DEPARTMENT OF CLIMATE CHANGE

GENERAL SECRETARIAT, NATIONAL COUNCIL FOR SUSTAINABLE DEVELOPMENT

Proceedings

KNOWLEDGE-SHARING WORKSHOP
Learning from CCCA-II Partners
Siem Reap, 28-29 May 2019

CAMBODIA CLIMATE CHANGE ALLIANCE
Implemented by: Ministry of Environment
Supported by: European Union
UNDP
SWEDEN

CONTENTS

BACKGROUND

The Department of Climate Change (DCC), General Secretariat of the National Council for Sustainable Development (GSSD), in alignment with its mandate, regularly organizes knowledge sharing events twice per year. These events aim to capitalize on knowledge gained through the implementation of climate change projects, and to foster the dissemination of lessons learnt from the work being conducted by a wide range of practitioners in Cambodia.

As the second phase of CCCA comes to a close at the end of June, sharing the results of CCCA-II government and non-government partners is especially important.

Since 2015 fourteen government agencies have received support from the CCCA Grant Facility for the implementation of priority actions under their Climate Change Action Plans. In 2016 eight governmental and non-governmental organisations have received CCCA grants to implement innovation and research projects focused on climate change priorities. These projects have now been fully implemented, and lessons can be learnt to inform current and future efforts in the implementation of the CC response in Cambodia.

DCC/CCCA has also partnered with academic institutions to promote engagement of academia and students in climate change related research. From 2017 onwards, 6 national universities have received support from the program to strengthen policy-relevant research in the field of climate change, with a specific focus on priorities identified through the dialogues on the national agenda for CC research.

Considering that all CCCA partners, both grantees and academia, have now concluded or are about to complete the implementation of planned activities, this event put a significant focus on sharing lessons learnt from their endeavours. It provides an opportunity to reflect on the challenges partners had to face during the implementation of activities, but also their efforts to ensuring the sustainability of results obtained, scaling-up successful approaches and achieving policy impact.

The event brought together CCCA partners who have been directly involved in the implementation of grant projects and programmes of work. CCTWG members and other climate change focal points from the concerned ministries and agencies, representatives from development partners, CSOs, private sector, and researchers also participated to share knowledge and lessons learnt, build partnerships, and explore opportunities for strengthening policy frameworks.

OBJECTIVE

The purpose of the knowledge sharing event is to capture lessons learnt from all efforts carried out at the national and subnational level by different actors who have been working with CCCA during its second phase.

More specifically, this knowledge sharing event aims to:

- Reflect on whether/how experiences and lessons learnt from grant projects and critical research initiatives have led/contributed to organisational change (e.g. increased institutional capacity, development of CC-related pipeline, changes in procedures);
- Build on the opportunities for strengthening policy frameworks;
- Identify opportunities for future collaboration between research institutions and policymakers;
- Receive feedback from grantees on CCCA grant guidelines.

ORGANIZATION OF THE EVENT

PARTICIPANTS

The event brought together 103 participants:

- 25 participants from GSSD (including 10 CCCA);
- 44 participants from grantees in Window 1 and Window 3;
- 12 participants from partner universities (RUA, RUPP, MCU, PNCA, UHST and ITC)
- 3 participants for development partners (UNDP, EU, Sweden);
- 2 participants from MoE
- 2 participants from other climate change projects (SRL and SPCR)
- 15 participants from CCTWG members (other members already counted above)

METHODOLOGY

In line with the objectives of the workshop, the overall approach is to promote active participation and knowledge-sharing. Formal presentations have been kept to a minimum, and most of the sessions were dedicated to guided group discussions between practitioners, on selected topics, followed by discussions in plenary. Key messages and lessons learnt were systematically identified and recorded.

The workshop proceeded as planned in the agenda (Annex 1).

Group Work: Session 2 and 3

After the opening session, sessions 2 and 3 had 5 working groups. Group 1 to 4 were in the main conference room with a max of 20 people per group, while Group 5, finance and project management, was in a nearby room. The thematic areas and target participants are in the table below:

Group #	Thematic areas	Participants
Group 1	Climate change research	University and research grants
Group 2	Climate change awareness raising/ education/ campaigns	MOE, MOEYS, MOInfo, MOT, and relevant CCTWG members
Group 3	Climate resilience	MAFF, MOWRAM, MRD, MOH, MLMUPC, and relevant CCWTG members
Group 4	Reducing greenhouse gas	MIH, MPWT, MME, and relevant CCWTG members
Group 5	*Finance and Project management (Session 2B)*	*Finance officers and project managers (project managers can choose to participate in this group or in their assigned thematic group 1-4)*

Group discussion guidance was as follows:

- Designate 1 facilitator (identified by CCCA), 1 note-taker, and 1 rapporteur.
- Make sure you have the note-taking template (provided in ppt format) and seek any clarification and support from CCCA resource persons.
- Use the guiding question for discussion and make sure to take notes in the template provided.

Group 1 to 4 discussed the following questions on the topics of institutional changes and staff capacity, coordination, new or revised policy/regulations/standards, resource mobilization, development of new CC projects, climate change integration in plans and budgets, M&E of climate change, gender integration, research/data, technology and technological capacity:

- Have CCCA projects/initiatives led to changes in your organisations?
- Reflecting on the changes that have happened already, what are the recommended approaches to improve and build on the changes to advance the climate change agenda in your organisation?
- Reflecting on the previous discussions, identify any changes to policies or regulations that would be needed (e.g. to secure scale-up/adoption of new technologies)

Group 5 discussed the challenges and solutions, best practices and lessons learnt on CCCA grant management and recommendations to improve CCCA grant facilities in the future.

Research initiatives and opportunities

The session started with the presentation of researches from national research institutions—RUA, RUPP and ITC. After the presentation, a panel discussion proceeded to reflect on current research initiatives and existing capacity and opportunities for broader partnerships to strengthen climate change action. Panel members were from the government, academia and NGO.

OUTPUTS EXPECTED

The learning event was designed to produce the following outputs:

- Evidence of the impact of CCCA funded projects and initiatives in building institutional capacity of participating institutions and stakeholders;
- Policy recommendations (organized per sector/theme);
- Updated lists of existing partnerships and opportunities for collaboration, and possibly of research needs);
- Recommendations for the improvement of CCCA grant guidelines.

OPENING SESSION

Ms. Johanna Palmberg, Counsellor, Embassy of Sweden, delivered the welcome remarks on behalf of the development partners supporting the CCCA 2 programme. Her speech highlighted the importance of the CCCA programme in the cooperation on climate change between the Swedish government, the European Union and the Royal Government of Cambodia. She indicated the need to capitalize on the knowledge gained through the CCCA grants, and to identify how this knowledge could be used to scale up climate action. This is particularly important as government , EU, Sweden and UNDP prepare to engage in a new phase of CCCA, with the objective to deepen the climate change response in target sectors.

H.E. Tin Ponlok, Secretary-General of the National Council for Sustainable Development, presided over the learning event. His opening remarks acknowledged the important role of development partners, namely Sida, EU, and UNDP in sustainable development in Cambodia in general and in the CCCA 2 Programme in particular. The CCCA programme has played a pivotal role in building institutional capacity, coordinating the preparation of the legal frameworks and planning instruments, and supporting resource mobilisation in

Cambodia. H.E. Ponlok stressed the main objective of the learning event to share the good-and-bad lessons learnt so far from climate change practitioners, researchers and policy makers. Although CCCA 2 is ending in June, the CCCA 3 will start in July in order not to lose the momentum gained so far. He thanked to all development partners to the programme, CCTWG members, all participants and the DCC and CCCA staff (See full speech in Annex 2).

Mr. Sum Thy, Director of Department of Climate Change provided an overview of the learning event. The learning event focuses on the CCCA grant projects and the partnership with universities (Annex 3).

SESSION 2 AND 3

Mr. Sum Thy, Director of the Department of Climate Change, chaired the session. The results of group discussions for Session 2 and 3 are presented by group (1 to 5). Group 5 focused on challenges and solutions, best practices and lessons learnt, and recommendations to improve the grant management. The group guidance is presented in annex 4.

Group 1: Climate change research

- Reflecting on experience and knowledge gained from implementation of CCCA funded projects, what are changes in your organization?

Changes in	Level of changes	Examples/evidences of changes
Institutional changes and staff capacity	1 - Some changes	Master program of Climate Change (RUPP) Research Unit on Water and Environment, Energy (ITC) Climate Change Unit (RUA &UHST) Increasing number of staff interested in CC research
Gender	1 – Some changes	Approximately 30% of research and lectures on CC include a gender component (estimate by the group)
Coordination	2 - Lot of changes	Climate change university network; Networking with relevant ministries; National and International Network on CC (RUA and UHST)
New or revised policy/regulations/standards	1 - Some changes	RUPP, RUA, UHST, and ITC have adopted a research promotion policy; Included CC in University curriculum (RUA, ITC, and UHST);
Resource mobilization development of new CC projects	1 - Some changes	Universities have developed some climate change research projects
Climate change integration plans and budgets	1 - Some changes	CCCA has allocated some budget for CC research Universities have allocated funds for research
M&E of climate change	1 - Some changes	M&E of research projects only
Research/data	1- Some changes	Research ongoing with CCCA and other support. Some initial results for example on heat impacts on workers (ITC)

Technology and technical capacity	1 - Some changes	Established biogas digester to community and students (UHST) ITC is developing model and tool to predict flood and drought for adaptation plan
Development of new CC projects	1 - Some changes	CCCA has built capacity on project development to universities Ongoing to develop new proposal and intend to submit within 2019.

- Reflecting on the previous discussions, identify any changes to policy or regulations that would be needed (e.g. to secure scale-up/adoption of new technologies)

Any changes to policy or regulations that would be needed.

- Universities have set up pilot project on CC Vulnerability Reduction Assessment in a total of 4 villages of 2 different districts of Thbong Khmum Province, and developed recommendations on priority climate change adaptation actions to include in commune development plans;
- Several universities have integrated climate change into research promotion policy and five years strategic plan 2018-2022. This should be further promoted.

Group 2: Climate change awareness raising/ education/ campaigns

- Reflecting on experience and knowledge gained from implementation of CCCA funded projects, what are changes in your organization?

Changes in	Level of changes	Examples/evidences of changes
Institutional changes and staff capacity	1 - Some changes	Tourism operators trained in one pilot community based eco-tourism area MoT capacity increased n management of Green Hotels Standards, including certification process MoInfo capacity to engage on CC through TV/radio and social media significantly increased, + training to journalists
Gender	1 - Some changes	75-78% in target tourism operators are women staff and increased participations in raising awareness. Same for local community leaders (women 70%). Still significant capacity needs to link gender and CC.
Coordination	2 – Lot of changes	For MOT, better capacity to coordinate with hotel owners (private sector) as well as local authorities on eco-tourism; Examples of good inter-ministry cooperation, for example MoE-MoInfo on awareness campaigns.

New or revised policy/regulations/standards	1 - Some changes	Applied standards on green hotel and pushed hotels to apply No policy on CC awareness in MoInfo but commitment to keep broadcasting messages developed with CCCA support. New teaching materials on CC for grades 10-12 (MOEYS)
Resource mobilization development of new CC projects	1 - Some changes	Explore cc mainstreaming into their planning and budgeting for domestic funds (through CC technical working group).
Climate change integration in plans and budgets	1 - Some changes	Limited for now for the ministries in this group, except MOE
M&E of climate change	1 - Some changes	Working group on M&E has been set up in MoT. Capacities to monitor the CC response remain low in these ministries. lack of technical skills and data.
Research/data	1-some change	EIA for Eco-Tourism community (3 provinces) Ratanakiri, Mondolkiri, Stung Treng Green hotel database (MOT)
Technology and technical capacity	1 - Some changes	n/a for awareness activities
Development of new CC projects	0 - No change	No direct pipelines but MOEYS and MOE have several ongoing projects.

- Reflecting on the previous discussions, identify any changes to policy or regulations that would be needed (e.g. to secure scale-up/adoption of new technologies) :

  - *Mainstreaming climate change in MOEYS strategy plan 2019-2023 and BSP 2020-2022*
  - *Strategy for awareness on CC adaptation and DRR to student and community through video documentary, awareness campaign material (MoEYS)*
  - *Guidelines for Clean City (MoT)*
  - *Guidelines for Green Tourism (MoT)*
  - *Guidelines on no waste restaurant and resort (MoT)*
  - *Guidelines for monthly or daily climate change report and intervention by media to ensure that CC information or its impact widely broadcast across Cambodia (MoInfo)*

Group 3: Climate resilience

- Reflecting on experience and knowledge gained from implementation of CCCA funded projects, what are changes in your organization?

Changes in	Level of changes	Examples/evidences of changes
Institutional changes and staff capacity	2 - Lot of changes	. Capacity building in institution and staff is significant; . MRD'S staff appoint and operate a CC adaptation working group; . MOH, MRD, MAFF, have increased capacity to identify CC issues, but implementation still faces constraints
Gender		. MRD CC programmes encourage participation of women, more and more women are involved . Other ministries such as MOH, MAFF and NCDD-S also apply their gender policies to CC projects
Coordination	1 - Some changes	Ministry-local authority coordination can sometimes be a challenge, to address technical capacity needs at local level Vertical coordination within ministries is usually good.
New or revised policy/regulations/standards	2 - Lot of changes	Agriculture adaptation plan 2016-2020 (MAFF) CC integrated in 5-year policy and strategy (MRD) Approved Guideline and hand book on resilient housing (MLMUPC) Three guidelines on water borne diseases, agreed data exchange with NCDM on disaster health impacts (MOH)
Resource mobilization development of new CC projects	2 - Lot of changes	MLMUPC MOU with UN Habitat on flood resilient houses, scaling-up CCCA work (NCDD) local governance climate change phase 2 (LGCC 2) and GCF proposal Additional support through UN Women, WFP, ASPIRE, SRL …
climate change integration in plans and budgets	1 - Some changes	MRD intergrated CC in strategy action plan and budgets strategic plans 2019 MLMUPC intergrade CC in PIP 3 and PIP 5 for next year MAFF got some budget for CC from MEF
M&E of climate change	0 - No change	No change. Still significant gaps.
Research/data	1 - Some changes	MRD vulnerability map in Kampong Thom MoE – air quality monitor in PP MAFF dry rice varieties adapting to CC
Technology and technical capacity	0 - No change 1 - Some changes 2 - Lot of changes	MRD – R & D on home gardening Testing Road quality Conservation agriculture method, using N15 , tested by MAFF

- Reflecting on the previous discussions, identify any changes to policy or regulations that would be needed (e.g. to secure scale-up/adoption of new technologies)

(the group did not have time to discuss this question)

Group 4: Reducing greenhouse gases

- Reflecting on experience and knowledge gained from implementation of CCCA funded projects, what are changes in your organization?

