCC director, delivered closing remarks to the participants that attended this second 2017 knowledge-sharing event, focusing on research and practices which can successfully produce significant results. Through proactive discussions, the initial definition of 18 climate change policy research priorities will contribute to national research agenda in the future. In addition, he stressed that is was good to see that all participants captured how climate-smart agriculture has been practiced by farmers and how it benefits to stabilize farm productivity and livelihoods.

Way forward and recommendations:

- Identify national research agenda in support to climate change response, based on national priority and existing gap
- Collect/gather existing research findings contributing the research priority

- Implement climate change partnership agreements with universities to define better mechanisms for conducting climate change research in Cambodia
- Improve knowledge management system where all research findings should be made available.

ANNEX 1: EVENT AGENDA

DAY 1 (5 December 2017)		
Time	**Subject**	**Facilitator/ Speaker**
08:00 – 8:30	Registration	Admin Officer
08:30 – 8:35	National Anthem	**Ms. Kien Danary** Administration Officer
08:35 – 8:45	Remarks	**Dr. Huon Thavrak** Director, Graduate School, RUA
08:45 – 9:00	Welcome remarks	**H.E. Tin Ponlok,** Secretary General, NCSD
09:00 – 9:15	Key note: Bridging the gap between science and policy	**Dr. Heng Chanthoeun,** Deputy Director, CC/GSSD
09:15 – 09:35	Group Photo and Coffee break	
09:35 – 11:15	***Session 1: Sharing policy relevant findings and lessons learnt from CC project implementation and research in Cambodia*** - Develop Emission and Removal Factors in Tonle Sap Flooded Forest - Assessing soil ecosystem services for resilient cropping systems - Climate change adaptation research findings and needs in the water, agriculture and urban and rural infrastructure sectors - Micro Watershed Management, FAO **Q&A – Comments**	**Moderator:** **Ms. Vichet Ratha,** Deputy Director, DCC/GSSD **Mr. Kim Soben,** RUA **Mr. Pheap Sambo,** Lecturer, RUA **Mr. Peter John Meynell,** Team Leader, SPCR **Mr. Chea Chanthan,** Project Manager, FAO
11:15 – 12:00	***Session 1 (cont.)*** - Increasing the knowledge of the water cycle in order to reduce vulnerability to Climate Change hazards through an integrated approach - Smart Agriculture Improvement for Climate Change Adaptation within communities along Upper Mekong River, Cambodia - Vulnerability & Impact Research Targeting Usability and Effectiveness (VIRTUE) **Q&A – Comments**	**Moderator:** **Dr. Heng Chanthoeun,** Deputy Director, DCC/GSSD **Mr. Lun Sambo**, MoWRAM **Mr. Yon Ma,** Project Manager, CRDT **Dr. Nget Sovann,** Deputy Director of Preventive Medicine Department, MoH
12:00 – 13:30	Lunch	

13:30 – 17:00	***Session 2: Field Visit*** Smart agriculture project site at Krabiy Real village, Siem Reap city, Siem Reap province	 **Mr. Hay Veasna,** Chief of the Agriculture office of Siem Reap Agriculture Department
DAY 2 (6 December 2017)		
08:00 – 9:45	***Session 1 (cont.): Sharing policy relevant findings and lessons learnt from CC project implementation and research in Cambodia*** - Medium Scale Biodigester Innovation for Smart Environment - ASPIRE findings - Vulnerability Assessment of Local People Living in and near Ramsar Site to Climate Variability and Change - Using dynamic modelling to facilitate communities' discussions of policy choices under climate change - Big data and cloud computing – Geospatial tools for NRM **Q&A – Comments**	Moderator: **Ms. Vichet Ratha,** Deputy Director, DCC/GSSD **Mr. Him Sambath,** Technical Manager, National Biodigester Program **Mr. Kim Soben,** RUA **Mr. Sorn Chanmonyphalla**, Stung Treng PDoE **Dr. Louise Gallegher,** Research University of Geneva **Mr. Jeff Silverman,** Senior Technical Advisor, WCS
09:45 – 10:15	Coffee break	
10:15 – 12:00	***Session 2: How to stimulate CC policy oriented research*** Group discussion	Group facilitators
12:00 – 13:30	Lunch	
13:30– 14:50	**Plenary discussion** - Group presentations/discussion	**Moderator:** **Mr. Sum Thy,** Director, DCC/GSSD
14:50 – 15:20	Coffee/Snack	
15:20 – 15:35	Report on the knowledge sharing event outcome	**Mr. Long Sona**

ANNEX 2: SPEECH

H.E. TIN PONLOK, SECRETARY GENERAL OF NCSD

សូមគោរព

- **បណ្ឌិត ហួន ថាវរៈ នាយកសាលាក្រោយឧត្តមនៃសាកលវិទ្យាល័យភូមិន្ទកសិកម្ម**
- **ឯកឧត្តម លោកជំទាវ លោក លោកស្រី ទាំងអស់ដែលបានអញ្ជើញចូលរួមក្នុងសិក្ខាសាលានាថ្ងៃនេះជាទីមេត្រី !**

ជាបឋមដួសមុខឱ្យ**ឯកឧត្តម សាយ សំអាល់ រដ្ឋមន្ត្រីក្រសួងបរិស្ថាន និងជាប្រធានក្រុមប្រឹក្សាជាតិអភិវឌ្ឍន៍ដោយចីរភាព** និងក្នុងនាមខ្លួនខ្ញុំផ្ទាល់ ខ្ញុំមានសេចក្តីសោមនស្សរីករាយ ដែលបានចូលរួមជាគណៈអធិបតីក្នុងពិធីបើកសិក្ខាសាលាស្តីពីការចែករំលែកបទពិសោធន៍ក្នុងស្រាវជ្រាវ និងអនុវត្តពាក់ព័ន្ធការប្រែប្រួលអាកាសធាតុ ដែលប្រព្រឹត្តទៅក្នុងរយៈពេល២ថ្ងៃនេះ និងសូមថ្លែងអំណរអរគុណ និងសូមស្វាគមន៍យ៉ាងកក់ក្តៅចំពោះ ដល់ ឯកឧត្តម អស់លោក លោកស្រីទាំងអស់ដែលបានចូលរួមសិក្ខាសាលាសារៈសំខាន់នាថ្ងៃនេះ។

