

## Annual International Training Course Proposal

### Theme: Climate Change

1. **Course Title:** Climate Change Adaptation: Pathways for Sustainable Development
2. **Duration:** 10 working days between May 2 – May 13, 2022
3. **Background and Rational:**

Climate change, an undeniable global issue, has a strong influence on sustainable development. The importance of climate change issue can be seen in the United Nations Sustainable Development Goals (SDGs) as Goal No. 13, which aims to take urgent action to combat climate change and its impacts. Warming climate results in the alteration of natural ecosystems and productivity of human food source, thus hinder the speed of sustainable development. Developing and least developed countries will be affected the most, partly due to the lack of abilities to cope with those changes. Although redressing changed climate system may not be possible at this stage, mitigation and adaptation measures can be employed to minimize the impact of climate change on several sectors. Thus, both mitigation and adaptation measures can be viewed as tools in shaping global development direction.

The real problem in implementing adaptation measures lies on the fact that the understanding on adaptation measure concept is limited in poor developing and least developed countries. At times, adaptation measures employed in one local area may not be applicable for another local area, thus the design of policy or program that is appropriate to each locality is crucial. This training course aims to provide such needed information to the participants via lectures, classroom activities, and field visits. Adaptation practices in Thailand such as in smart farming agricultural sector and micro-grid energy production system will be covered to provide the participants with best case practices.

Chiang Mai is generally the perfect location for such training course as it is the second largest city in Thailand where man-made environment and many kinds of natural resources and ecosystem services can be accessed within short distance. Impacts of climate change can be visibly observed here as well as the adaptation measures practices that have been implemented, thus, cause-effect-solution loop can be completed within one locality. In addition to that, Chiang Mai University is also located here with the availability of many research facilities and experienced researchers, which can directly benefit the training course proposed.

4. **Objectives:** The training course aims to enhance participants with the knowledge in climate change adaptation that strongly facilitates sustainable development through the reduction of climate change's impacts on livelihood. In addition, the course also intends to provide hands-on experience for the participants in various aspects related to climate change adaptation planning and implementation via class exercises, project assignment and field trips.

## 5. Course Contents:

**5.1 Course Outline:** The outline and synopsis of each topic to be covered in this course are listed in the following table.

Day	Topic	Synopsis	Mode of teaching/learning	No. of hour
1	Climate change: background and future trends	Participants will be made familiar with climate change science via scientific data and reports. Future trends in climate condition will be discussed. Relationship between climate change and sustainable development will be emphasized.	Lecture	2
	Impacts of human activities on climate change	Impacts of human activities (e.g., energy production, agricultural practice, waste management, and urbanization) on climate change will be discussed	Lecture	2
	Impacts of climate change on various sectors	Impacts of climate change on various sectors (e.g., energy, agriculture, water resource, and coastal ecosystem) will be introduced. Case studies from different countries will be used for discussion.	Lecture	2
2	Country's report	Participants will present their country report on the situation of climate change, policy related, action taken, and etc.	Presentation	6
3-4	Estimation of GHGs emission	Basis calculation on an estimation of greenhouse gas emission will be introduced.	Lecture	3
	GHGs calculation exercise	Participants will work in group to identify the amount of GHGs emission from current practices. IPCC guidelines for national greenhouse gas inventories will be used as basis for calculation. Worksheet will be provided.	Class exercise with facilitator team (Exercise 1)	9

5	Climate change adaptation measures	Definition of adaptation measure to climate change will be introduced together with the current practices around the world in different sectors.	Lecture	3
	Adaptation measures exercise	Participants will work in group to identify potential adaptation measures for different sectors. Results should be presented at the end of the class.	Class exercise with facilitator team (Exercise 2)	3
6	Climate change adaptation policy design	In order to have effective climate change adaptation, policy should be designed based on the local context. Policy design workshop will be carried out to familiarize the participants with the policy design concept. Results should be presented at the end of the class.	Lecture & Class exercise with facilitator team (Exercise 3)	6
7	Tools in climate change monitoring	Tools in monitoring climate change condition (both before and after the implementation of adaptation measure) will be introduced. Worksheet will be provided for participants to work in group.	Lecture & Class exercise with facilitator team (Exercise 4)	6
8	Disaster preparedness	Climate change related disasters will be discussed. Best practice in disaster preparedness and prevention. Case studies on Haze problem will be discussed.	Lecture	3
10	Final presentation preparation	Based on country report and all knowledge gained during the course, participants shall develop his/her country adaptation plan to reduce the impact of climate change on livelihood.	Preparation for final presentation	6
11	Final presentation	Presentation of the country adaptation plan	Presentation	6