Changes in	Level of changes	Examples/evidences of changes
Institutional changes and staff capacity	1 - Some changes	MIH: increased knowledge on GHG and to conduct energy/GHG audits, clean technology and clean energy; MPWT: Established a working group, built staff capacity on CC and cost-benefit analysis, GHG inventory methodology; MME: Institutional reform and know how to calculate GHG emission, assess low carbon technologies; NBP: More understanding on medium-scale biodigester, technical capacity of NBP staff. Increased capacity of model farmers: 6 farms have 13800 pig head and 4800 tCO_2/y reduced
Gender	1 - Some changes	MIH, MME, MPWT and NBP all take into consideration gender in beneficiary selection, and report on it. But links to CC still not fully understood
Coordination	1 - Some changes 2 – Lot of changes	MIH, MPWT, MME: mostly coordination with local authorities and provincial departments (vertical) NBP good cooperation with private sector (pig farms), including co-financing
New or revised policy/regulations/standards	2 - Lot of changes	MME: Reported to policy makers on results of off-grid pilots, and potential; MIH: Publish training manual on GHG and clean production, GHG inventory in the sector

		MPWT: Have drafted the GHG emissions inventory and training manuals for road and transport sector; NBP: revised national policy on biodigester
Resource mobilization development of new CC projects	2 - Lot of changes	MIH: Have the potential to mobilize private sector (banks etc…) for energy efficiency and sharing knowledge; MME and MPWT convince MEF to increase support to their CC-related activities; NBP: outreach to financial institutions to fund on a loan basis
Climate change integration plans and budgets	1 - Some changes 2 - Lot of changes	MIH: needs the involvement from other departments among the ministry, and facilitate with MEF and MoP; MME and MPWT have budget to train staff on climate change and conduct cost-benefit analysis (MPWT)
M&E of climate change	1 - Some changes	MIH, MME, MPWT: no M&E at national level but only project; and NBP: Tracking GHG emissions reduction from project activities is operational
Research/data	1 - Some changes	MIH: Difficulties in obtaining data from industry, need for intensive MIH involvement in collecting data. Inventory for the sector is available + GHG audits of pilot firms; MME: Data on performance of off-grid pilots; MPWT: Data from MME at national level, and used the bottom up questionnaire at sub national level, to produce sectoral and city level (Siem Reap) GHG inventory; NBP: Data on performance of bio-digester, technical guidance
Technology and technical capacity	1 - Some changes	MIH and MME: Standard of clean technology list and supporting documents;

		MPWT: Lack of technology on vehicle inspection for pollution/GHG, need standards for e-vehicles NBP: New technology with innovation from diesel to biogas to produce electricity with good modification on generators and enough technical capacity.

- Reflecting on the previous discussions, identify any changes to policy or regulations that would be needed (e.g. to secure scale-up/adoption of new technologies)

Any changes to policy or regulations that would be needed.

- *MIH: Publication via the website, training on technology, need high level participation internally to scale-up;*
- *MME: Energy efficiency policy should be officially published, tax policy for energy efficiency;*
- *MPWT integration in planning/budgeting procedures at national and subnational level, apply standards not just to a few donor projects but also for Govt. projects;;*
- *NBP subsidy to farm 10-20% for large scale biodigester.*

Group 5: Finance and Project management – CCCA grant guidelines

Challenges	Proposed solutions
1. Need consultant support for proposal writing 2. Difficulties to find contractors for certain types of works in the province 3. Budget missing for recruitment/announcements 4. Some issues with inflation /higher prices during implementation 5. Three quotations below USD 500 can be difficult to obtain 6. Opening bank account takes long time	1. Suggest to increase budget available for proposal development 2. Allow for some budget variance due to inflation 3. Allow direct shopping below 500 USD

Best practices and Lessons learnt

- Good practice on capacity development / mentoring of civil servants on project and budget management;
- Good coordination from CCCA colleagues on budget management and financial report preparation
- Knowledge-sharing opportunities
- Improve communication across institutions

Recommendations

- Increase training on procurement and financial management

SESSION 4: CURRENT CLIMATE CHANGE RESEARCH INITIATIVES AND OPPORTUNITIES FOR BROADER PARTNERSHIPS

Dr Heng Chan Thoeun, Deputy Director of the Department of Climate Change, facilitated the session. He invited the presenters, namely Mr Kim Soben, Dr Seak Sophat and Ms Sang Davin to present their respective research initiatives in their institutions. All the presentations are attached in Annex 5.

Mr Kim Soben, Vice-dean of Graduate School, and Director of Centre for Agricultural and Environmental Studies, RUA, presented the climate change research initiatives at the Royal University of Agriculture (see attached presentation for details) and discussed remaining challenges for CC research in Cambodia. He noted a shortage of equipment and financing for certain types of research, as well as human resource constraints.

Dr Seak Sophat, Vice-dean of the Faculty of Development Studies, Program Coordinator, Master of Science in Climate Change, RUPP, provided an overview of CC research at the Royal University of Phnom Penh, with a focus on urban issues. The challenges of the research findings were presented also. This includes difficulties to make research / academic information understandable and attractive for policy-makers and the general public, issues due to the long time frame of research vs. short timeframe for decision-makers, and a very donor-driven research agenda, not always aligned with top national priorities.

Ms Sang Davin, Researcher and Lecturer, ITC, talked about the research initiatives on climate change in ITC, with a lot of focus on adaptation, particularly in the water sector, and on environmental impacts/ waste. Finally, she discussed a case study on energy audit at the ITC.

After the presentations, **Dr Heng Chan Thoeun** invited the panel members to the stage, namely:

- **Ms Te Tevy,** Chief of office of Planning and Reporting, MOWA
- **Mr Kim Soben**, Vice-dean of Graduate School, and Director of Center for Agricultural and Environmental Studies, RUA
- **Dr Seak Sophat**, Vice-dean of faculty of Development Studies, Program Coordinator, Master of Science in Climate Change, RUPP
- **Mr Yon Ma,** Program Manager, CRDT

Dr Heng Chan Thoeun asked the panel members to share their views on the following questions:

1. Would you please share the experience made in your institution on climate change research and initiatives?
2. What are the challenges of the research initiatives and building partnership?
3. What are your perspectives for future broader partnerships in climate change research?

Commented [jc1]: Need content here!

After the presentations, a panel discussion proceeded on the experience, challenges and perspectives in researches since CCCA 2 had provided spurred research activities in government and non-government institutions, particularly through innovative research grant mechanism. **Dr Heng Chan Thoeun** invited the panel members to the stage, asked the panel members on the following questions:

1. Would you please share the **experience** made in your institution on climate change research and initiatives?
2. What are the **challenges** of the research initiatives and building partnership?
3. What are your **perspectives** for future broader partnerships in climate change research?

Ms Te Tevy, Chief of office of Planning and Reporting, MOWA, noted that there are very few research activities in the ministry on gender and climate change. Notably, MOWA conducted a research jointly with Plan International on gender roles in climate change adaptation and disaster risk reduction in seven provinces. The research collected information/data from 108 samples from students, provincial departments, district offices, local CSO, villagers, and women. Based on the findings from this research, MOWA integrated priority actions on gender and climate change into the MOWA's NSDP inputs and the Neary Rathanak Plan. Another example is the support from CCCA 2 to MOWA, where gender-sensitive Vulnerability Risk Analysis was conducted to collect baseline data for project interventions in four provinces— Kampot, Svay Rieng, Stung Treng, and Kampong Chhnang, with a focus on schools.

Mr Yon Ma, Program Manager, CRDT indicated that his organization has a primary focus on project implementation along five themes, namely food security, income generation, renewable energy, CC adaptation, and environmental education. CRDT had two streams of research on testing of effectiveness of solar pumping system and climate-smart agricultural techniques. For both cases, a critical issue was the engagement of the poor, because adaptation requires some assets. CRDT recommended to promote income generation actions together with climate change adaptation practices.

Mr Kim Soben, Vice-dean of Graduate School, and Director of Center for Agricultural and Environmental Studies, RUA, underlined that RUA faced many challenges on promoting a research agenda in the university. However, the faculties are committed to be a leading research driven university in Cambodia. A major challenge is the lack of capacity on design of research methodologies for new approaches or technologies, for example, on allometry. The research members had to do self-study and participate in research trainings. Capacity building and practice are important factors to promote research at the university. Another important factor is the continuity of the research practices, which is a challenge when it is mostly donor funded and linked to specific projects.

Dr Seak Sophat, Vice-dean of faculty of Development Studies, Program Coordinator, Master of Science in Climate Change, RUPP mentioned that in addition to challenges and recommendations presented, he would suggest to form a national research alliance, including local universities and ministries to conduct research on the climate change in Cambodia. The group should have a regular meeting, e.g. every 6 months, to present research findings, future research activities and funding sources to share among the researchers in Cambodia.

The group should focus on the promotion of the implications of the research findings to policy makers and practitioners, which are the real motivation for the researchers to see the research impacts.

Mr Kimthoun (MAFF) had suggestions to promote sustainability of the research in Cambodia. Firstly, the research should have more rigorous methodology; for example, research on new rice variety should be tested in various ecological zones. Secondly, the research should link to government research institutes, e.g. CARDI on rice to ensure that the findings would be used in national policy, interventions and other applications. In MAFF, there is a committee on dissemination of research, in which the research on agriculture should be reviewed and if approved, supported for dissemination. Overall, the connection between research and government agencies is important. Thirdly, researchers should check the national policy/strategies to prioritize their work. Lastly, for MAFF, research on crop insurance is a priority in current government mandate. He urged the CCCA 3 to support research on crop insurance.

Julien (CCCA), asked about the need for partnerships to address capacity gaps and develop new skills. How important are regional or international partnerships with academia? Or what other support from development partners to strengthen research on climate change in Cambodia?

Mr Kim Soben (RUA). Research publications are on the website for the public to access. Research in RUA has been supported by many international agencies, e.g. from Europe. Currently, RUA is in a process of proposal development jointly with a university in Europe. Supports from international partners, e.g. from Genova University on drought and flood monitoring, is important to develop capacities within RUA.

Dr Seak Sophat (RUPP). RUPP has extensive university partnerships. The master degree on climate change includes a partnership with the Asian Institute of Technology, Thailand. Other key areas of support required are sustainable funding, and access to data.

SESSION 5: CLOSING

Mr Sum Thy, Director of Department of Climate Change presented the CCCA phase 3, which will start in July 2019 with budget of 11.9 M USD coming from EU, Sweden and UNDP (See Annex 6).

He thanked all participants for joining the event and for several years good cooperation facilitated by the CCCA programme. He encouraged all to build on the partnerships developed during this period, to increase their contribution to the climate change response.

ANNEX 1: AGENDA

Time	Session	Speaker		Moderator
Day 1 – 28 May 2019				
13:30-14:00	Registration			
Session 1: Opening Session				*MC: Ms. Kien Danary, CCCA*
14:00-14:05	National Anthem			
14:05-14:20	Remarks	**Ms. Johanna Palmberg,** Counsellor, Embassy of Sweden		
	Opening remarks	**H.E. Tin Ponlok** Secretary General, NCSD		
14:20-14:30	Highlights on the review of lessons learnt and experience form CCCA	**Mr. Sum Thy** Director of DCC and CCCA Project Manager, GSSD		
	Group guidance	**Mr. Va Vuthy** Adaptation Officer, CCCA		
***Session 2A:* Have CCCA projects/initiatives led to changes in partner organizations?**			***Session 2B: Grant Guidelines***	
14:30-15:30	**Group discussion** • Discuss examples where CCCA grant projects and research initiatives may have led to changes in your organizations (e.g. increased institutional capacity, development of CC-related pipeline, etc.)	Facilitation/Note takers: Resource people from DCC, CCCA	***Group discussion*** • *Grant managers, in a discussion facilitated by CCCA Grant support team, provide feedback and recommendations on Grant Guidelines*	H.E. Tin Ponlok Secretary General, NCSD
15:30-15:50	**Group photo and coffee break**			
15:50-16:30	**Plenary discussion** • Presentation of results from group discussions highlighting types of changes observed, providing specific examples • Discussion	Group rapporteurs	• *Feedback and recommendations on Grant Guidelines (cont.)*	
Session 3A: Harnessing CCCA project experiences for policy reforms			***Session 3B: Grant Closure Clinic***	
16:30-17:30	**Group discussion** • Reflecting on the previous discussion on CCCA grant projects and	Facilitation/Note takers: Resource people from DCC, CCCA	**Q&A** *CCCA Grant support team will be available*	Mr. Sum Thy Director of DCC, GSSD

Time	Session	Speaker		Moderator
	research initiatives experiences, discuss entry points identified for policy reform (e.g. to secure scale-up/adoption of new technologies)		*to answer questions from Grantees*	