ឆ្លៀតក្នុងឱកាសនេះ ខ្ញុំសូមសម្តែងនូវការកោតសរសើរ និងវាយតម្លៃខ្ពស់ចំពោះកិច្ចខិតខំប្រឹងប្រែងរបស់ថ្នាក់ដឹកនាំ និងមន្ត្រីរាជការរបស់នាយកដ្ឋានប្រែប្រួលអាកាសធាតុនៃអគ្គលេខាធិការដ្ឋានក្រុមប្រឹក្សាជាតិអភិវឌ្ឍន៍ដោយចីរភាព និងមន្ត្រីកម្មវិធីសម្ព័ន្ធភាពប្រែប្រួលអាកាសធាតុកម្ពុជា ដែលបានផ្តួចផ្តើមរៀបចំសិក្ខាសាលានេះឡើងក្នុងគោលបំណង ចងក្រងនូវមេរៀនរៀនសូត្រ និងចែករំលែកនូវចំណេះដឹង ដែលទទួលបានពីការអនុវត្តគម្រោងឆ្លើយតបនឹងការប្រែប្រួលអាកាសធាតុទាំង២២ ដែលផ្តល់មូលនិធិដោយកម្មវិធីសម្ព័ន្ធភាពប្រែប្រួលអាកាសធាតុកម្ពុជា និងគម្រោងពាក់ព័ន្ធនឹងការប្រែប្រួលអាកាធាតុសំខាន់ៗផ្សេងៗទៀតដែលជាធម្មតាតែងតែរៀបចំឡើង២ដងក្នុង១ឆ្នាំៗ។

ក្រោយពីរាជរដ្ឋាភិបាលកម្ពុជា បានប្រកាសដាក់ឱ្យប្រើប្រាស់ផែនការយុទ្ធសាស្ត្រឆ្លើយតបនឹងការប្រែប្រួលអាកាសធាតុកម្ពុជា ២០១៤ - ២០២៣ រួចមក យន្តការចាំបាច់មួយចំនួនក៏ត្រូវបាន និងកំពុងអនុវត្តនៅក្នុងប្រទេស យើងផងដែរ ដែលរួមមាន ១)បានឆ្លើតក្រុមប្រឹក្សាជាតិអភិវឌ្ឍន៍ដោយចីរភាពត្រូវបានបង្កើតឡើងជំនួសឱ្យគណៈកម្មាធិការជាតិគ្រប់គ្រងការប្រែប្រួលអាកាសធាតុ ដែលក្រុមប្រឹក្សាជាតិនេះកំពុងដើរតួយ៉ាងសកម្មក្នុងការអភិវឌ្ឍន៍ដោយចីរភាព សំដៅធានានូវតុល្យភាពរវាងសេដ្ឋកិច្ច បរិស្ថាន សង្គម និងវប្បធម៌នៅក្នុងព្រះរាជាណាចក្រកម្ពុជា ២) ការរៀបចំ និងការជួយគាំទ្រដល់ការអនុវត្តផែនការសកម្មភាពឆ្លើយតបនឹងការប្រែប្រួលអាកាសធាតុតាម វិស័យ របស់ក្រសួង/ស្ថាប័ននានា ដែលមានស្ថាប័នក្រសួងចំនួន ១៥ បានអនុម័ត និងកំពុងអនុវត្ត និងកៀរគរធនធានសម្រាប់អនុវត្ត ខ្ញុំសូមបញ្ជាក់ថាក្រសួងស្ថាប័នទាំង ១៥ នេះ បានលើកឡើងនូវសកម្មភាពជាអទិភាពរហូតដល់១៧១ សកម្មភាពអទិភាព ដែលមានទឹកប្រាក់រហូតដល់ ៨៦៥,៤៧ លានដុល្លាអាមេរិក តែមានតែសកម្មភាពចំនួន៣៧សកម្មភាពតែប៉ុណ្ណោះដែលបាន និងកំពុងអនុវត្តដែលមានទឹកប្រាក់ស្មើរនឹង២៤៥,១២លានដុល្លា ដូច្នោះយើងនៅខ្វះថវិការចំនួន៦២០,៣៧លានដុល្លាទៀតសម្រាប់អនុវត្តសកម្មភាពឆ្លើយតបនឹងការប្រែប្រួលអាកាសធាតុ។ (៣)ការបង្កើតក្របខ័ណ្ឌហិរញ្ញវត្ថុប្រែប្រួល

