



Course Outline

Online International Training Course via Zoom Meeting

1. Course Title:

Low Carbon Scenario Development: Waste Management Under Crisis Situations

2. Duration:

17-31 August 2022

3. Background and Rational:

TICA: Thailand International Cooperation Agency

TICA is a national focal point for Thailand's international development cooperation. TICA was established in 2004 to realize Thailand's aspiration to be a contributor of development cooperation. Believing that global challenges are best addressed by international cooperation and global partnership, today we continue to strengthen our contribution to achieve global development agenda through various capacity-building and human resources development programmes. In response to the recent changes in the global landscape of development cooperation, especially through the concept of South-South and Triangular Cooperation, TICA continues to realign our focuses in order to deliver Thailand's commitment to be a relevant partner in global agendas including the 2030 Agenda for Sustainable Development.

Organization/Institution

The Joint Graduate School of Energy and Environment at King Mongkut's University of Technology Thonburi is a well-known institution offering international Master and PhD programs in Energy and Environmental Technology, and international Master programs in Energy and Environmental Technology and Management and conducting high impact research in energy and environment. JGSEE-CEE possesses 3 research directions including Low Carbon Energy Technology, Environment and Climate Science, and Energy and Environmental Policy. Under the Environment and Climate Science research direction, the Advance Greenhouse Gas and Aerosols Research (AGAR) Laboratory constitutes the research focus specialized in GHG emission

inventory and mitigation options to support low carbon scenario development and implementation at city and national levels.

4. Objectives:

- To introduce to the participants to the concept of low carbon city development and accounting under crisis situation.
- To build capacity of the participants on low carbon city development approach and waste management during crisis situation
- To transfer and exchange knowledge, technology, and experience to the participants through low carbon city approach activities and discussion, guidance on crisis situation of waste management and city-country actions.
- To set up a network for “Low Carbon City Development” of developing countries.

5. Course Contents:

Based on the United Nations Population Fund statistics, the world is undergoing the unprecedented largest wave of urban growth, with more and more people living in cities than in rural areas. It is forecasted that by 2030, over 60 percent of the population would be living in cities. Megacities, which define cities with more than 10 million inhabitants, are on the rise and becoming a topic of frequent discussion in urban development discourse. However, it is foreseen that most new urban growth will occur in smaller towns and cities in developing countries, which have fewer resources to respond to the magnitude of the urban population increase. This projected growth leads to great challenges for cities to provide a high quality of life to their residents at present and in the future. Actually, in many cases, rapid urbanization is generally conveying to concentrating socioeconomic poverty and environmental degradation in cities. Currently, cities face increasing development needs in infrastructure, land use, basic service provisions, etc.. Consequently, sectors such as transportation, water and sanitation, energy supply, health services, etc., are under severe pressure from continuously increasing population and limited resources. In this regard, a sustainable development approach is recommended to ensure that the needs of citizens today are met without compromising the ability of future generations to meet their needs. However, this approach suggests that, in addition to the efficient management of available resources, cities must take into consideration additional risks related to climate change. On the other hand, it is now well recognized that cities are responsible for a high proportion of global carbon emissions, which are the main driver of anthropogenic climate change. In a recent United Nations Human Settlements Program (UN-Habitat) report, it was stated that the world’s cities cover only two percent of the total land area, but account for more than 70 percent of the global GHG emissions (UN-Habitat, 2011). Emissions in cities come mainly from fossil fuel combustion for power generation,

transport, industrial activities, municipal waste, and water and sewage treatment. Also, if urban expansion is not appropriately planned, land-use change and deforestation can lead to the release of carbon dioxide (CO₂) from natural carbon stocks, such as forest cover. Thus, cities will have to consider both mitigation measures that lower their carbon emissions, as well as adaptation measures that improve their resilience to climate impacts.

Further to the sustainable low carbon urban development, we are facing nowadays not only the pressure to reduce GHG but also the impact from climate action and some crisis situation including pandemic waste, flood waste and plastic/microplastic waste in relation to the climate change situation. These crisis introduce changes to waste stream both in term of waste generation rate and waste composition. This is, off cause, a big challenge to waste management in urban area. It is assumed that during crisis situation either short term as pandemics situation and long term as climate situation, composition of waste is dramatically change. Improper waste management during this crisis will lead to health and environmental problem and delay the approach of sustainable waste management. During 2020, amount of waste in Bangkok and other big cities reduced to 11-20 % in the big business city and around 50% in the tourist city. On the other hands, amount of plastic and paper components in waste stream are increased. These phenomena leads to difficulty in several aspects of waste management including treat of hazardous waste, energy fuel from plastic waste and leakage of plastic and microplastic to environment, treatment of plastic paper packages from food and pos delivery etc. In addition, these changes also affect in low carbon scenario planning of urban development.