Day 2 – 29 May 2019			
Session 3A (cont.): Harnessing CCCA project experiences for policy reforms			
08:30-09:30	**Plenary discussion** • Presentation of results from group discussions on policy recommendations • Discussion	Group rapporteurs	Mr. Sum Thy Director of DCC, GSSD
09:30-10:00	**Coffee break**		
Session 4: Current climate change research initiatives and opportunities for broader partnerships			
10:00-10:45	Presentation of research initiatives from national research institutions	- **Mr. Kim Soben**, Vice Dean of Graduated School, and Director of Center for Agricultural and Environmental Studies, RUA - **Dr. Seak Sophat**, Vice dean of faculty of Developmnent Studies, Program Coordinator, Master of Science in Climate Change, RUPP - **Ms. Sang Davin,** Researcher and Lecturer ITC	Dr. Heng Chanthoeun, Deputy Director, DCC/GSSD
10:45-11:30	**Panel** - Reflections on current research initiatives, existing capacity and opportunities for broader partnerships to strengthen climate change action	*Panel will discuss perspectives from:* - **Ms. Te Tevy,** Chief of office of Planning and Reporting, MOWA - **Mr. Kim Soben,** Vice Dean of Graduated School, and Director of Center for Agricultural and Environmental Studies, RUA - **Dr. Seak Sophat,** Vice dean of faculty of Developmnent Studies, Program Coordinator, Master of Science in Climate Change, RUPP - **Mr. Yon Ma**, Program Manager, CRDT	
Session 5: Closing			

Time	Session	Speaker		Moderator
11:30-12:00	***Closing*** **Remarks** • Highlights of the next phase of CCCA • Closing			Mr. Sum Thy Director of DCC, GSSD
12:00 -	**Lunch & travel back**			

ANNEX 2: OPENING REMARKS BY H.E. TIN PONLOK

សុន្ទរកថាបើក

របស់ឯកឧត្តម ទិន ពន្លក អគ្គលេខាធិការក្រុមប្រឹក្សាជាតិអភិវឌ្ឍន៍ដោយចីរភាព

ក្នុងសិក្ខាសាលាចែករំលែកចំណេះដឹងស្តីពី

ការរៀនសូត្រពីដៃគូពាក់ព័ន្ធ នៃកម្មវិធីសម្ព័ន្ធភាពប្រែប្រួលអាកាសធាតុកម្ពុជា (CCCA)

ដំណាក់កាលទី២

សណ្ឋាគារអង្គរជ្រាវ៉ឺ ខេត្តសៀមរាប ថ្ងៃទី២៨-២៩ ខែឧសភា ឆ្នាំ២០១៩

សូមគោរព

- **លោកស្រី ជូហាន់ណា ផាមប៊ើក (Johanna Palmberg)** អគ្គកុងស៊ុលទទួលបន្ទុកបរិស្ថាននិងយែនឌ័រ នៃស្ថានទូតស៊ុយអែត ប្រចាំកម្ពុជា
- **លោក Clemens** តំណាងសហគមន៍អឺរុបប្រចាំនៅកម្ពុជា
- **លោកស្រី Rany** អនុប្រធានកម្មវិធីអភិវឌ្ឍន៍សហប្រជាតិប្រចាំកម្ពុជា
- ឯកឧត្តម លោកជំទាវ លោក លោកស្រី នាងកញ្ញា ភ្ញៀវកិត្តិយសជាតិ-អន្តរជាតិ ទាំងអស់ជាទីមេត្រី !

ជួសមុខឱ្យ**ឯកឧត្តម សាយ សំអាល់ រដ្ឋមន្ត្រីក្រសួងបរិស្ថាន និងជាប្រធានក្រុមប្រឹក្សាជាតិអភិវឌ្ឍន៍ដោយចីរភាព** និងក្នុងនាមខ្លួនខ្ញុំផ្ទាល់ ខ្ញុំមានសេចក្តីសោមនស្សរីករាយ ដែលបានចូលរួមជាគណៈអធិបតីក្នុងពិធីបើកសិក្ខាសាលាចែករំលែកចំណេះដឹងស្តីពី **"ការរៀនសូត្រពីដៃគូពាក់ព័ន្ធនៃកម្មវិធីសម្ព័ន្ធភាពប្រែប្រួលអាកាសធាតុកម្ពុជា(CCCA) ដំណាក់កាលទី២"** ។ ខ្ញុំសូមស្វាគមន៍យ៉ាងកក់ក្តៅចំពោះវត្តមានឯកឧត្តម ភ្ញៀវកិត្តិយសជាតិ-អន្តរជាតិ ទាំងអស់ដែលឆ្លៀតពេលដ៏មមាញឹកចូលរួមសិក្ខាសាលាដ៏មានសារៈសំខាន់រយៈពេល២ថ្ងៃ នៅលើទឹកដីខេត្តសៀមរាប។

ឆ្លៀតក្នុងឱកាសនេះ ខ្ញុំសូមសម្តែងនូវការកោតសរសើរ និងវាយតម្លៃខ្ពស់ចំពោះកិច្ចខិតខំប្រឹងប្រែងរបស់ថ្នាក់ដឹកនាំ មន្ត្រីរាជការ និងមន្ត្រីគម្រោងរបស់នាយកដ្ឋានប្រែប្រួលអាកាសធាតុនៃអគ្គលេខាធិការដ្ឋានក្រុមប្រឹក្សាជាតិអភិវឌ្ឍន៍ដោយចីរភាព ដែលបានរៀបចំសិក្ខាសាលានេះឡើងដើម្បីចែករំលែក បទពិសោធន៍ ចំណេះដឹង និងផ្តល់ជាអនុសាសន៍ប្រកបដោយភាពស្ថាបនាក្នុងការតម្លើងទិសការអនុវត្តកម្មវិធីសម្ព័ន្ធភាពប្រែប្រួលអាកាសធាតុកម្ពុជា។ ខ្ញុំសូមថ្លែងអំណរគុណដល់ដៃគូអភិវឌ្ឍន៍ នៃ កម្មវិធីសម្ព័ន្ធភាពប្រែប្រួលអាកាសធាតុកម្ពុជា(CCCA) ដំណាក់កាលទី២ រួមមាន ភ្នាក់ងារអភិវឌ្ឍន៍អន្តរជាតិនៃប្រទេសស៊ុយអែត(Sida) សហភាពអឺរ៉ុប(EU) និងកម្មវិធីអភិវឌ្ឍន៍សហប្រជាជាតិ(UNDP) ដែលគាំទ្រកម្មវិធីសម្ព័ន្ធភាពប្រែប្រួលអាកាសធាតុកម្ពុជា(CCCA) ដំណាក់កាលទី២ ។

អង្គសិក្ខាសាលាជាទីមេត្រី!

បញ្ហាប្រែប្រួលអាកាសធាតុមិនមែនជារឿងប្រឌិតនោះទេ។ ក្រុមការងារអន្តរដ្ឋាភិបាលស្តីពីការប្រែប្រួលអាកាសធាតុ(IPCC) បានបញ្ជាក់ម្តងទៀតថា សកម្មភាពរបស់មនុស្សបានបង្កឱ្យសីតុណ្ហភាពមធ្យមពិភពលោកកើន១អង្សាសេ ធៀបនឹងសីតុណ្ហភាពសម័យមុនបដិវត្តន៍ឧស្សាហកម្ម ហើយនឹងបន្តកើនដល់១,៥អង្សាសេ រវាងឆ្នាំ២០៣០និង២០៥០។ ការកំហិតកំណើនសីតុណ្ហភាពពិភពលោកត្រឹម១,៥អង្សាសេ ត្រូវការឱ្យមានការផ្លាស់ប្តូរយ៉ាងរហ័ស ស៊ីជម្រៅ និងមិនធ្លាប់មានពីមុនមកនូវគ្រប់ទិដ្ឋភាពទាំងអស់នៃសង្គម ។ ជាផលវិបាកការប្រែប្រួលអាកាសធាតុប៉ះពាល់ដល់ការអភិវឌ្ឍដោយចីរភាព កិច្ចប្រឹងប្រែងកាត់បន្ថយភាពក្រីក្រ និងការអភិវឌ្ឍសេដ្ឋកិច្ចជាតិ។ ខ្ញុំសូមបញ្ជាក់ថា នៅម្សិលមិញ និងថ្ងៃនេះ អគ្គលេខាធិការដ្ឋាន

ក្រុមប្រឹក្សាអភិវឌ្ឍន៍ដោយចីរភាព ក្នុងនាមរាជរដ្ឋាភិបាលបានសហការជាមួយក្រុមការងារអន្តររដ្ឋាភិបាលស្តីពីការប្រែប្រួលអាកាសធាតុ(IPCC) ផ្សព្វផ្សាយស្តីពីសកម្មភាព និងរបកគំហើញរបស់ IPCC ជាពិសេសគឺ របាយការណ៍ពិសេសស្តីពីកំដៅសកល ១,៥អង្សាសេ ដែលពិភពលោក ជាកំពុងចាប់អារម្មណ៍យ៉ាងខ្លាំង។ នេះជាព្រឹត្តិការណ៍ លើកទី១ ហើយសម្រាប់អ្នករៀបចំគោលនយោបាយ អ្នកសិក្សាស្រាវជ្រាវ យុវជន និងសិស្សានុសិស្ស នៅកម្ពុជាបានស្តាប់ដោយផ្ទាល់នូវបទបង្ហាញពីអ្នកជំនាញការ របស់ស្ថាប័នអន្តរជាតិមួយនេះ។

ចំពោះព្រះរាជាណាចក្រកម្ពុជា របាយការណ៍ជាច្រើនបានបង្ហាញពីផលប៉ះពាល់អវិជ្ជមានដែលបណ្តាលមកពីការប្រែប្រួលអាកាសធាតុ។ ជាឧទាហរណ៍ តម្លៃជាត់បង់សរុបដោយគ្រោះទឹកជំនន់នៅឆ្នាំ២០១១មានចំនួន៦៣៥លានដុល្លា និង៣៥៦លានដុល្លាសម្រាប់ឆ្នាំ២០១៣។ បន្ថែមពីនេះ តម្លៃជាត់បង់ក្នុងផលិតភាពការងារដោយសារកម្តៅខ្លាំង ត្រូវបានព្យាករណ៍ក្នុងប្រមាណ៣%នៃផលិតផលក្នុងស្រុកសរុបនៅឆ្នាំ២០១០។ ការសិក្សារបស់ក្រសួងសេដ្ឋកិច្ចនិងហិរញ្ញវត្ថុ និងក្រុមប្រឹក្សាជាតិអភិវឌ្ឍន៍ដោយចីរភាព បានរកឃើញថា ក្រោមចំហាក(សេណារីយ៉ូ)ចម្បងសីតុណ្ហភាពសកលនឹងរក្សាកំណើននៅក្រោម២អង្សាសេនៅឆ្នាំ២១០០ ប្រសិនបើកម្ពុជារក្សាការវិនិយោគកម្រិតបច្ចុប្បន្នលើសកម្មភាពបន្ស៊ាំទៅនឹងការប្រែប្រួលអាកាសធាតុ នោះផលប៉ះពាល់ពីការប្រែប្រួលអាកាសធាតុនឹងកាត់បន្ថយផលិតផលក្នុងស្រុកសរុប (GDP) ២,៥%នៅឆ្នាំ២០៣០ និង៩,៨%នៅឆ្នាំ២០៥០។

ដោយមានកិច្ចខិតខំប្រឹងប្រែងពីរាជរដ្ឋាភិបាលនិងការគាំទ្រពីដៃគូអភិវឌ្ឍន៍ កម្មវិធីCCCA បានដើរតួនាទីយ៉ាងសំខាន់ ក្នុងការលើកកំពស់សមត្ថភាពបច្ចេកទេស ស្ថាប័ន ការសម្របសម្រួលកិច្ចសហប្រតិបត្តិការអន្តរវិស័យក្នុងការរៀបចំ បទដ្ឋានគតិយុត្ត គោលនយោបាយ ផែនការ និងការគៀគរធនធាន ដើម្បីឆ្លើយតបទៅនឹងការប្រែប្រួលអាកាសធាតុនៅកម្ពុជា។ កម្មវិធីCCCA ដំណាក់កាលទី២ នឹងត្រូវបិទបញ្ចប់ការងារ របស់ខ្លួនក្នុងនៅបញ្ចប់ខែមិថុនា ឆ្នាំ ២០១៩ នេះ ខ្ញុំសូមធ្វើការកត់សម្គាល់អំពីសមិទ្ធផលសំខាន់ៗ ដែលកម្មវិធីCCCAសម្រេចបានមានដូចខាងក្រោម៖

១) **ការរៀបចំគោលនយោបាយថ្នាក់ជាតិ** ដូចជា ការផ្តល់ធាតុចូលសម្រាប់ដាក់បញ្ចូលការប្រែប្រួលអាកាសធាតុទៅក្នុងយុទ្ធសាស្ត្រចតុកោណដំណាក់កាលទី៤, ផែនការអភិវឌ្ឍន៍យុទ្ធសាស្ត្រជាតិ២០១៩ - ២០២៣, គោលដៅអភិវឌ្ឍន៍ដោយចីរភាពកម្ពុជា, គោលការណ៍ណែនាំស្តីពីការបញ្ចូលការប្រែប្រួលអាកាសធាតុទៅក្នុងផែនការថវិកា, និងសេចក្តីព្រាងក្រមបរិស្ថាននិងធនធានធម្មជាតិផ្នែកប្រែប្រួលអាកាសធាតុ ការបង្កើតក្របខណ្ឌហិរញ្ញប្បទានអាកាសធាតុ និងក្របខណ្ឌពិន្ទុតាមដាន និងវាយតម្លៃការឆ្លើយតបនឹងការប្រែប្រួលអាកាសធាតុ។