អាកាសធាតុ ដើម្បីធានាថាមូលនិធិពីប្រភពជាតិ និងអន្តរជាតិ ត្រូវបានគ្រប់គ្រងយ៉ាងមានប្រសិទ្ធភាព និងដែលផ្តល់ផលប្រយោជន៍។(៤)បង្កើតក្របខ័ណ្ឌជាតិសម្រាប់ការពិនិត្យតាមដាន និងវាយតម្លៃ (M&E) វិធានការឆ្លើយតបនឹងការប្រែប្រួលអាកាសធាតុ ហើយមានក្រសួងចំនួន៣ ដែលបានរៀបចំសូចនាករសម្រាប់ត្រួតពិនិត្យ និងវាយតម្លៃរបស់ខ្លួនរួចហើយ មានក្រសួងកសិកម្ម រុក្ខាប្រមាញ់ និងនេសាទ ក្រសួងធនធានទឹក និងឧត្តុនិយម និងក្រសួងសាធារណៈការនិងដឹកជញ្ជូន។ (៥) សិក្សាលើក្របខ័ណ្ឌច្បាប់ដើម្បីជាជំនួយដល់ការអនុវត្ត និងការរៀបចំផ្នែកស្ថាប័ន ៦) ការសិក្សាស្រាវជ្រាវផ្សេងៗទាក់ទងនឹងការប្រែប្រួលអាកាសកាសធាតុ ដែលលទ្ធផលទាំងនោះបានផ្តល់លទ្ធផលជាមូលដ្ឋានក្នុងការរៀបចំគោលនយោបាយ ផែនការយុទ្ធសាស្ត្រ និងផែនការសកម្មភាពក្នុងការចូលរួមដោះស្រាយការប្រែប្រួលអាកាសធាតុ និង ៧) គណៈកម្មាធិការអភិវឌ្ឍន៍តាមបែបប្រជាធិបតេយ្យនៅថ្នាក់ក្រោមជាតិបានរៀបចំនឹងអនុម័តគោលការណែនាំពីការបញ្ជ្រាបការប្រែប្រួលអាកាសធាតុទៅក្នុងផែនការអភិវឌ្ឍន៍ថ្នាក់ក្រោមជាតិ ទន្ទឹមគ្នានោះដែរនាយកដ្ឋានប្រែប្រួលអាកាសធាតុបានបានជ្រើសរើសយកខេត្តចំនួន ៦ ក្នុងការគាំទ្រដល់មន្ត្រីមន្ទីរបរិស្ថានក្នុងការគាំទ្រដល់ក្រុមបប្រឹក្សាឃុំចំនួន១៩ ក្នុងបញ្ជ្រាបការប្រែប្រួលអាកាសធាតុទៅក្នុងផែនការអភិវឌ្ឍន៍ឃុំរបស់ខ្លួន និងគាំទ្រគម្រោងវិនិយោគចំនួន៦ឃុំ។

ថ្មីៗនេះ ក្រុមប្រឹក្សាអភិវឌ្ឍន៍ដោយចីរភាពបានចុះអនុស្សរណៈនៃការយោគយល់គ្នាជាមួយសាកលវិទ្យាល័យចំនួន៤ ដែលរួមមានសាកលវិទ្យាល័យភូមិន្ទកសិកម្ម សាកលវិទ្យាល័យភូមិន្ទភ្នំពេញ សាលាជាតិកសិកម្មព្រែកលៀប និងសាកលវិទ្យាល័យមានជ័យ ក្នុងគោលបំណងដើម្បី សិក្សាស្រាវជ្រាវ កសាងសមត្ថភាព ការចែករំលែកចំណេះដឹង និងការផ្តល់មតិយោបលគ្នាទៅវិញទៅមកលើការងាររៀបចំគោលនយោបាយ ផែនការយុទ្ធសាស្រ្ត និងរបៀបវារៈនៃការសិក្សាស្រាវជ្រាយពាក់ព័ន្ធនឹងវិស័យបរិស្ថាន និងការអភិវឌ្ឍន៍ដោយចីរភាពរបស់យើង ដោយផ្តោតសំខាន់លើការប្រែប្រួលអាកាសធាតុ ការអភិរក្ស ជីវៈចម្រុះ និរន្តរភាពទីក្រុង ការផលិត និងការប្រើប្រាស់ដោយនិរន្តរភាព សេដ្ឋកិច្ចបៃតង វិទ្យាសាស្ត្រ និងនុវានុវត្ត។

ឯកឧត្តមរដ្ឋមន្ត្រីក្រសួងបរិស្ថាន និងជាប្រធានក្រុមប្រឹក្សាជាតិអភិវឌ្ឍន៍ដោយចីរភាព បានចង្អុលបង្ហាញ និងគាំទ្រយ៉ាងពេញទំហឹងក្នុងការកសាងភាពជាដៃគូជាមួយគ្រឹះស្ថានសិក្សា និងវិទ្យាស្ថានស្រាវជ្រាវនានា ព្រោះគ្រឹះស្ថានទាំងនោះ គឺជាធនាគារខួរក្បាល ជាកន្លែងសិក្សាស្វែងយល់ នូវបេកគំហើញនានា សម្រាប់ផ្តល់ឱ្យអ្នករៀបចំ និងតាក់តែងគោលនយោបាយ និងជាថ្នាលសម្រាប់បណ្តុះនូវចំណេះវិជ្ជាសម្រាប់យុវជនជំនាន់ក្រោយរបស់យើង។

សិក្ខាសាលានាថ្ងៃនេះ នឹងនឹងផ្តៀតលើការចែករំលែកនូវបទបទពិសោធន៍ ស្តីពីការស្រាវជ្រាវ និងការអនុវត្តទាំងល្អ ទាំងអាក្រក់ដែលពាក់ពន្ធនឹងការប្រែប្រួលអាកាសធាតុ។ ខ្ញុំសូមឱ្យអ្នកចូលរួមទាំងអស់ចូលរួមពិភាក្សា និងចែករំលែកបទពិសោធន៍ដោយចំហរទាំងពិសោធន៍ដែលល្អ និងបទពិសោធន៍ដែលអាក្រក់នូវអ្វីដែលវាអនុវត្តបាននិងមិនអនុវត្តមិនបាន សម្រាប់ឱ្យយើងអាចយកគម្រូនិងអនុវត្តតាម។ ម្យ៉ាងទៀតសុំឱ្យវេទិការនេះជាវេទិកាផ្លាស់ប្តូរនូវព័ត៌មាននៃគម្រោងពីគ្នាទៅវិញទៅមកនៅក្នុងវិស័យនីមួយៗ និងក្នុងចំណោមម្ចាស់ជំនួយនឹងដៃគូរអភិវឌ្ឍន៍ផងដែរ។