In this regards, although cities can engage in sustainable development and lead on global warming mitigation by considering a low carbon development approach but planning during crisis situation need to be concerned and its impact should be taken into account while taken into account. mutually advantage of integrated planning strategies and socioeconomic growth to be inclusive.

To this end, a long-term vision can be created where economic goals across sectors align and balance with carbon reduction goals while underling the management during crisis. Such an integrated approach not only makes planning more efficient, but also offers an opportunity to bring together multiple stakeholders and raise awareness of the benefits of simultaneously pursuing socioeconomic growth health care and carbon reduction. In order to pave the path of low carbon city development, especially during the crisis situation of developing countries, it is of prime importance that government officers involved in city management could have the opportunity to be initiated to low carbon city development with the view of how to manage waste during crisis through hands-on training organized by an institution that has developed knowledge and experience in the field.

The Joint Graduate School of Energy and Environment (JGSEE) and Centre of Excellence on Energy Technology and Environment (CEE-PERDO), King Mongkut's University of Technology Thonburi (KMUTT) together with Kasetsart University and National Institute for Environment Study, Japan have developed the Collaborative Research Laboratory (CRL) developed, in 2011, a guideline of flood waste management for municipality engaging many authority officer from big city in Thailand. This development was conducted closely with Bangkok Metropolitan Administration (BMA) and later two project of Rapid urgent waste management to remove barrier from water way in big city were performed with the support from Asia Pacific Network on Climate Change (APN). Thus, in recognition that low carbon city development cannot avoid the crisis situation that resulted from the impact of climate change, we would like to disseminate our experience to other governmental officer from developing countries and offer the training course on the integration of low carbon development taken into account waste management during the crisis situation in order to perceive the challenge of sustainable low carbon city approach.

In awareness of the current limitation of traveling this year, this course will be conduct remotely using the Microsoft-Team or Zoom platform. However, we still keep our concept of active participatory, therefore we request participants to prepare their own information of crisis waste management in your country and exchange with other participants during class. The activities will include small research with your own afford but closely guidance by course mentor. We expected that by the end of the course, participant should understand the low carbon city approach, how to estimate carbon emission in the developing city, how to plan waste management to cope with rapid and slow continuity impact of crisis situation. This is one of the foreseen new normal that happen in our changing world.

6. Participants Criteria:

Applicants must fulfill the following requirement:

- Be nominated by their respective government;
- Education: have at least a bachelor degree in Science or Engineering in relation to energy, environment, economics, architecture, or related fields, and good English proficiency.
- have at least 1 year working experience.
- currently work closely in the areas of urban development and planning.
- have an understanding of an involvement in environmental technology and management, or environmental management.
- be strongly motivated to improve the city development and planning; and/or apply “Low Carbon City Development and Implementation” approach to his/her city to mitigate global warming and climate change.

- Language: proficiency in English (speaking, reading and writing)

7. Attendance and Evaluation

Participants who completed the online training will receive E-certificate base on:

- Real time Online Class (not less than 80%)
- Online class participation and discussion
- Online presentation and report
- Online evaluation

8. Venue:

Microsoft-Team or Zoom platform

9. Expected Results:

Participants are expected have a good understanding and knowledge in global warming and how to develop low carbon city development pathway for a sustainable development of their city while reducing the GHG emissions to mitigate climate change. Also, they are expected to understand the crisis situation that may impact to the development. Participants understand how to manage solid waste under flood, pandemic and plastic situation and be able to transfer their knowledge acquired from this training to others inside and outside their organization. Finally, they are expected to pursue the network they have set up during this training.