២) កិច្ចចរចានៅលើឆាកអន្តរជាតិ ដូចជា គាំទ្រដំណើរការធ្វើសច្ចាប័នកិច្ចព្រមព្រៀងទីក្រុងប៉ារីសស្តីពីការប្រែប្រួលអាកាសធាតុដើម្បីទទួលការអនុម័តពីរដ្ឋសភានិងព្រឹទ្ធសភា និងដាក់បញ្ជូនទៅកាន់អង្គការសហប្រជាជាតិ, ការរៀបចំផែនការចូលរួមចំណែករបស់កម្ពុជាក្នុងការអនុវត្តអនុសញ្ញាក្របខណ្ឌសហប្រជាជាតិស្តីពីការប្រែប្រួលអាកាសធាតុ (NDC), និងគាំទ្រដំណើរការចរចានានានៅលើឆាកអន្តរជាតិ ដើម្បីទាមទារអត្ថប្រយោជន៍សម្រាប់ប្រទេសងាយរងគ្រោះ ដូចជា កម្ពុជា។

៣) ការឆ្លើយតបនឹងការប្រែប្រួលអាកាសធាតុនៅថ្នាក់វិស័យ ដូចជា ការគាំទ្រក្រសួងស្ថាប័នរដ្ឋចំនួន១៤ ក្នុងការរៀបចំ អនុម័តនិងអនុវត្តផែនការសកម្មភាពឆ្លើយតបនឹងការប្រែប្រួលអាកាសធាតុក្នុងវិស័យរបស់ខ្លួន។ គម្រោងទាំងនោះក្របដណ្តប់លើសកម្មភាពជាច្រើនពាក់ព័ន្ធបន្សាំ និងកាត់បន្ថយឧស្ម័នផ្ទះកញ្ចក់, ចាប់ពីទឹក អនាម័យ រហូតដល់អប់រំ, និងចាប់ពីហេដ្ឋារចនាសម្ព័ន្ធរហូតដល់សេវាសុខាភិបាល និងកសិកម្ម។

៤) ការឆ្លើយតបនឹងការប្រែប្រួលអាកាសធាតុថ្នាក់ក្រោមជាតិ ដូចជា បានផ្តល់ធាតុចូលក្នុងការរៀបចំគោលការណ៍ណែនាំបច្ចេកទេស

ស្តីពីការរៀបចំនិងការកសាងផែនការអភិវឌ្ឍនិងកម្មវិធីនិយោគសម្រាប់ថ្នាក់ក្រោមជាតិ របស់ក្រសួងផែនការ និងគ.ជ.អ.ប., ការគាំទ្រមន្ទីរបរិស្ថានខេត្តនិងឃុំសង្កាត់ក្នុងការកំណត់គម្រោងអាទិភាពក្នុងសហគមន៍។
សរុបមក យើងមានគាំទ្រសកម្មភាពបន្ទាំពុំនិងកាត់បន្ថយឧស្ម័នផ្ទះកញ្ចក់សរុបប្រមាណ ៦៥សកម្មភាព ដោយមានអ្នកទទួលផលផ្ទាល់សរុបប្រមាណ ២៨ ៣៧៥ភ្លួសារ ហើយសមាជិកសហគមន៍សរុបប្រមាណ ៥៦ ៦៦២នាក់ បានទទួលការបណ្តុះបណ្តាលក្នុងនោះមាន៣៣%គឺជាស្ត្រី។

៥) ការសិក្សាស្រាវជ្រាវ មានដូចជា
ការសិក្សាលើក្របខ័ណ្ឌច្បាប់ដើម្បីជាជំនួយដល់ការអនុវត្តនិងការរៀបចំផ្នែកស្ថាប័ន,
ការសិក្សាអំពីការចំណាយសាធារណៈលើការងារអាកាសធាតុ, ការសិក្សាអំពីផលប៉ះពាល់នៃការប្រែប្រួលអាកាសធាតុទៅលើកំណើនសេដ្ឋកិច្ច,
និងការសិក្សាលើកទី២អំពីចំណេះដឹង ឥរិយាបទ និងការអនុវត្តរបស់សាធារណជន។
លទ្ធផលនៃការស្រាវជ្រាវទាំងនេះ គឺជាមូលដ្ឋានដ៏ចម្បងក្នុងការរៀបចំគោលនយោបាយផែនការយុទ្ធសាស្ត្រ
និងផែនការសកម្មភាពក្នុងការចូលរួមដោះស្រាយការប្រែប្រួលអាកាសធាតុ។

៦) កិច្ចសហការជាមួយគ្រឹះស្ថានឧត្តមសិក្សាចំនួន៦
ដើម្បីពង្រឹងការរៀបចំគោលនយោបាយដោយផ្អែកលើភស្តុតាងស្រាវជ្រាវ ដូចជា
ការផលិតឯកសារសង្ខេបគោលនយោបាយ
ការពង្រឹងការអប់រំនិងសមត្ថភាពអ្នកស្រាវជ្រាវ និងឱកាសស្រាវជ្រាវសម្រាប់និស្សិត។

អង្គពិធីទាំងមូលជាទីមេត្រី!

សិក្ខាសាលាចែករំលែកចំណេះដឹងនាពេលនេះ គឺមានគោលបំណងដើម្បីស្វែងយល់អំពីភាពប្រែប្រួលសំខាន់ៗដែលកើតមាននៅក្នុងអង្គភាពរបស់លោក-លោកស្រីក្នុងរយៈពេល៥ឆ្នាំកន្លងមកនេះ,
ដើម្បីប្រមូលមតិយោបល់អំពីយន្តការផ្តល់ជំនួយឥតសំណង
កំដូចជាទទួលបានទស្សនៈយោបល់ល្អៗអំពីដំហានបន្ទាប់ដែលអង្គភាពរបស់លោក-លោកស្រីមានបំណងអនុវត្ត ដើម្បីពង្រីកវិសាលភាពកិច្ចការឆ្លើយតបនឹងការប្រែប្រួលអាកាសធាតុ។
ហេតុនេះហើយ ខ្ញុំមានក្តីរំពឹងយ៉ាងមុតមាំថាសិក្ខាសាលានេះក្លាយជាធាតុចូលចាំបាច់សម្រាប់ជួយឱ្យការរៀបចំកម្មវិធីCCCAដំណាក់កាលបន្ទាប់កាន់តែប្រសើរឡើង។

កម្មវិធីសម្ព័ន្ធភាពប្រែប្រួលអាកាសធាតុកម្ពុជាCCCA ដំណាក់កាលទី២ នឹងត្រូវបិទបញ្ចប់នៅខែមិថុនា ខាងមុខនេះ ជាមួយគ្នានេះដែរគម្រោងទាំង២២គម្រោងនិងសកម្មភាពជាមួយសាកលវិទ្យាល័យជាដៃគូ ដែលទទួលថវិកាគាំទ្រដោយCCCA ក៏នឹងត្រូវបញ្ចប់ផងដែរ តែខ្ញុំសូមកត់សម្គាល់ និងវាយតម្លៃខ្ពស់ចំពោះលទ្ធផលដែលបានអនុវត្តដោយដៃគូទាំងអស់ ទាំងការបង្កើនសមត្ថភាពមន្ត្រីក៏ដូចជាស្ថាប័ន និងការផ្តល់ផល់ប្រយោជន៍ផ្ទាល់ដល់ប្រជាជននៅមូលដ្ឋាន ជាពិសេសទៅទៀតនោះគឺគម្រោងនេះបានចងក្រងនូវមេរៀនបទពិសោធន៍ជាច្រើនទាំងការរៀបចំគោលនយោបាយ ការសិក្សាស្រាវជ្រាវ និងការអនុវត្តសាកល្បង។ ហើយមន្ត្រីរបស់យើងទាំងអស់នឹងរង់ចាំជួយណែនាំលោក-លោកស្រីអំពីនីតិវិធីនៃការបិទគម្រោងជំនួយឥតសំណង។

ឯកឧត្តម លោកជំទាវ លោកលោកស្រី
ខ្ញុំសូមបញ្ជាក់ថា កម្មវិធីសម្ព័ន្ធភាពប្រែប្រួលអាកាសធាតុកម្ពុជាCCCA ដំណាក់កាលទី៣ នឹងត្រូវ ចាប់ពីខែកក្កដា ឆ្នាំ ២០១៩នេះផងដែរ ដោយធានាបាននិរន្តរភាពនៃការអនុវត្តសម្ភាពបន្ត។ ខ្ញុំសូមអគុណជាថ្មីម្តងទៀតដល់ទីភ្នាក់ងារអភិវឌ្ឍន៍អន្តរជាតិនៃប្រទេសស៊ុយអែក(Sida) សហភាពអឺរ៉ុប(EU) និងកម្មវិធីអភិវឌ្ឍន៍សហប្រជាជាតិ(UNDP) ដែលជឿជាក់លើការដឹកនាំ សម្របសម្រួលរបស់នាយកដ្ឋានប្រែប្រួលអាកាសធាតុ
នៃអគ្គលេខាធិការដ្ឋានក្រុមប្រឹក្សាជាតិអភិវឌ្ឍន៍ដោយចីរភាព ក្នុងការអនុវត្តកម្មវិធីCCCA នេះ។

ជាទីបញ្ចប់ ខ្ញុំសូមជូនពរឱ្យអង្គសិក្ខាសាលានេះប្រព្រឹត្តទៅដោយរលូននិងជោគជ័យ និងសូមប្រសិទ្ធីពរជូនឯកឧត្តម លោកជំទាវ លោក លោកស្រី ទាំងអស់ប្រកបដោយសុខភាពល្អបរិបូណ៌ ទទួលបានជោគជ័យគ្រប់ភារកិច្ច ។

ខ្ញុំសូមប្រកាសបើកអង្គសិក្ខាសាលាចាប់ពីពេលនេះតទៅ។

សូមអរគុណ!!

ANNEX 3: OVERVIEW OF THE LEARNING EVENTS FROM CCCA 2

សិក្ខាសាលាចែករំលែកចំណេះដឹង
"ការរៀនសូត្រពីដៃគូពាក់ព័ន្ធនៃកម្មវិធីCCCA ដំណាក់កាលទី២"

សណ្ឋាគារអង្គរប៉ាវ៉ាឌី ខេត្តសៀមរាប ថ្ងៃទី២៨-២៩ ខែឧសភា ឆ្នាំ២០១៩

សូមគោរព

- **លោកស្រី ចូហាន់ណា ផាមប៊ើក (Johanna Palmberg)** អគ្គកុងស៊ុលទទួលបន្ទុកបរិស្ថាននិងយែនឌ័រ នៃស្ថានទូតស៊ុយអែត ប្រចាំនៅកម្ពុជា
- **លោក Clemens BECKERS** តំណាងសហគមន៍អឺរ៉ុបប្រចាំនៅកម្ពុជា
- **លោកស្រី ប៉ែន រ៉ានី** អនុប្រធានកម្មវិធីអភិវឌ្ឍន៍សហប្រជាតិប្រចាំកម្ពុជា
- ឯកឧត្តម លោកជំទាវ លោក លោកស្រី នាងកញ្ញា ភ្ញៀវកិត្តិយសជាតិ-អន្តរជាតិ ទាំងអស់ជាទីមេត្រី !

ជាកិច្ចបន្ត ខ្ញុំបាទសូមធ្វើបទបង្ហាញកន្លះ អំពី ទិដ្ឋភាពទូទៅនៃអង្គសិក្ខាសាលា
និងការពិនិត្យឡើងវិញនូវមេរៀនបទពិសោធន៍កន្លងមករបស់កម្មវិធីCCCAដំណាក់កាលទី២

១. គោលបំណងសំខាន់នៃសិក្ខាសាលានៅថ្ងៃនេះនិងថ្ងៃស្អែក
គឺដើម្បីមើលពីរបៀបដែលកម្រោងជំនួយឥតសំណងបានផ្លាស់ប្តូរវិធីធ្វើការងាររបស់អង្គភាពលោក-លោកស្រី ក៏ដូចជាដើម្បីស្វែងយល់អំពីរបៀបដែលយើងអាចផ្សារភ្ជាប់គ្នារវាង
អ្នកស្រាវជ្រាវនិងអ្នកអនុវត្តឱ្យកាន់តែខិតជិតគ្នាសម្រាប់ដំណាក់កាលបន្ទាប់នៃកម្មវិធីCCCA
ដោយផ្អែកលើការងារដែលយើងធ្លាប់អនុវត្តកន្លងមក។

២. ពាក់ព័ន្ធការផ្តល់ជំនួយឥតសំណងទៅកាន់ក្រសួង ស្ថាប័នរដ្ឋ និងអង្គការមិនមែនរដ្ឋាភិបាល:

- ជាការពិត យើងមិនអាចរៀបរាប់លទ្ធផលដែលកើតចេញពីកម្រោងជំនួយឥតសំណងទាំងអស់របស់CCCAឱ្យបានអស់នៅទីនេះឡើយ។
  អ្នកទាំងអស់គ្នាភាគច្រើនប្រហែលធ្លាប់បានចូលរួមក្នុងសិក្ខាសាលា
  ចែករំលែកចំណេះដឹងរបស់យើងជារៀងរាល់ឆ្នាំ ហើយអ្នកទាំងអស់គ្នា
  ប្រហែលជាធ្លាប់បានដឹងអំពីការងារដែលបានអនុវត្តដោយគម្រោងជំនួយឥតសំណងផ្សេងទៀតកន្លងមក។
- យើងបានគាំទ្រសកម្មភាពបន្សាំនិងកាត់បន្ថយផ្សេងៗគ្នាសរុបចំនួន៦៤សកម្មភាព
  ដោយមានអ្នកទទួលផលផ្ទាល់សរុបចំនួន ២៨.៣៧៥ក្រួសារ។ មន្ត្រីរដ្ឋាភិបាលចំនួន
  ២.២៥៣នាក់ បានទទួលការបណ្តុះបណ្តាលអំពីសកម្មភាពបន្សាំនិងកាត់បន្ថយ
  ក្នុងនោះ២០%គឺជាស្ត្រី ចំណែកសមាជិកសហគមន៍ចំនួន ៥៦.៦៦២នាក់
  ក៏ទទួលបានការបណ្តុះបណ្តាលផងដែរ ក្នុងនោះមានស្ត្រីចំនួន៣៣%។
- ថវិកាជាង២,៣លានដុល្លា ត្រូវបានប្រើប្រាស់រហូតមកដល់សព្វថ្ងៃ ដោយគិតចាប់ពីហិរញ្ញវត្ថុឯកជនរហូតដល់សាធារណៈ:
  ហើយយើងរំពឹងថាតួលេខនេះនឹងមានការកើនឡើងនៅពេលយើងបញ្ចប់ការចងក្រងទិន្នន័យគម្រោងដែលបានបញ្ចប់នាពេលថ្មីៗនេះ។
- ឯកសារចំណេះដឹងចំនួន៥៨ ត្រូវបានផលិតឡើង
  ហើយឯកសារគោលនយោបាយឬផែនការរបស់រដ្ឋាភិបាលចំនួន១៥ ក៏ត្រូវបានផលិត
  ឬកែសម្រួលដោយមានការគាំទ្រពីជំនួយឥតសំណងរបស់កម្មវិធីCCCA ។
- យ៉ាងហោចណាស់ ឧស្ម័នកាបូនិក ១០,០០០តោនត្រូវបានកាត់បន្ថយ
  ហើយយើងរំពឹងថានឹងទទួលបានលទ្ធផលបន្ថែមទៀតពីគម្រោងដែលទើបបញ្ចប់នាពេលថ្មីៗនេះ។