ខ្ញុំសង្ឃឹមថាឯកឧត្តម លោក លោកស្រីទាំងអស់ពិតជាចូលរួមយ៉ាងសកម្មក្នុងកិច្ចពិភាក្សា ផ្លាស់ប្តូរ យោបល់ ក្នុងនាមជាអ្នករៀបចំគោលនយោបាយ ប្រតិបត្តិករ ក៏ដូចជាអ្នកស្រាវជ្រាវ ក្នុងសិក្ខាសាលារយៈពេលមួយថ្ងៃកន្លះ នេះនូវយន្តការសម្រាប់ធ្វើឱ្យមាននិរន្តភាព និងយន្តការពង្រីកការឆ្លើយតបនឹងការប្រែប្រួលអាកាសធាតុដោយជោគជ័យ ដែលយើងចាំបាច់ត្រូវគិតគូលើសពីការអនុវត្តគម្រោងខ្នាតតូចៗនេះដែលអាចនាំទៅរកភាពជោគជ័យនៅកម្រិតជាតិក្នុងការឆ្លើយតបការប្រែប្រួលអាកាសធាតុនៅកម្រិតជាតិយើង។

លើសពីនេះទៀត ក្នុងសិក្ខាសាលានេះក៏បានផ្តល់ឧកាសឱ្យគម្រោងដែលទទួលបានមូលនិធិពីកម្មវិធីសម្ព័ន្ធភាពប្រែប្រួលអាកាសធាតុកម្ពុជាដោះស្រាយបញ្ហាប្រឈម និងការលំបាកផ្សេងៗដែលជួបប្រទះនៅពេលអនុវត្តគម្រោងផងដែរ។

អនុសាសន៍ពីសាក្ខាសាលានេះ នឹងក្លាយជាតុចូលយ៉ាងសំខាន់ សម្រាប់ការរៀបចំគោលនយោបាយ និងបទពិសោធន៍សម្រាប់ការរៀបចំ និងការអនុវត្តគម្រោង ដើម្បីជាប្រយោជន៍សម្រាប់គាំទ្រកម្ពុជាក្នុងការឆ្លើយតបនឹងការប្រែប្រួលអាកាសធាតុឆ្ពោះទៅរកសង្គមមួយដែលបៃតង បញ្ចេញកាបូនតិច ធន់នឹងការប្រែប្រួលអកាសធាតុ មានសមធម៌ និងមានភាពសុខដុមរវាងការរស់នៅរបស់មនុស្ស និងបរិស្ថាន។

ជាទីបញ្ចប់ ខ្ញុំសូមជូនពរឱ្យអង្គសិក្ខាសាលានេះប្រព្រឹត្តទៅដោយរលូននិងជោគជ័យ និងសូមប្រសិទ្ធិពរជូនឯកឧត្តម លោកជំទាវ លោក លោកស្រី ទាំងអស់ប្រកបដោយសុខភាពល្អបរិបូណ៌ ទទួលបានជោគជ័យគ្រប់ភារកិច្ច ។

ខ្ញុំសូមប្រកាសបើកអង្គសិក្ខាសាលាចាប់ពីពេលនេះតទៅ៕

សូមអរគុណ!!

DR. HUON THAVRAK, DIRECTOR OF GRADUATE SCHOOL, RUA

សូមគោរព

- **គណៈអធិបតី**
- **ឯកឧត្តម ទិន ពន្លក អគ្គលេខាធិការក្រុមប្រឹក្សាជាតិអភិវឌ្ឍន៍ដោយចីរភាព នៃក្រសួងបរិស្ថាន**
- **ឯកឧត្តម លោកជំទាវ លោក លោកស្រីជាថ្នាក់ដឹកនាំ និងជាមន្ត្រីរាជការនៃនាយកដ្ឋានប្រែប្រួលអាកាសធាតុ**
- **ឯកឧត្តម សាកលវិទ្យាធិការ លោកសាកលវិទ្យាធិការរង លោកនាយក លោក លោកស្រីមន្ត្រីសាស្ត្រាចារ្យ**
- **ភ្ញៀវកិត្តិយសជាតិនិងអន្តរជាតិ**
- **សមាជិកសមាជិកាអង្គប្រជុំជាទីគោរព !**

ថ្ងៃនេះ ក្នុងនាមគណៈគ្រប់គ្រងនៃសាកលវិទ្យាល័យភូមិន្ទកសិកម្ម និងក្នុងនាមជាតំណាងឲ្យគ្រឹះស្ថានឧត្តមសិក្សាសាធារណៈទាំង៣ទៀត រួមមាន សាកលវិទ្យាល័យភូមិន្ទភ្នំពេញ សាកលវិទ្យាល័យមានជ័យ និងសាលាជាតិកសិកម្មព្រែកលៀប និងខ្លួនខ្ញុំផ្ទាល់ ខ្ញុំមានកិត្តិយសនិងសេចក្តីសោមនស្សរីករាយក្រៃលែង ដែល

បានមកចូលរួមក្នុង **"សិក្ខាសាលាចែករំលែកបទពិសោធពីរបកគំហើញនៃការប្រែប្រួលអាកាសធាតុ និង ការអនុវត្តនៅក្នុងប្រទេសកម្ពុជា"** ។