10. Organization/ Institution:

The Joint Graduate School of Energy and Environment (JGSEE), Center of Excellence on Energy Technology and Environment (CEE-PERDO), King Mongkut's University of Technology Thonburi (KMUTT)

126 Prachauthit Road, Bangmod, Tungkru, Bangkok 10140, Thailand

Tel (66 2) 470 8309 ext 4130, Fax (66 2) 872 9805

Contact person: Ms. Kulakarn Soontornwat (Head of PRO Unit)

E-mail: kulakarn.sun@mail.kmutt.ac.th, pro.jgsee@gmail.com

Website: www.jgsee.kmutt.ac.th

11. Expenditure/Funding:

Thailand International Cooperation Agency (TICA)

Government Complex, Building B (South Zone), 8th Floor,

Chaengwattana Rd. Laksi District, Bangkok 10210 THAILAND

Website: <https://tica-thaigov.mfa.go.th/en/index>

Email: aitc@mfa.mail.go.th

Schedule for the Online Training Programme:

Date	Time	Topics	Lecturers	Lecture	Practices
Day 1 / WED 17 AUG 2022					
	11.00-12.00	Opening, Introduction & Orientation	TBA	1	
	12.00-14.00	Introduction to Global warming and climate change; their causes and impacts	TBA	2	
	14.00-14.30	Break 30 Min.			
	14.30-15.30	Climate change Mechanism and Global context	TBA	1	
	15.30-16.30	Crisis situation in relation to climate change	TBA	1	1
Day 2 / THU 18 AUG 2022					
	11.00-13.00	Low Carbon City in Different Countries	TBA	2	2
	13.00-13.30	Break 30 Min.			
	13.30-14.30	Life Cycle Assessment & Carbon footprint: Organization, Products, LCA	TBA	1	
	14.30-15.30	Different scopes of GHG emission estimation: National level, Community scale, Project, Organizations	TBA	1	
Day 3 / FRI 19 AUG 2022					
:	11.00-13.00	GHG emission inventory for non waste and practice	TBA	2	2
	13.00-13.30	Break 30 Min.			
	13.30-15.30	GHG emission inventory for waste sector and practice	TBA	2	2

Date	Time	Topics	Lecturers	Lecture	Practices
Day 4 / MON 22 AUG 2022					
	11.00-13.00	Community scale GHG inventory by using GHG protocol guidelines	TBA	2	2
	13.00-13.30	Break 30 Min.			
	13.30-14.30	Community scale GHG inventory by using GHG protocol guidelines: Practice	TBA	1	1
	14.30-15.30	GHG emission projection	TBA	1	1
Day 5 / TUE 23 AUG 2022					
	11.00-13.00	Principle of solid waste management	TBA	2	
	13.00-13.30	Break 30 Min.			
	13.30-16.30	Technology and disposal [+VDO.1: Composting of Satuk Municipality (Buriram); Semi-aerobic landfill of Sikhio Municipality (Nakhon Ratchasima)]; MBT-Biogas&RDF of Chiang Mai University (Chiang Mai)]	TBA	3	3
Day 6 / WED 24 AUG 2022					
	11.00-13.00	Waste management during flood situation	TBA	2	
	13.00-13.30	Break 30 Min.			
	13.30-15.30	Workshop1: Discussion and activities on flood waste management including case study.	TBA	2	2
Day 7 / THU 25 AUG 2022					

Date	Time	Topics	Lecturers	Lecture	Practices
	11.00-13.00	Waste management during pandemic situation	TBA	2	
	13.00-13.30	Break 30 Min.			
	13.30-15.30	Waste management during pandemic situation	TBA	2	
Day 8 / FRI 26 AUG 2022					
	11.00-13.00	Workshop2: Discussion and activities on pandemic waste management including a case study [+VDO.2: Pandemic waste management of BKK]	TBA	2	2
	13.00-13.30	Break 30 Min.			
	13.30-15.30	Workshop2: Discussion and activities on pandemic waste management including a case study (continue)	TBA	2	2
Day 9 / MON 29 AUG 2022					
	11.00-13.00	Packaging waste management	TBA	2	2
	13.00-13.30	Break 30 Min.			
	13.30-15.30	Workshop 3: Discussion and activities on packaging waste management including a case study [+VDO.3: Packaging waste management in the Eastern Economic Corridor]	TBA	2	2
Day 10 / TUE 30 AUG 2022					
Module xx:	11.00-13.00	Workshop 4: Integrated low carbon city approach	TBA	2	2

Date	Time	Topics	Lecturers	Lecture	Practices
		and crisis waste management			
	13.00-13.30	Break 30 Min.			
	13.30-15.30	Workshop 4: Integrated low carbon city approach and crisis waste management (continue) [+VDO.4: Waste management in Wiang Thoeng Sub-District Municipality, Chiang Rai]	TBA	2	2
Day 11 / WED 31 AUG 2022					
Module xx: Wrap-up and closing	11.00-13.00	Conclusion and lessons learned	TBA	2	
	13.00-13.15	Break 15 Min			
	13.15-15.15	Evaluation	TBA	2	2
	15.15-15.30	Closing Ceremony	TBA		
รวม				46	30