៣. ពាក់ព័ន្ធការកសាងភាពជាដៃគូជាមួយសាកលវិទ្យាល័យ៖

- ការស្រាវជ្រាវផ្អែកលើគោលនយោបាយត្រូវបានបង្កើត ដោយរួមបញ្ចូលទាំងការរៀបចំសំណើរគម្រោងសុំថវិការួមគ្នាដើម្បីស្នើសុំមូលនិធិ ហើយការងារបណ្តាញក៏ត្រូវបានបង្កើតឡើងដោយមានការចូលរួមយ៉ាងសកម្មពីតំណាងសាកលវិទ្យាល័យ។
- ឯកសារសង្ខេបគោលនយោបាយជាជ្រើនត្រូវបានផលិតសម្រាប់អ្នករៀបចំគោលនយោបាយ ដោយបង្ហាញពីគោលនយោបាយសំខាន់ៗដែលធ្វើឡើងដោយអ្នកស្រាវជ្រាវនៅតាមសាកលវិទ្យាល័យ។
- ទីតាំងបង្ហាញ ដូចជាឡជីវឧស្ម័នត្រូវបានសាងសង់នៅក្នុងសាកលវិទ្យាល័យ បម្រើឱ្យការងារស្រាវជ្រាវពាក់ព័ន្ធប្រធានបទប្រែប្រួលអាកាសធាតុ ហើយការសិក្សាស្រាវជ្រាវនានាក៏ត្រូវបានរៀបចំឡើង ដូចជាសម្ពាធកម្តៅទៅលើកម្លាំងពលកម្ម និងការវាយតម្លៃភាពងាយរងគ្រោះ និងហានិភ័យ។
- ការបង្កើតឱកាសរវាងអ្នកស្រាវជ្រាវនិងអ្នកអនុវត្ត ក្នុងបរិបទប្រែប្រួលអាកាសធាតុ តាមរយៈការចូលរួមក្នុងព្រឹត្តិការណ៍ចែករំលែកចំណេះដឹង ការសន្ទនារវាងដៃគូអភិវឌ្ឍន៍ និងកិច្ចពិគ្រោះយោបល់ផ្សេងៗ។
- លើកកម្ពស់ការអប់រំនិងឱកាសពង្រឹងសមត្ថភាពសម្រាប់សាស្ត្រាចារ្យនិងសិស្សនិស្សិត ដូចជាការចូលរួមក្នុងវគ្គបណ្តុះបណ្តាលភាពងាយរងគ្រោះនិងបន្សាំ វិធីសាស្ត្រ សរសេរសំណើគម្រោង សិក្ខាសាលាបណ្តុះបណ្តាល ក៏ដូចជាគាំទ្រ ការសរសេរនិក្ខេបទរបស់និស្សិត។

Highlight the ongoing review of lesson learnt:

Section on CCCA grants:

- It is not possible to mention here the results from all our CCCA grants. Most of you have participated in our learning event every year and you are aware of the work done by other grant projects;
- In total, 64 different adaptation and mitigation activities have been supported, with 28,375 households as direct beneficiaries. 2,253 government staff have been training on mitigation and adaptation activities, 20% of them female. 56,662 community members have been trained, 33% of them female.
- Over 2.3 million dollars have been leveraged to date from private and public finance, and we expect this figure to increase when we finish compiling data from recently completed projects.
- 58 knowledge products have been issued and 15 Government policies or plans have been issued or revised with support from CCCA grants.
- At least 10,000 tons of CO2 emissions have been avoided and we expect additional results from recently completed projects.
- The objective of the workshop today and tomorrow is to see how these grants have changed the way that you do your work, and also to explore how we can bring researchers and practitioners closer in the next phase of CCCA, building on the work that we have done so far.

Section: Partnership with universities

- Policy-oriented research is being developed, including the development of joint research grant proposals to be submitted for funding and the networks actively established among universities to develop the proposals;
- Policy briefs are available for policy makers highlighting key policy implication of research finding made by university researchers;
- Demonstration site such as biodigester is installed for climate change related research topics and action study/survey have been conducted such as heat stress research and VRA assessment in certain communes;
- Exchange opportunity between researchers and practitioners in areas of climate change through participation in the knowledge sharing event, development partner dialogues and other consultative events;
- Enhancement of education and capacity strengthening opportunities for lecturers and students, including participation in V&A training, grant proposal writing, CC lectures, as well as thesis writing financial support.

ANNEX 4: GROUP GUIDANCE

Guidance for Group Discussions

KNOWLEDGE-SHARING EVENT
LEARNING FROM CCCA-II PARTNERS
SIEM REAP, 28-29 MAY 2019

Group Arrangements

- The participants are invited to **5 groups** as in the table below. Group 1 to 4 are in the main conference room with a max of 20 people per group, while Group 5, finance and project management, is in a nearby room.
- People from the same institution should stay in the same group.

Group #	Areas of discussion	Participants
Group 1	Climate change research	University and research grants
Group 2	Climate change awareness raising/ education/ campaigns	MOE, MOEYS, MOInfo, MOT, and relevant CCWTG members
Group 3	Climate resilience	MAFF, MOWRAM, MRD, MOH, MLMUPC, and relevant CCWTG members
Group 4	Reducing greenhouse gas	MIH, MPWT, MME, and relevant CCWTG members
Group 5	*Finance and Project management (Session 2B) → Separate Room (with Mr. Lim Veng)*	*Finance officers and project managers (project managers can choose to participate in this group or in their assigned thematic group 1-4)*

SESSION 2A: Have CCCA projects/initiatives led to changes in your organizations?

Time for discussion: 1 hour

Each group – before you start discussions: **[5 min]**

1. **Designate 1 facilitator (identified by CCCA), 1 note-taker, and 1 rapporteur**.
2. **Make sure you have the note-taking template** (provided in ppt format). CCCA resource persons will be available to provide support as needed.
3. **Use guiding question** for discussion and make sure to take notes in the template provided.

Objective to **identify changes in your organizations** (e.g. increased institutional capacity, development of CC-related pipeline, etc.)

Guiding Questions

(each grantee gets the floor to provide an initial answer, and CCTWG members can comment)

- **Reflecting on experience and knowledge gained from implementation of CCCA funded projects, what are changes in your organization?** (each grantee to provide an initial answer, and CCTWG members can comment)

  Topics may include:

  Institutional changes and staff capacity, coordination, new or revised policy/regulations/standards, resource mobilization development of new CC projects, climate change integration in plans and budgets, M&E of climate change, gender integration, research/data, technology and technological capacity, development of new CC projects, etc.

- **Discuss the level of changes for each topic and provide example/evidences of the changes**

Fill in the table below

Changes in	Level of changes	Examples/evidences of changes
Institutional changes and staff capacity	0 - No change 1 - Some changes 2 - Lot of changes	
Gender		
Coordination		
New or revised policy/regulations/standards		
Resource mobilization development of new CC projects		
climate change integration plans and budgets		
M&E of climate change		
Research/data		
Technology and technical capacity		
Development of new CC projects		

Session 3A: Reflecting on these changes, what are approaches to improve and build on the changes to advance the climate change agenda in your organization? And, identify the entry points for policy reform.

Time for discussion: 1 hour

Each group – before you star discussions: **[5 min]**

1. **Designate 1 facilitator (identified by CCCA), 1 note-taker, and 1 rapporteur**.

2. **Make sure you have the note-taking template** (provided in ppt format). CCCA resource persons will be available to provide support as needed.
3. **Use guiding question** for discussion and make sure to take notes in the template provided.

Objective: 1) to **identify next steps/actions** to improve and build on the changes to advance the climate change agenda in your organization
2) to **identify entry points** for policy reform.

Guiding Questions

(each grantee gets the floor to provide an initial answer, and CCTWG members can comment)

- **Q1. Reflecting on the changes that have happened already, what are approaches to improve and build on the changes to advance the climate change agenda in your organization?**

Fill in the table below

Changes in	Next steps / actions
Institutional changes and staff capacity	
Gender	
Coordination	
New or revised policy/regulations/standards	
Resource mobilization development of new CC projects	
climate change integration plans and budgets	
M&E of climate change	
Research/data	
Technology and technical capacity	
Development of new CC projects	

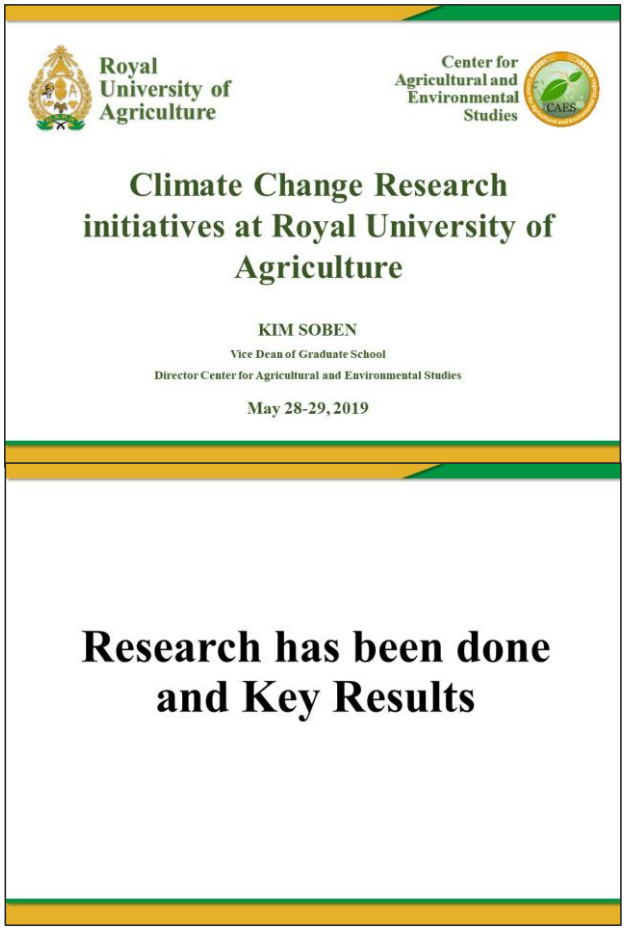
- **Q2: Reflecting on the previous discussions, identify any changes to policies or regulations that would be needed (e.g. to secure scale-up/adoption of new technologies)**

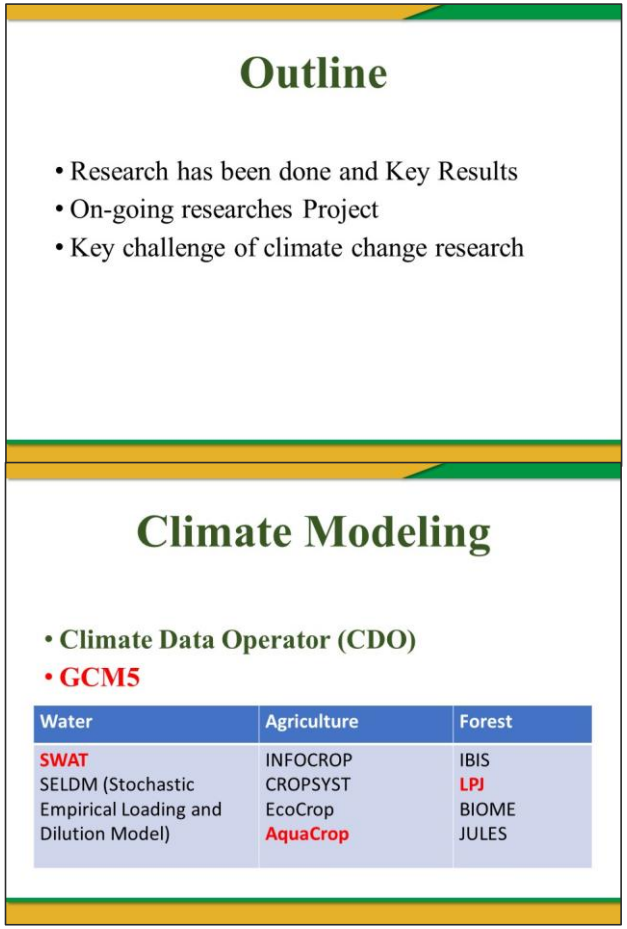
Any changes to policy or regulations that would be needed.

- .
- .