ស្ថិតក្នុងឱកាសដ៏ថ្លៃថ្លានេះ ខ្ញុំសូមសម្តែងនូវគារវៈកិច្ចស្វាគមន៍យ៉ាងកក់ក្តៅ និងអំណរគុណយ៉ាងជ្រាលជ្រៅ ជូនចំពោះវត្តមាន ឯកឧត្តម លោកជំទាវ លោក លោកស្រី ដែលជាមន្ត្រីរាជការមកពីនាយកដ្ឋានពាក់ព័ន្ធ និងមន្ត្រីសាស្ត្រាចារ្យតំណាងឲ្យសាកលវិទ្យាល័យទាំងអស់ ដែលបានចំណាយពេលវេលាដ៏មមាញឹក និងមានតម្លៃបំផុតអញ្ជើញចូលរួមក្នុងកម្មវិធីនាពេលនេះ ។ ជាមួយគ្នានេះដែរ ខ្ញុំសូមថ្លែងអំណរគុណយ៉ាងជ្រាលជ្រៅ ជូនចំពោះអគ្គលេខាធិការដ្ឋានក្រុមប្រឹក្សាជាតិអភិវឌ្ឍន៍ដោយចីរភាព ដែលបានចាប់ដៃគូរជាមួយគ្រឹះស្ថានឧត្តមសិក្សាសាធារណៈ ក្នុងគោលបំណងពង្រឹង និងអភិវឌ្ឍកិច្ចសហប្រតិបត្តិការបន្ថែមទៀតនៅក្នុងវិស័យការប្រែប្រួលអាកាសធាតុ។

អង្គពិធីទាំងមូលជាទីមេត្រី!

តាមរយៈសិក្ខាសាលានេះ យើងមានជំនឿ និងមានសង្ឃឹមយ៉ាងមុតមាំថា សិក្ខាសាលានេះអាចផ្តល់នូវផលប្រយោជន៍រួម និងរួមចំណែកក្នុងការពង្រឹងទំនាក់ទំនងរវាង វិទ្យាសាស្ត្រ គោលនយោបាយ និង ការអនុវត្ត និងក្នុងការពង្រឹងសមត្ថភាពមនុស្ស និងស្ថាប័ននៅកម្ពុជា លើវិស័យសំខាន់ៗនៃការប្រែប្រួលអាកាសធាតុ។ ជាក់ស្តែង កន្លងមកនេះសាកលវិទ្យាល័យភូមិន្ទកសិកម្ម បានសហការជាមួយគ្រឹះស្ថានឧត្តមសិក្សាចំនួន៦ រួមមាន: សាកវិទ្យាល័យ ជា ស៊ីម កំចាយមារ សាកលវិទ្យាល័យស្វាយរៀង សាកលវិទ្យាល័យបាត់ដំបង សាកលវិទ្យាល័យមានជ័យ សាលាជាតិកសិកម្មព្រែកលៀប និងសាលាជាតិកសិកម្មកំពង់ចាម ដែលបានអនុវត្តគម្រោងការដាក់បញ្ចូលការប្រែប្រួលអាកាសធាតុទៅកម្មវិធីសិក្សានៃគ្រឹះស្ថានឧត្តមសិក្សានៅកម្ពុជា។ គម្រោងនេះបានផ្តល់ថវិកាឧបត្ថម្ភដោយធនាគារពិភពលោក(World Bank)តាមរយៈក្រសួងអប់រំ យុវជន និងកីឡា។ ក្នុងន័យនេះដែរ សាកលវិទ្យាល័យដៃគូទាំងអស់ បានដាក់បញ្ចូលមុខវិជ្ជា ការប្រែប្រួលអាកាធាតុ ទៅក្នុងការបង្រៀនកម្រិតនិស្សិត ថ្នាក់បរិញ្ញាបត្រ និងបរិញ្ញាបត្រជាន់ខ្ពស់។ ថ្មីៗនេះ សាកលវិទ្យាល័យបានទទួលនឹងកំពុងរៀបចំអង្គភាពការប្រែប្រួលអាកាសធាតុ (Climate Change Unit) ក្នុងគោលបំណងដើម្បីពង្រឹងការសិក្សាស្រាវជ្រាវពាក់ព័ន្ធនឹងការប្រែប្រួលអាកាសធាតុ រួមមាន៖ ការរៀបចំវគ្គបណ្តុះបណ្តាល សិក្ខាសាលាផ្សាព្វផ្សាយលទ្ធផលស្រាវជ្រាវ សន្និសិទ្ធវិទ្យាសាស្ត្រផ្សេងៗ និង កិច្ចសហប្រតិបត្តិការជាមួយស្ថានប័នពាក់ព័ន្ធ ដែលធ្វើការងារលើវិស័យអភិវឌ្ឍន៍ដោយចីរភាព។

ម៉្យាងវិញទៀត ឆ្លៀតក្នុងឱកាសដ៏ប្រសើរថ្លៃថ្លានេះ ខ្ញុំសូមអនុញ្ញាតិជម្រាបជូនអង្គពិធីទាំងមូល មេត្តាជ្រាបផងដែរថា បច្ចុប្បន្ននេះ សាកលវិទ្យាល័យបាននឹងកំពុងរៀបចំបញ្ចប់ផែនការយុទ្ធសាស្ត្រថ្មី រយៈពេល១០ឆ្នាំរបស់ខ្លួន ២០១៧-២០២៦ ដែលមានគោលដៅចម្បងគឺ ពង្រឹងសមត្ថភាពសាកលវិទ្យាល័យភូមិន្ទកសិកម្ម ឱ្យរឹងមាំលើការស្រាវជ្រាវ ពោលគឺប្រែក្លាយសាកលវិទ្យាល័យភូមិន្ទកសិកម្ម ជាបណ្តើរៗឱ្យទៅជា **សាកលវិទ្យាល័យស្រាវជ្រាវ** Research University មួយនៅកម្ពុជា តាមរយៈគោលដៅ៣សំខាន់ៗគឺ (១)ការបង្កើនសមត្ថភាពអប់រំបណ្តុះបណ្តាល ស្រាវជ្រាវ នវានុវត្តន៍ និង ការផ្ទេរបច្ចេកវិទ្យា (២)ការអភិវឌ្ឍន៍សមត្ថភាពសាស្ត្រាចារ្យ និង អភិវឌ្ឍន៍ហេដ្ឋារចនាសម្ព័ន្ធសិក្សានិងមន្ទីរពិសោធន៍ ឱ្យសមស្របតាមបទដ្ឋានអប់រំសិក្សា (៣) លើកកម្ពស់អភិបាលកិច្ចល្អ និងការគៀងគរនិងគ្រប់គ្រងហិរញ្ញវត្ថុឱ្យបានល្អប្រសើរ។ បេសកកម្មថ្មីនេះ សំដៅបណ្តុះបណ្តាលធនធានមនុស្សជំនាន់ថ្មី ឱ្យមានសមត្ថភាពគ្រប់គ្រាន់ ដែលអាចឆ្លើយតបនិងរួមចំណែកក្នុងការអនុវត្តន៍គោលនយោបាយវិស័យឧស្សាហកម្ម Industrial Development Policy ផងដែរ ។ ពិធីចុះអនុស្សារណៈយោគយល់នាពេលនេះ គឺជាសូចនាករមួយទៀត ក្នុងការរួមចំណែកបំពេញឱ្យគ្នាទៅវិញទៅមក ជាពិសេសនឹង