**5.2 Practices:** There are four class exercises in this course. In all exercises, participants will work in group to finish the tasks and submit their works in the provided worksheet or short presentation. The topics for practice exercise are as follows:

1. Estimation of greenhouse gas emission from human activities
2. Identification of potential adaptation measures for selected sectors.
3. Policy design for adaptation measures
4. Tools in climate change condition monitoring

**5.3 Advance Assignments:**

1) Country Report:

A maximum of 10 pages country report should be prepared prior to the course starting date following the format provided. Contents of the report should include general information about the country, current situation related to climate change (e.g. national emission inventory, impacts of climate change and affected sector, and government policy related to climate change). Twenty minutes presentation of the report should also be prepared in advanced.

2) Reading Assignment:

Prior to the course participation, participant should read the following book chapter;

Denton, F., T.J. Wilbanks, A.C. Abeysinghe, I. Burton, Q. Gao, M.C. Lemos, T. Masui, K.L. O'Brien, and K. Warner, 2014: Climate-resilient pathways: adaptation, mitigation, and sustainable development. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L.White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1101-1131.

[https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-Chap20\\_FINAL.pdf](https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-Chap20_FINAL.pdf)

3) Project Assignment: -

6. **Participants Criteria:** Participants may include academic staff and government officers who has basic knowledge in environmental science or has to deal with environmental issues in their work.
7. **Venue:** Training Venue: All lectures will be held online
8. **Expected Results:** Upon completion of this training course, participants will be able to perform the following tasks;

- 1) Explain the relationship between climate change and sustainable development with the emphasis on how adaptation measures can be used to facilitate sustainable development.
- 2) Understand theory behind GHGs emission calculation and calculate gas emission from selected sector.
- 3) Develop adaptation policy/action plan that is suitable for local conditions.

**9. Evaluation:** Participants will be evaluated by the following assignments;

- 1) Participants should participate and submit 4 class exercises as indicated in class outline
- 2) Participants should present their final project assignment
- 3) Attendance to course activities should not be less than 80% of the course period.

**10. Institution:**

**10.1 Executing/Implementing Agency**

1) Implementing Agency: Environmental Science Research Center (ESRC), Faculty of Science, Chiang Mai University

2) Capability

a) Personnel: ESRC is the research center where faculty members with various academic background related to environmental science are working together to tackle environmental problems in both local and regional context. In total, there are 30 faculty members with doctorate degree and 60 graduate students working on research topics emphasizing on environmental problems. Research expertise at the center includes, but not limited to, atmospheric air pollution, waste management, water resource management, reforestation technique, and climate change adaptation. Faculty members at the center have planned for this training course together to ensure that our expertise will smoothly complementing each other.

b) Training Materials/Equipment Availability: Due to the fact that the center works under strong collaboration from all Departments, equipment available at the Faculty of Science are ready to be used in this training course. As for training materials, will be prepared and reviewed by the working group before using in the training course.

c) Accommodation: Chiang Mai University has its own hotel known as UNISERVE CMU. The accommodation is clean, close to the university and other tourist attractions of Chiang Mai, thus, location will be very convenient for the participants.

3) Address: Environmental Science Research Center,  
Faculty of Science, Chiang Mai University,  
239 Huay Kaew Road, Tambon Suthep, Mueng District,

Chiang Mai 50200

4) Contact persons:

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## 10.2 Collaborative Organizations

1) Forest Restoration Research Unit (FORRU)

Address: Faculty of Science, Chiang Mai University Huay Kaew Road, Chaing Mai 50200

Contact person: Asst Prof. Dr. Sutthathorn Chairuagsri (E-mail: [s.suwann@gmail.com](mailto:s.suwann@gmail.com))

Website: [www.forru.org](http://www.forru.org), Facebook page: @forestrestorationresearchunit

2) Energy Research and Development Institute of Nakornping (ERDI)

Address: 155 Moo 2 Mae Hia, Mueang Chiang Mai District, Chiang Mai 50100

Website: <http://www.erdicmu.ac.th>

## 11. Expenditure/Funding: 235,400 Baht