ANNEX 5: PRESENTATION OF RESEARCH INITIATIVES FROM NATIONAL RESEARCH INSTITUTIONS

- **Mr. Kim Soben,** Vice Dean of Graduated School, and Director of Center for Agricultural and Environmental Studies, RUA

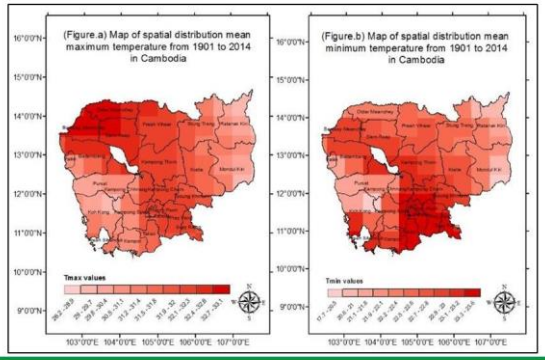




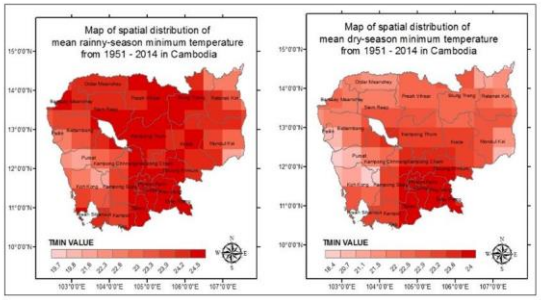
Climate Data (Ex)

Source	Scale	Description
MET Station Data		For point validation of CRU and APHRODITE data
CRU (CRU TS3.23)[1]	0.5 x 0.5 degree	Climate Research Unit (CRU) time-series datasets are monthly climate variation data over the last century (1901-2014) produced by the Climate Research Unit at the University of East Anglia. The datasets are based on an archive of monthly mean temperature derived from more than 4000 wather stations around the world.
APHRODITE (Asian Precipitation – Highly-Resolved Observational Data Integration Towards Evaluation)[2]	0.25 x 0.25 degree	It is the APHRODITE monsoon daily precipitation datasets over Asia, produced by the Earth Observation Data Integration and Fusion Research Initiative (EDITORIA) of the University of Tokyo. Dataset is for the 1951-2007 period.

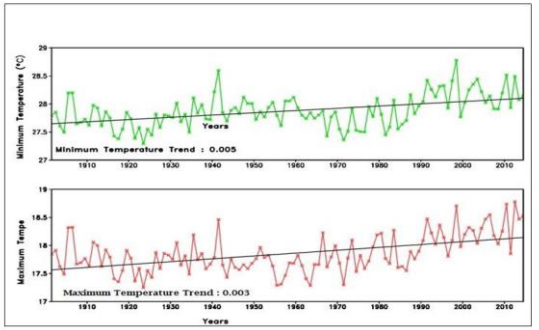
Map of spatial distribution annual mean maximum and minimum temperate from 1901 to 2014 in Cambodia



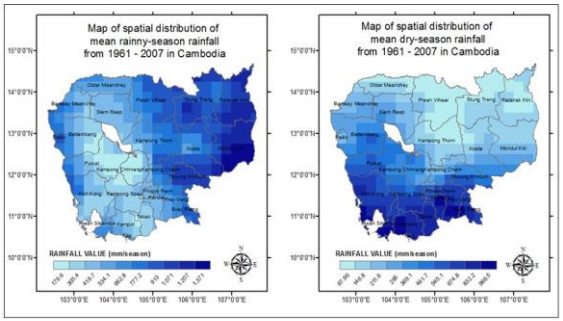
Spatial pattern of season mean minimum temperature (^{0}C) in Cambodia for the period 1951 – 2014



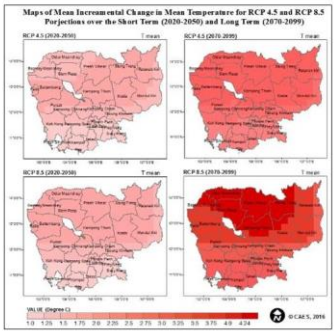
Temperature Trends



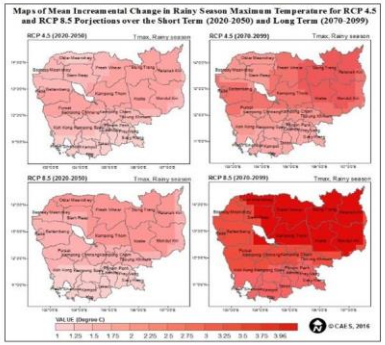
Map of annual rainfall trend



Spatial distributions of projected mean incremental change in mean temperature for RCP 4.5 and RCP 8.5 projections over the short term (2020-2050) and long term (2070-2099).



Spatial distributions of mean incremental change in averaged rainy-season (May-Oct) maximum temperature of RCP 4.5 and RCP 8.5 projections over the short term (2020-2050) and long term (2070-2099).



Development of Emission and Removal Factors in Tonle Sap flooded forest and Upland Forest in Cambodia

FUND BY

UN-REDD PROGRAMME

Objective

- To better understand the structure and floristic composition of Flooded forest in the Great Lake 'Tonle Sap' and upland forest, while testing the National Forest Inventory (NFI) design for tree measurement.
- To develop biomass allometric equations to improve carbon stock estimates and emission/removal factors for the flooded forests and upland forest

AGB Equation for *Barringtonia acutangula*

- **AGB = 0.748*dbh^1.781**
- **AGB = 279.431*D2H^0.852**
- **AGB = 1.703*D2HWD^0.831**
- **(WD) of *Barringtonia acutangula* to be 0.51 g/cm^3**

Diospyros bejaudii

The models without random effect are therefore recommended:

- **Agb = 218.159 *d2h^0.974**
- **Agb = 0.668 *d2hwd^0.926**
- ***Diospyros bejaudii*, WD=0.538 g/cm^3**

Allometric Equation use for AGB and BGB for difference vegetation type in Tonle Sap, Cambodia

Species	AGB / Trees (kg)	Reference
Aboveground biomass		
Barringtonia micrantha	AGB = 1.703 * (r (DBH/100)^2 H)$^{0.831}$	Soben et al. (unpublished)
Other tree/sapling species	ABG = 0.112 * (r DBH^2 H)$^{0.916}$	Chave et al. (2005)
Shrub	ABG = 1.853 * H	Sharma et al. (unpublished)
Liana	ABG = exp (-1.347+2.391*lnD)	Hozumi et al. (1969)
Belowground biomass		
Trees, saplings, shrubs, lianas	BGB = 0.489 * AGB$^{0.890}$	Mokany el al. (2006)
Grassland vegetation	BGB = 11.9 + 1.1082 * AGB	Whigham and Simpson (1978)

Note: AGB = aboveground biomass (kg); BGB = belowground biomass (kg); r = wood density (g/cm^3); DBH = diameter at breast height (cm); H = height (m).

Allometric Equation of *Diterocarpus tubercalatus and Xylia xylocarpa*

- AGB = 363.134*D2H^1.014
- AGB = 0.048*DBH^ 2.299*H^0.541

Allometric Equation of *Diterocarpus tubercalatus (BGB)*

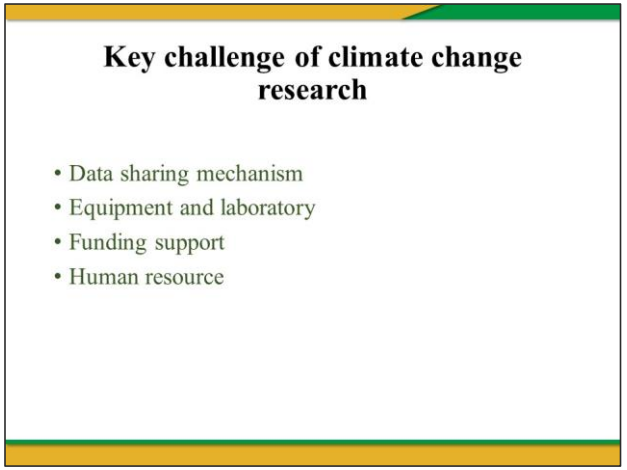
BGB = 170.61 * D2H^0.365

WD=0.501 g/cm3 for *Diterocarpus tubercalatus*

On-going researches Project

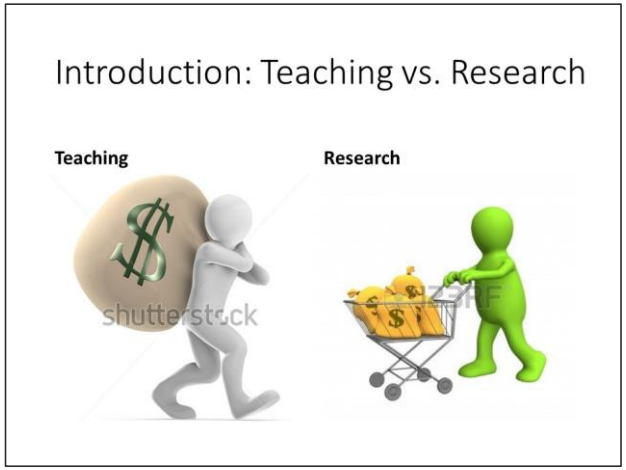
1. Schelling up Climate Resilience Agriculture Activities (2018-2022)
1. Forest Restoration and Water Availability For Smart Agriculture (2016-2019) **LPJ Model**
2. Scaling-up Sustainable Land Management (SLM) practices by smallholder farmers (2016-2020)
3. Nodes of Excellence in (SEA) Universities through Spatial data (NEXUS) (2017-2020)
4. Strengthening Climate Change Research and Innovation Capacity in Cambodia Laos and Vietnam (REACT)
5. Development of Emission and Removal Factors in Tonle Sap flooded forest and Upland Forest in Cambodia
6. SET Installation

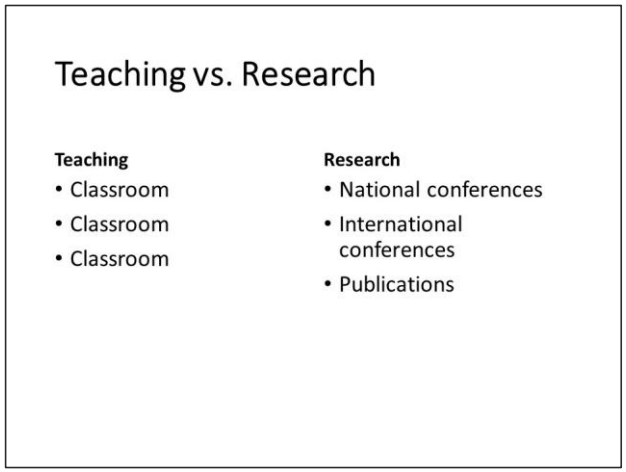

Climate Unit
WELCOME TO THE REACT PROJECT


Key challenge of climate change research
• Data sharing mechanism
• Equipment and laboratory
• Funding support
• Human resource


សូមអរគុណ!
Thanks you for your attention!

- **Dr. Seak Sophat**, Vice dean of faculty of Developmnent Studies, Program Coordinator, Master of Science in Climate Change, RUPP





RUPP's Strategic Plan: 2014-2018

E. Research and Innovation

- Encouraging faculty and students to become members of professional societies, participate in national and international conferences, do paper presentations, and publish their papers and books with peer-reviewed journals/publishers;
- Motivating staff and students to do and collaborate in research with local and international partners through financial and academic incentive support;

- Encouraging faculty to embed research in policy engagement;
- Supporting competent faculties to establish specialized research centers/institutes and academic journals;
- Establishing a University Bulletin and University Press;
- Facilitating faculty and students to file for patents of, and commercialize, their research outcomes.

Introduction

On-going researches at RUPP (selected)

NO	TITLE	PARTNER(S)	FUNDER(S)	WHEN
1	Urban Climate Resilience in Southeast Asia Partnership	University of Toronto, York University, University of Ottawa, Thailand Environment Institute, and Institute for Social and Environmental Transition	Social Sciences and Humanities Research Council (SSHRC) and International Development Research Centre (IDRC)	2014-2019
2	Vulnerability assessment and adaptation planning in water resource, agriculture, and infrastructure	RUPP, AIT	World Bank through RGC (Potential)	2019-2020
3	Comparative study of Urban Climate Resilience and Mitigation in Cambodia (Phnom Penh, Siem Reap and Preah Sihanouk	RUPP, AIT	World Bank through RGC (Potential)	2019-2020
4	Climate change impact on rice yield and food security in the riverine communities in Cambodia	RUPP, University of California, Davis	PEER (USAID)	2018-2020
5	Supporting decision making and building capacity to support IPBES through national ecosystem assessments	RUPP, MOE, WCMC	GIZ	2019-2023

Introduction

On-going researches at RUPP (selected)

6. Climate change vulnerability of Prey Lang in Cambodia
7. The impact of climate change on runoff in the context of LULC change in Prek Thnot catchment, Cambodia

Tittle...

Objective of the researches

1. Urban Climate Resilience in Southeast Asia Partnership
   - To build capacity for applied research on the interactions between urbanization, regionalization, and climate change in Cambodia, Myanmar, Thailand, and Vietnam
2. Vulnerability assessment and adaptation planning in water resource, agriculture, and infrastructure
   - To measure the vulnerability assessment and adaptation planning in water resource, agriculture, and infrastructure in Cambodia.
3. Comparative study of Urban Climate Resilience and Mitigation in Cambodia (Phnom Penh, Siem Reap and Preah Sihanouk
   - To identify how to build urban resilient to flood and heat
4. Climate change impact on rice yield and food security in the riverine communities in Cambodia
   - To assess impacts of climate change on rice yield leading to food insecurity in Cambodia

Tittle... 9

Comparative study of Urban Climate Resilience and Mitigation in Cambodia (Phnom Penh, Siem Reap and Preah Sihanouk

Background of the research topic:

- As Cambodia is located in the highly sensitive location to climate change and low-lying area, the urban area is also vulnerable to climate extreme events (MoE 2005), and the urban systems of its country have been affected by extreme climate events such as flood and drought due to low adaptive capacity in adapting to climate change effects.
- As climate change mitigation becomes pervasive on all spatial scales, mitigation options related to urban spatial planning and behavioral change become increasingly important. Because transport energy consumption seems to scale inversely with population density, increased attention focuses on the role of urban ecosystem.
- Urban adaptation to climate change is often linked to the role of governance; including social, economic, and environmental vulnerabilities

Tittle... 10

Comparative study of Urban Climate Resilience and Mitigation in Cambodia (Phnom Penh, Siem Reap and Preah Sihanouk

Objectives:

- to identify the existing urban infrastructure resilient to flood and heat problems, and develop adaptation planning to cope with climate change impacts and disasters;
- to investigate the existing waste management system in three urban areas;
- to assess the knowledge of urban people on the flood and heat issues and testing new appropriate urban infrastructure resilient; and
- to provide the policy recommendations for responses to climate change on urban ecosystems.