ជួយជម្រុញឱ្យការអនុវត្តន៍ផែនការយុទ្ធសាស្ត្រ១០ឆ្នាំថ្មី របស់សាកលវិទ្យាល័យភូមិន្ទកសិកម្ម ឱ្យទទួលបានជោគជ័យល្អប្រសើរតាមការរំពឹងទុក ។

-គណៈអធិបតី!

-ភ្ញៀវកិត្តិយសជាតិនិងអន្តរជាតិ!

-សមាជិកសមាជិកាអង្គប្រជុំជាទីមេត្រី!

ខ្ញុំសង្ឃឹមថាតាមរយៈនៃសិក្ខសាលានេះ យើងនឹងទទួលបាននូវបទពិសោធន៍ថ្មីៗថែមទៀត ស្របតាមបច្ចុប្បន្នភាព និងឆ្លើយតបនឹងផលប្រយោជន៍រួមសម្រាប់សង្គមជាតិ។ ខ្ញុំសូមប្រសិទ្ធិពរ សុំឲ្យកិច្ចសហប្រតិបត្តិការនេះទទួលបានជោគជ័យ ដូចគោលបំណងដែលបានគ្រោងទុក ដូចជា

ក. ពង្រឹងសមត្ថភាពក្នុងការសិក្សាស្រាវជ្រាវ

ខ. បង្កើតការស្រាវជ្រាវដែលផ្តោតលើគោលនយោបាយ

គ.ផ្សព្វផ្សាយរបកគំហើញពីការស្រាវជ្រាវពាក់ព័ន្ធនឹងគោលនយោបាយ និងសកម្មភាពនៅកម្ពុជា

ឃ.ចូលរួមពិភាក្សាយុទ្ធសាស្ត្រលើប្រធានបទអទិភាពនៃការសិក្សាស្រាវជ្រាវ ស្តីពីអភិវឌ្ឍន៍ដោយចីរភាពនៅកម្ពុជា និងចូលរួមផ្តល់ធាតុចូលសម្រាប់ការរៀបចំរបៀបវារៈនៃការស្រាវជ្រាវរបស់ជាតិ។

ជាទីបញ្ចប់នេះ ខ្ញុំសូមថ្លែងអំណរគុណសារជាថ្មីទៀតចំពោះគណៈអធិបតី ឯកឧត្តម លោកជំទាវ លោក លោកស្រី ភ្ញៀវជាតិ និងអន្តរជាតិ ដែលបានឆ្លៀតឱកាសដ៏មមាញឹកចូលរួមជាកិត្តិយស ដែលញុំាងឲ្យកម្មវិធីនេះប្រព្រឹត្តទៅប្រកបដោយមោទនភាព។ សូមគោរពជូនពរដល់ ឯកឧត្តម លោកជំទាវ អស់លោក លោកស្រីទាំងអស់ សូមទទួលបាននូវពុទ្ធពរ ទាំងបួយ៤ប្រការ គឺអាយុ វណ្ណៈ សុខៈ ពលៈ កុំបីឃ្លៀងឃ្លាតឡើយ ។

សូមអរគុណ !