Approach

Socio-economic approaches:

1. household survey
2. Key informant interview
3. Focused Group Discussion (FGD)
4. Questionnaires

Modelling:

1. Climate change projection with climate data (temperature, precipitation, storm, etc)
2. Vulnerability assessment
3. Air pollution monitoring
4. Carbon modelling sequestration and monitoring
5. REDD+ methodology

Tittle... 12

Key challenges of research findings

- Hard to translate the research findings into real practices as they are carried out for academic purpose only
- Complicated and technical terms for laymen to understand
- Mostly used for teaching, and policy recommendation, but lack of absorption by policy makers
- Time for research may take longer, and resolution to these findings needs shorter period
- Policy sensitive findings are difficult to disseminate publicly
- Lack of involvement from relevant stakeholder since the research formulation to findings partly due to time and resources
- Donor driven research areas, which may not be responsive to Cambodia context

Tittle... 14

Results of the research

In accordance with the project objectives, the following are key expected outputs:

- Scientific reports written on Urban Climate Resilience and Mitigation in Cambodia.
- The appropriate and inappropriate existing urban infrastructure resilient is identified, and the feasible adaptation planning is produced.
- Policy brief on urban climate resilience for policy makers and planners to build the resilient city in support to sustainable city goal.
- TOT training in support to academics, researchers, urban planners, and practitioners for effective urban climate resilience and mitigation.
- Scientific publications – journal article related to Urban Climate Resilience and Mitigation in Cambodia.

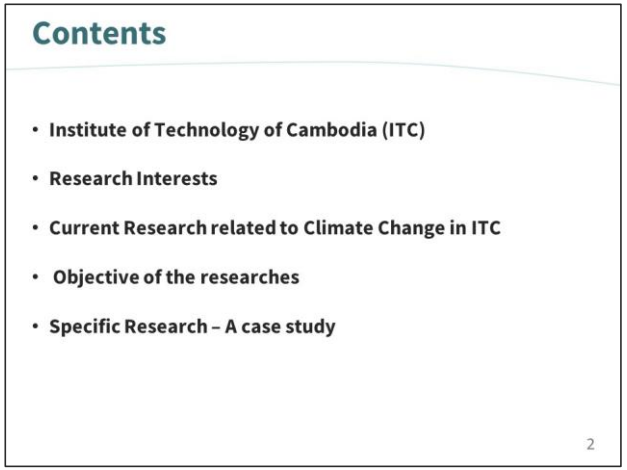
Tittle... 13

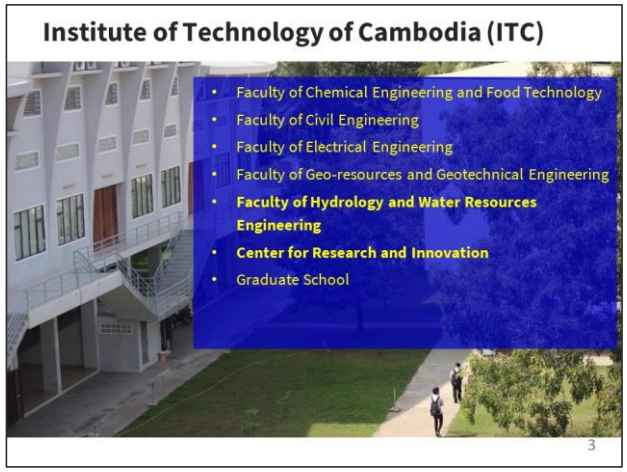
Thank you

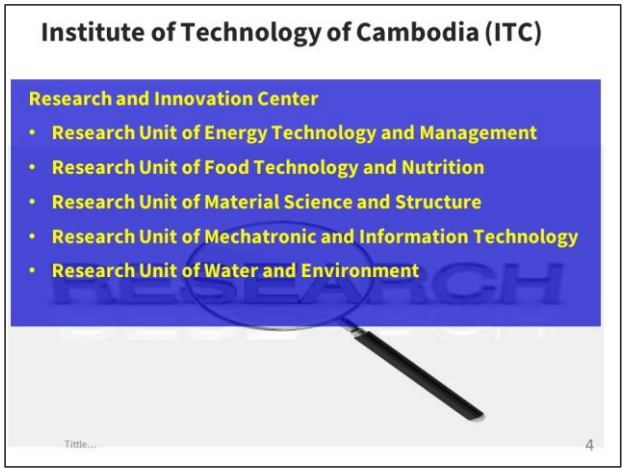
Email: seak.sophat@rupp.edu.kh
www.rupp.edu.kh/master/climate_change/

Tittle...

- **Ms. Sang Davin,** Researcher and Lecturer, ITC

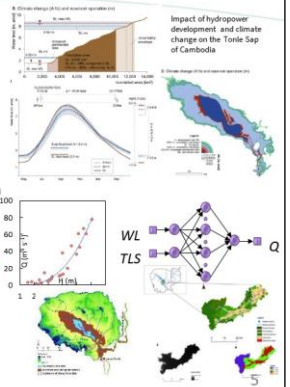






Research Interests

- Hydrological analysis: water balance, modeling, soil-plant-water relation
- Remote sensing and GIS application to water resources development and river morphology
- Sediment transport and erosion
- Irrigation management and development
- Groundwater management and evaluation
- Climate change: trends of change and projection
- Environmental impact assessment caused by human activities and climate change
- Waste management: solid waste and waste water
- Integrated Water Resources Management



5

Research related to Climate Change

On-going researches of the university related to climate change

No.	Code	R. Area	Project Title	Budged	Funded By	Period
1	ReWE-001	WWM, WQT	SATREP Cambodia - Establishment of Environmental Conservation Platform of Tonle Sap Lake	5 MILLIONS USD	JICA and JST	2016 - 2020
2	ReWE-006	WWM	NERC - Foundations for Environment Flow Assessments in Cambodia	JOINT RESEARCH	Natural Environment Research Council (NERC) - UK	2017 - 2019
3	ReWE-009	WWM	Water and vulnerability in the floodplains of Cambodia (WATVUL)		Academy of Finland	2018-2022
4			JST- Establishment of Asian (Second path)	2millions yet	JST	2018-2020
5	CaWE-001	WWM, DCS	NORHED - Water and Society – Institutional Capacity Building in Water Management and Climate Change Adaptation in Selected Countries in Asia (WaSoAsia) (almost finish)	6 MILLIONS USD	NORHED	2014 - 2018
6	CaWE-002	DCS	CCCA - Increasing the knowledge of the water cycle in order to reduce the vulnerability to Climate Change hazards through an integrated approach	509,636 USD	CCCA Grant and Co. Financing	36 months ???
7		WWM	Integrated Water Resources and Environmental Management for Asian and African Mega deltas under climate change			Finished
8		WWM	Water Governance and Climate Change in Cambodia			Finished
9		WWM	Exploring Tonle Sap Future - Exploring Mekong Region Future			Finished
10		WWM	Hydrological study to mitigate flood/drought disaster in Tonle Sap Lake, Kingdom of Cambodia			Finished
11		WWM	Impact of Land use Change and Climate Change on Occurrence of Hydrological Extreme Events (Flood and drought) in the Mekong Basin.			Finished

6

Objective of the researches

(1). Simulate flood event due to change in river flow and rainfall as the impact of climate change

(2). Develop flood forecasting and warning system

(3). Develop the tool to predict the drought event for short term and long term

(4). Propose mitigation strategies responding to drought event

7

Specific research – A case study

Improved water governance under climate change - Stung Chreybak catchment

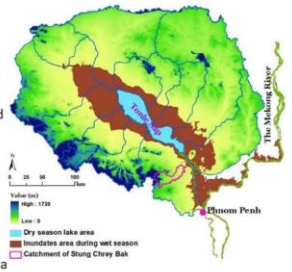
Dr. Ly Sarann

Institute of Technology of Cambodia (ITC)
Faculty of Hydrology and Water Resources Engineering

8

Background and Objective

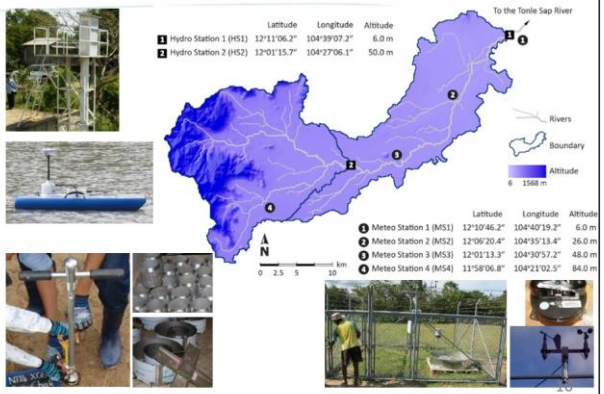
- Cambodia is one of the most disaster-prone countries in South East Asia, with its vulnerability to annual floods and droughts
- Without having an efficient water resources management system, it would be difficult to talk about food security, environment and safe future of man kind
- Understanding water availability of catchment is important for improving water resources allocation to adapt with climate change
- Strengthening the resilience of communities to help them to cope with existing challenges to their livelihoods is a must



The main objective is to assess water resources and water use in Chreybak catchment: present and future

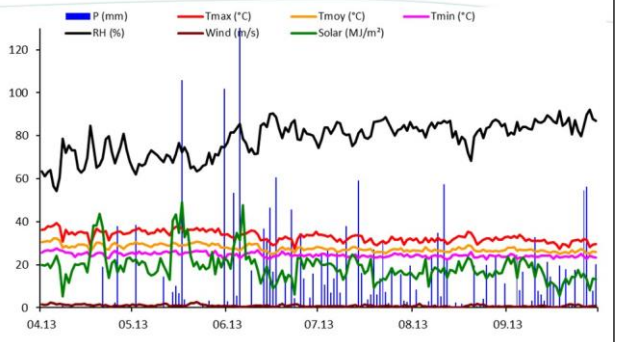
9

Data collection and processing



10

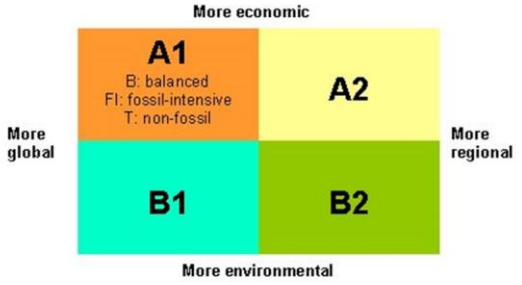
Data collection and processing



11

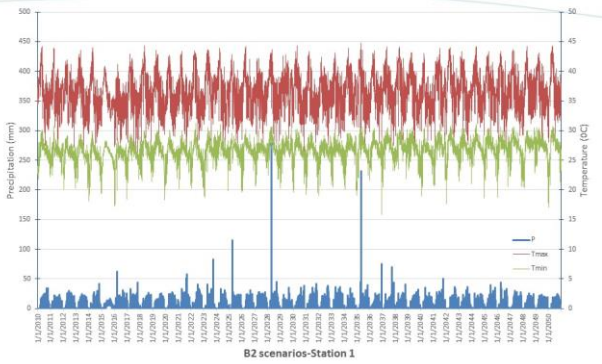
Climate Scenarios

- Six scenarios groups -the three scenario families A2, B1, and B2, plus three groups within the A1 scenario family, A1B, A1FI, and A1T
- *no single most likely, "central", or "best-guess" scenario*



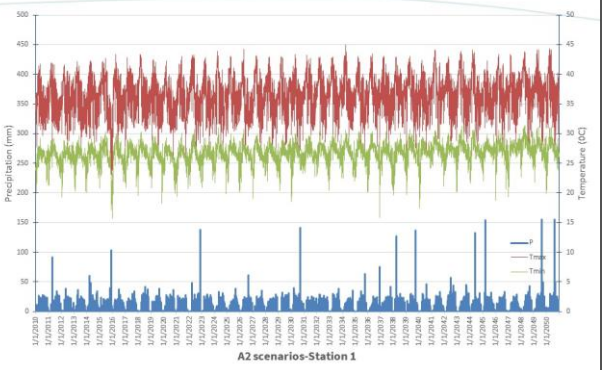
12

Climate Scenarios



14

Climate Scenarios

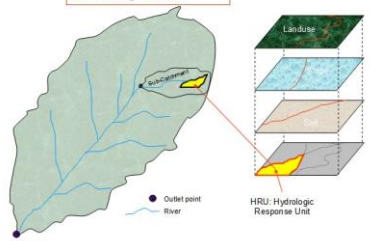


13

Modelling approach using the SWAT Model

Input

Digital Elevation Model
Soil and Landuse data
Meteorological data



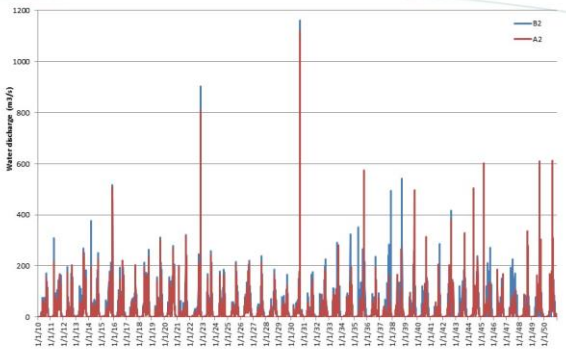
Flow, Sediment, Nutrients , Pesticides, contamination bacteria

(Anual timesteps >> daily)

- Digital elevation map (DEM) from the Mekong River Commission (MRC)
- Soil map data from the Mekong River Commission (MRC) & soil properties from Oeurng et al. (2012) for the SWAT soil database.
- Landuse data obtained from Japanese International Cooperation Agency (JICA) and reclassified for SWAT input.
- Meteorological data included 4 rainfall stations which have a complete measurement of daily minimum and maximum air temperature, wind speed, solar radiation and relative humidity (June 2010 to November 2013)

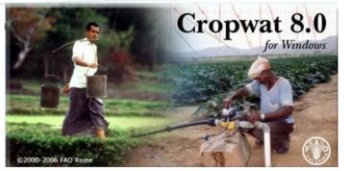
15

Projected water discharge by SWAT



16

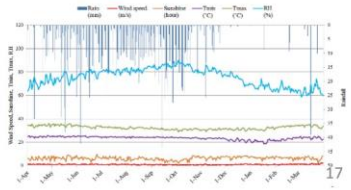
Crop water requirement modelling



- **Input data**
  - Climate/ETo data
  - Rain data
  - Crop data
  - Soil data
- **Output data**
  - Crop water requirement & Irrigation requirement
  - Irrigation Schedule

Tittle...