ANNEX 3: CONTACT LIST OF PARTICIPANTS

No.	Name	Gender	Position	Institute	Phone Number
1.	Tin Ponlok	M	Secretary General	GSSD	012 915 351
2.	Chhun Bunara	M	Deputy Director	NCDD	017 553 586
3.	Sum Thy	M	Director of Department	DCC/GSSD	016 907 764
4.	Chea Chan Thou	M	Director	DST/GSSD	011 750 758
5.	Heng Chan Thoeun	M	Deputy Director	DCC/GSSD	016 726 668
6.	Hak Mao	M	Deputy Director	DST/GSSD	078 996 479
7.	Taing Kruy	M	Deputy Director	DST/GSSD	012 579 486
8.	Kluok Vichet Ratha	F	Deputy Director	DCC/GSSD	012 509 966
9.	Keo Pesith	M	Vice Chief of Office	GSSD	015 848 787
10.	In Many	F	Chief of Office	GSSD	061 666 607
11.	Ung Soeun	M	Coordination Officer	CCCA	012 910 391
12.	Yem Sokha	M	Grants Management Officer	CCCA	010 059 598
13.	Sim Touch	M	Chief of Office	DCC/GSSD	012 425 346
14.	Sum Cheat	M	Vice Chief of Office	DCC/GSSD	012 850 164
15.	Neth Baroda	F	Chief of Office	DCC/GSSD	078 589 985
16.	Rin Sarem	M	Officer	DGE/GSSD	012 334 263
17.	Leng Sophal	M	Chief of Office	DCC/GSSD	012 246 192
18.	Lim Veng	M	Financial Management Officer	CCCA	012 632 633
19.	Va Vuthy	M	Adaptation Officer	CCCA	012 553 050
20.	Neou Reaksmey	F	Communication Assistant	CCCA	077 535 392
21.	Zhang Xin	F	Intern	CCCA	085 986 746
22.	Julien Chevillard	M	Trust Fund Administrator	CCCA	092 277 782
23.	Clara LANDEIRO	F	Technical Specialist	CCCA	077 380 321
24.	Chrun Naren	F	Secretary	CCCA	012 998 626
25.	Seang Sonyta	F	Clerk	CCCA	076 333 3710
26.	Kien Danary	F	Admin Officer	CCCA	012 391 869
27.	Chea Chanthou	M	Director of Department	DST/ GSSD	011 750 758
28.	Pheap Sambo	M	Lecturer	RUA	089 468 806
29.	Hill Sothea	M	Vice Rector	MCU	077 992 136
30.	Saing Sophath	M	Dean	MCU	012 411 247
31.	Kim Soben	M	Vice Dean	RUA	012 724 686
32.	Khoeun Sorvanviseth	M	Deputy Director	SRP PDE	012 934 984
33.	Meak Kamerane	M	Dean	RUPP	012 876 971
34.	Va Dany	F	Lecturer	RUPP	078 876 037
35.	Nuon Mony	M	Director	SRP PDE	017 719 000
36.	Taing Chanreaksmey	F	Researcher	ITC	070 284 742
37.	Heng Naleak	F	Researcher	ITC	098 555 046
38.	Huon Thavrak	M	Dean	RUA	017 381 080
39.	Kol Veasna	M	Technical of CC	CI	098678718
40.	Phann Phearum	M	Officer	FA	095 254 545
41.	Chouth Titsophea	M	Officer	FA	092 471 828

No.	Name	Gender	Position	Institute	Phone Number
42.	Vong Pisay	F	Officer	UHST	092 988 835
43.	Kea Ratha	F	Head of Department	PNCA	017 512 912
44.	Lan Khannarith	M	Vice Director	PNCA	012 707 677
45.	Sroin Chan Thea	M	Lecturer	UHST	012 479 562
46.	Hak Channy	M	Officer	EDC	
47.	Khim Mora	M	Chief of office	PP PDE	093 767 800
48.	Leok Pheak	M	Officer	MLMUPC	077 979753
49.	Te Tevy	F	Vice Chief Officer	MoWA	012 305 137
50.	Or Siem	M	Director	MoEYS	012 809487
51.	Lay Nara	M	Officer	MPWT	012 922 676
52.	Hou Chansythom	M	Vice Chief Officer	GDA/MAFF	012 329 960
53.	Mon Samut	M	Deputy Director	GANCP/MoE	012 418 488
54.	Nouv Borey	M	Deputy Director	MME	012 418 488
55.	Srey Sunleang	M	Director	MoE	077 333 456
56.	Ngeth Sovan	M	Deputy Director	MoH	012 883 161
57.	Sokh Heng	M	Director	MAFF/FA	012 639 96
58.	Phorn sopheak	M	Chief of Bureau	MoT	078 214 245
59.	Kheng Sambath	M	Deputy Director	MoP	089 226 226
60.	Kol Phanna	M	Deputy Director	MoI	017 614 416
61.	Siyonn Sochet	M	Deputy Director	MRD	012 965 908
62.	X Bunlean	M	Officer	MIH	092 204 555
63.	Soth Kimkalmony	M	Deputy Director	NCDD	012 272 107
64.	Chea Sokpheng	M	Officer	CDC	017 333 334
65.	Tach Sovanna	M	Deputy Director	MoWRAM	012 890 321
66.	Thoun ChanMolyka	F	Officer	CDC	012 247 532
67.	Mann Mara	F	Chief Officer	MoWRAM	012 842 38
68.	Thav Sophearith	M	Director	MoE	012 858 509
69.	Prak Marina	M	Director General	SRP PDE	012 825 051
70.	Bul Delly	M	Director General	MoWRAM	077 878 978
71.	Kong Chanveasna	M	Officer	MoWRAM	012 884 944
72.	Ly Virak	M	Chief of office	ODM PDE	012 330 542
73.	Hai Veasna	M	Chief of Office	SRP PDE	017 299 971
74.	Tep Vichetmony	M	Chief of office	NBP-KSP	016 867 811
75.	Eng Pirong	M	Director	STG PDE	012 939 158
76.	Sorn Chanmonyphalla	M	Vice Chief Officer	STG PDE	088 866 6485
77.	Lun Sambo	M	Lecturer	MOWRAM/ ITC	078 844 984
78.	Yay Chloeun	M	Deputy Director	ODM PDE	012 397 822
79.	Phuong Dara	M	officer	NBP	092 992 472
80.	Him Sambath	M	Officer	NBP	092 992 472
81.	Chhin Oat	M	Vice Chief Officer	PMD/MoH	095 360 036
82.	Hing Phearanich	F	Policy Analyst	UNDP	
83.	Gauagher lauise	F	Researcher	University of Ganeva	+41 786 389 003
84.	Chea Chanthan	M	NPC	FAO	017 799 973

No.	Name	Gender	Position	Institute	Phone Number
85.	Meng Chan Thoeun	M	PO	WFP	012 880 462
86.	Peier John Meysu	M	SPCR	ICEM	
87.	Yon Ma	M	PM	CRDT	098 428 764
88.	Meas Viphon	M	LPM	CRDT	070 381 558
89.	Chet Sakan	M	P.A	CRDT	088 370 091
90.	Jeff Skyerman	M	TA	WCS	012 907 455
91.	Tea Chanthy	F	MPT	WHO	
92.	Hieng Channy	M	Technical	WWF	
93.	Prack Oudomserey	M	Manager of part BDC	EDC	071 961 6888
94.	So Chan	M	Driver	CCCA	012 846 505
95.	Im Touch	M	Driver	CCCA	012 922 120
96.	Long Sona	M	Programme Management Officer	CCCA	012 256 869
97.	Kim Menglim	M	Environment Specialist	USAID	017 535 318
98.	Keo Chivon	F	Chief of Lamp	PPH	
99.	Khim Nora	M	Vice Chief waste management	PP PDE	

ANNEX 4: PRESENTATIONS

(see separate documents)

ANNEX 5: GROUP WORK GUIDANCE

Groups Arrangement

1. Group into **5 groups** by theme/sector according to the Group Arrangement:

Group Arrangement

Group 1 **Theme: Agriculture, forestry**	**Group 2** **Theme: Water, sanitation, health, Rural infrastructure**	**Group 3** **Theme: Information management, awareness raising, education, Vulnerability assessment**	**Group 4** **Theme: CC mitigation, energy**	**Group 5** **Theme: Urban management, housing, waste management**
Participants: 1. IFAD/RUA? 2. MAFF/GDA 3. CRDT 4. MAFF-Forestry 5. MAFF-Fisheries 6. MAFF-Agriculture 7. RUA 8. PNCA	Participants: 1. SPCR 2. FAO 3. WHO 4. MOWRAM-Grantee 5. MOWRAM-CCTWG 6. MOH-Grantee 7. MOH-CCTWG 8. MRD 9. MOE-Dept of Air Pol. 10. NCDD 11. RUPP 12. PNCA	Participants: 1. University of Geneva 2. PDOE Stung Treng 3. WCS 4. MOEYS 5. MoInfo 6. MOWA 7. MOP 8. CDC 9. RUPP 10. Meanchey University	Participants: 1. REDD+ 2. NBP 3. MIH 4. MPWT 5. MME 6. ITC 7. RUA 8. Tbong Kmum University	Participants: 1. GGGI? 2. MLMUPC 3. MOE-Coastal 4. MOT 5. NCDM 6. CDC 7. ITC 8. Meanchey University 9. Tbong Kmum University
CCCA's Assistant Mr. Ung Soeun	CCCA's Assistant Mr. Va Vuthy	CCCA's Assistant Ms. Nouv Reaksmey	CCCA's Assistant Mr. Huong Nuong and Mr. Long Sona	CCCA's Assistant Mr. Yem Sokha

Other participants can join any Group, but should try to keep the size of groups similar.

2. Each Group will have CCCA Staff to support as needed

In Each Group [5 min]

1. Designate a **facilitator** who will facilitate group discussion and report back to plenary;
2. Ask a representative from universities to be a **note-taker.** A note-taking template will be provided; and
3. Use the guiding questions below for discussion.

Guiding Questions

Q1 [20 min]: What research is needed to support CC policy making (both short and long term)?

→ **Review the list** of "Research and Innovation Focus Areas" provided in the handout

→ **Add to the list** provided other research topics you think are needed to support CC response (try to add at least 5 topics).

→ **Prioritize** the top-3 research topics

Q2 [20 min]: Do you know any research projects that are relevant to the 3 research topics the group prioritized?

→ **Discuss** for each research topic:

- What is the research project about?
- How is it relevant to CC response?

→ **Write down** for each research project:

- Title
- Contact information

Q3 [15 min]: Who could conduct the research for the 3 prioritized topics?

→ **Identify/list** the institutions that could be interested in carrying out the research (for each topic) for the following categories:

- Research institutions
- Research partnerships
- Government institutions

<u>Q4 [30 min]:</u> What are the enabling activities needed to support research in the topics you have identified?

Besides the funding issue (!)...

→ **Discuss** challenges and opportunities to conduct research for the 3 prioritized topics.

→ **Identify and write down** the actions that can be easily implemented (i.e. low cost, committed implementing partner) to boost research that can inform policy in:

- Short-term
- Long-term

<u>Q5 [10 min]:</u> Please write down any additional recommendations if there are any.

<u>PLEASE USE THE POWERPOINT SLIDES PROVIDED FOR NOTE TAKING AND PRESENTATION IN PLENARY</u>

RESEARCH AND INNOVATION FOCUS AREAS	
GREENHOUSE GAS (GHG) MITIGATION AND INVENTORY	1. Research & Development of low-cost, low carbon, appropriate technologies for energy, industry and waste management (including policy and market frameworks)
	2. Decoupling development from carbon – reducing uncertainties in estimating national greenhouse gases (GHGs) emissions and removals from key emitting sectors (including energy, industry, agriculture, land use, land use change and forestry, waste management) and assessing and testing scalable cost-effective mitigation options to enhance energy security
	3. Improving activity data and emission factors for the key sources of national GHGs Inventory
ADAPTATION	4. Climate resilience of food production systems for increased food security
	5. Policy relevant health risk assessment from short and medium term climate variability and the effects of gradual climate change (with a focus on vulnerable groups exposed to climate hazards)
	6. Understanding the role of social protection and early warning schemes in reducing vulnerability to climate variability and change (including analysis of the gender dimension)
	7. Developing bottom up, participatory approaches to community/ecosystem based adaptation
	8. Developing methodologies for assessing adaptation technologies and the costing of adaptation measures for local level planning
	9. Quantifying ecosystem services – methodological contributions to the establishment of natural resource accounting systems in the context of climate change
ADAPTATION/GHG MITIGATION	10. Understanding the role of land use planning in climate change adaptation and mitigation responses
	11. Understanding urban resilience – technical and policy recommendations for low carbon urban resilient development (including governance, management, planning and design dimensions)

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