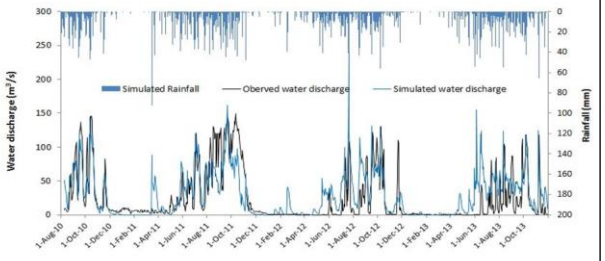
❖Meteorological Data of $WS3_{average}$ from 2010-2013 (Ly S., 2013)



17

Results

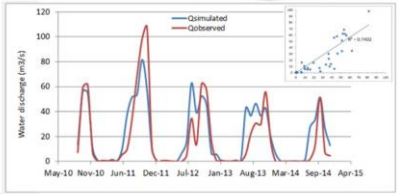
Observed and simulated daily discharge at Chreybak catchment outlet (baseline)

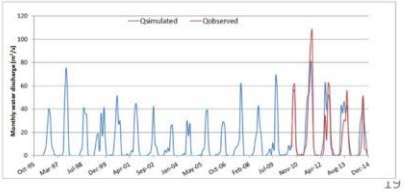


18

Water discharge simulation

Acceptable results relative to observed data

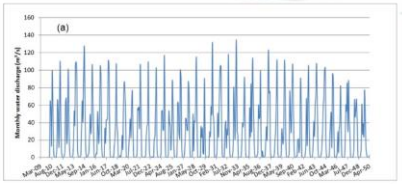


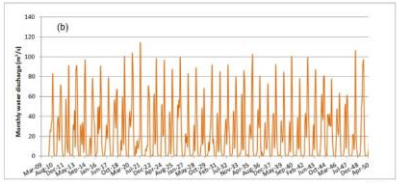


19

Projected water discharge

Simulated water discharge at Chrey Bak catchment outlet from 2010 to 2050 for A2 (a) and B2 scenario (b)

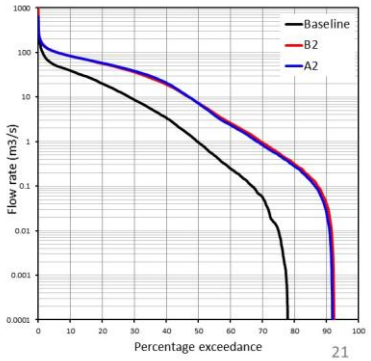




20

Projected water discharge

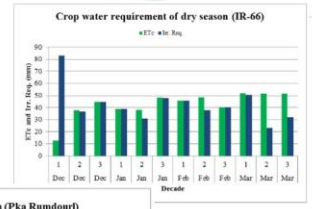
- Droughts and floods will be more extreme
- Droughts will occur more frequently while floods will be less frequent but more severe.

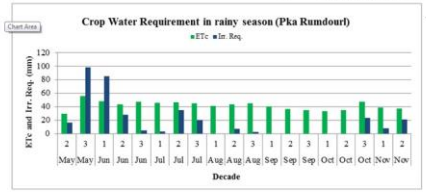


21

Crop water requirement modelling

CropWater Requirement modelled by CROPWAT (baseline)





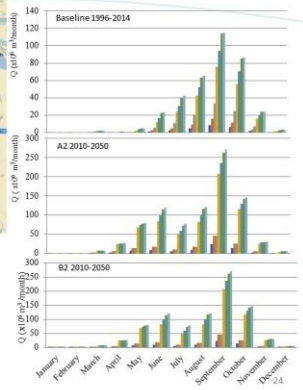
22

Water availability in different irrigation scheme

23

Water availability in different irrigation scheme

- Tang Krasang scheme often experiences water shortages in the dry season
- downstream farmers often a lack of water for rice cultivation



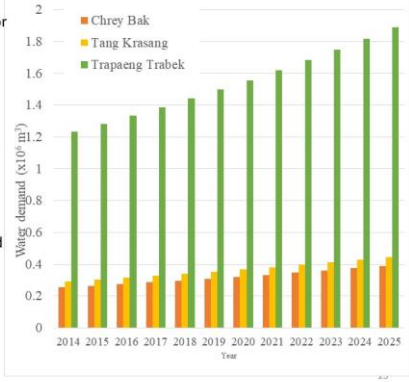
24

Water scarcity in 5% annual increase scenario of irrigation area

Probably water shortages for dry season irrigation in at least three irrigation schemes

No possibility of increasing water use.

Necessary to manage water demand by growing crops and rice varieties that demand less water, or to change water allocation and cropping calendars



Implications

- More frequent and intent of drought. If only surface water, increasing water scarcities for dry season cultivation. Biodiversity and ecosystems will most likely be affected, too. Local people's vulnerability to natural hazards will increase due to their direct dependence on surface water and river ecosystems for their livelihoods.
- Flooding less frequent but more severe and destructive; infrastructure could be severely damaged. Communities would face more difficulties.
- Water is sufficient for the current irrigated area. If expansion of irrigation command areas, water security will be badly affected. Ongoing mismanagement of water sharing and allocation, along with water insecurity, will intensify upstream-downstream conflicts over water

26

Suggested way forward

- Improve irrigation and in farm water management, as well as in water allocation and operation of irrigation storage and water gates.
- Redesigning and improving water infrastructure so that water delivery to irrigated areas is more efficient.
- Apply a suitable cropping pattern would also be helpful for sound water allocation.
- Explore use of groundwater for increasing dry season cultivation because surface water in the river system is fully used. Knowing groundwater quantity will be helpful for increasing irrigated land and adaptation to drought.
- Restoring degraded forest in upstream areas should be considered to increase forest cover, prevent flash flooding and sustain dry season flow.
- Community members should be provided capacity building in water management and operation, water regulations and downstream-upstream conflict resolution. Mechanisms, rules and regulations on water use and water fees should be adopted for the whole catchment.

27

Future Research

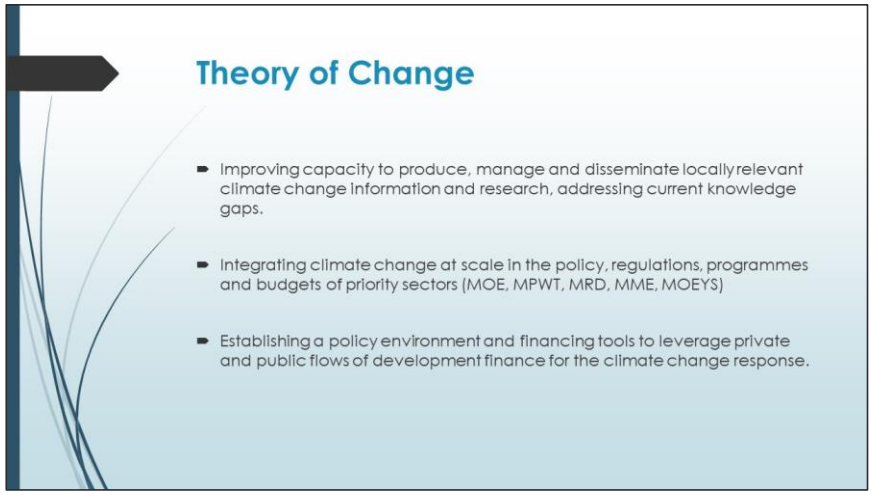
- Improvement of irrigation water allocation
- Building adaptation to flood and drought in Stung Chrey Bak catchment
- Impacts of land-use change on water and sediment, and implications for integrated watershed management
- Improved understanding of surface water and groundwater for sustainable water resources management.

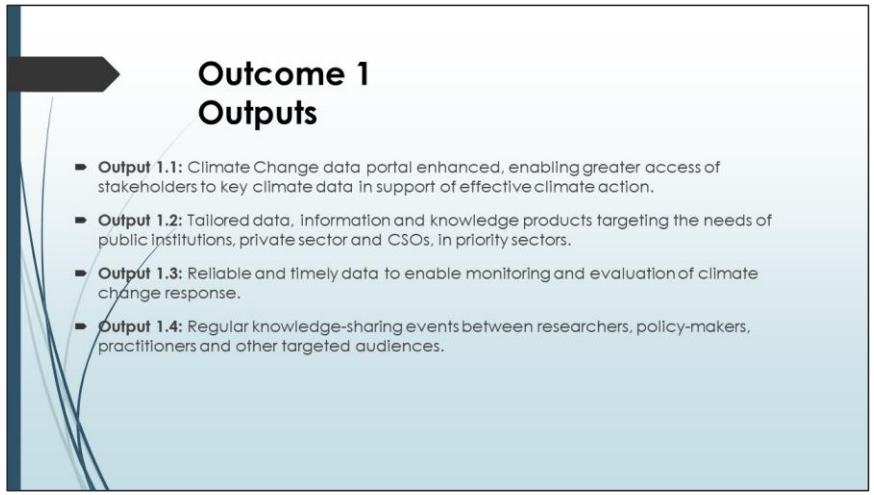
28

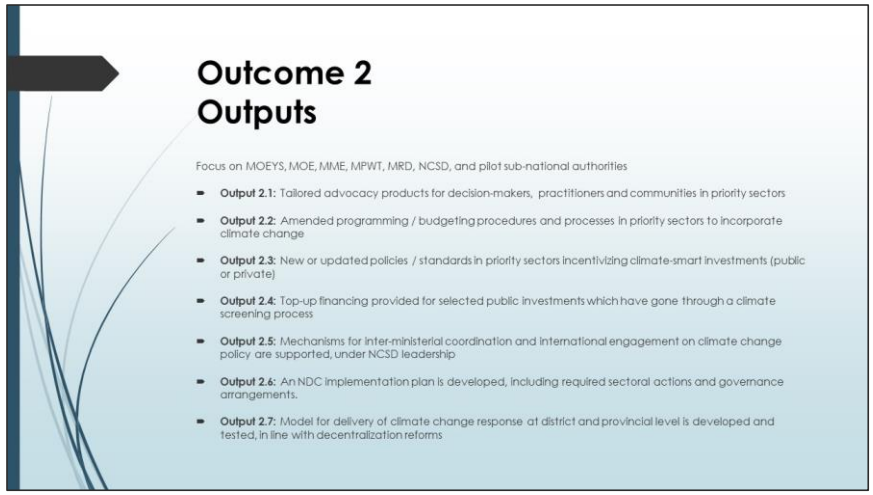
Thank you

Email: ly.sarann@itc.edu.kh
www.hydro.itc.edu.kh

ANNEX 6: CAMBODIA CLIMATE CHANGE ALLIANCE PHASE 3




Outcome 1
Outputs
Output 1.1: Climate Change data portal enhanced, enabling greater access of stakeholders to key climate data in support of effective climate action.
Output 1.2: Tailored data, information and knowledge products targeting the needs of public institutions, private sector and CSOs, in priority sectors.
Output 1.3: Reliable and timely data to enable monitoring and evaluation of climate change response.
Output 1.4: Regular knowledge-sharing events between researchers, policy-makers, practitioners and other targeted audiences.


Outcome 2
Outputs
Focus on MOEYS, MOE, MME, MPWT, MRD, NCSD, and pilot sub-national authorities
Output 2.1: Tailored advocacy products for decision-makers, practitioners and communities in priority sectors
Output 2.2: Amended programming / budgeting procedures and processes in priority sectors to incorporate climate change
Output 2.3: New or updated policies / standards in priority sectors incentivizing climate-smart investments (public or private)
Output 2.4: Top-up financing provided for selected public investments which have gone through a climate screening process
Output 2.5: Mechanisms for inter-ministerial coordination and international engagement on climate change policy are supported, under NCSD leadership
Output 2.6: An NDC implementation plan is developed, including required sectoral actions and governance arrangements.
Output 2.7: Model for delivery of climate change response at district and provincial level is developed and tested, in line with decentralization reforms

Outcome 3 Outputs

- **Output 3.1:** Climate-related expenditures are regularly tracked and their efficiency and effectiveness is analysed
- **Output 3.2:** MEF receives technical support to increase its capacities to conduct policy research on fiscal and economic policy issues related to climate change
- **Output 3.3:** Innovative adaptation and mitigation approaches from the public and private sector receive seed funding and have access to scaling-up opportunities

Budget

	5-year budget
Outcome 1	3.9 MUSD
Outcome 2	3.9 MUSD
Outcome 3	3.3 MUSD
Indirect costs + evaluations	0.8 MUSD
Total	**11.9 MUSD**

- EU: 6 million Euro (circa 6.8 MUSD) – agreements under discussion (with MEF and UNDP)
- Sweden: 34 million SEK (circa. 3.6 MUSD) – under review by Sweden
- UNDP TRAC: 0.5 MUSD