

The Joint Graduate School of Energy and Environment



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CENTER OF EXCELLENCE ON ENERGY TECHNOLOGY AND ENVIRONMENT



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Supported by



## Contribution to International Organization

### Fourth Lead Authors' Meeting (LA4) of the IPCC 2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol



At the invitation of the Co-chairs of the IPCC Task Force on National Greenhouse Inventories (TFI), the Office of Natural Resources and Environmental Policy and Planning (ONEP), Ministry of Natural Resources and Environment (MONRE), and JGSEE-CEE co-organized on behalf of the Royal Thai Government, the “Fourth Lead Authors' Meeting (LA4) of the 2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol (2013 KP Supplement)” during 15-18 July 2013 at Imperial Mae Ping Hotel, Chiang Mai, Thailand. The 2013 KP Supplement aims at updating the supplementary methodologies for estimating anthropogenic greenhouse gas emissions by sources and removals by sinks resulting from land

use, land-use change and forestry (LULUCF) activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol (KP), related to the annex to 2/CMP.7, on the basis of, inter-alia, Chapter 4 of IPCC's 2003 Good Practice Guidance for Land Use, Land-Use Change and Forestry (GPG-LULUCF).

More than 70 participants selected by the Bureau of the TFI (TFB), composed of 58 authors and 16 review editors based on nominations by governments and international organizations, joined the event. Assoc Prof Dr Savitri Garivait of JGSEE-CEE participated to the meeting as one of the Lead Authors of the Cluster 1 responsible for the Chapter and Sections related to “General Guidance”.

As the final step of the 2013 KP Supplement Publication Process, the LA4 has been convened to consider the comments received in the Expert and Government Review and to prepare the Final Draft for Final Distribution and Government Review of the Overview Chapter (Government Consideration).

### 25th Meeting of the Bureau of the Task Force on Greenhouse Gas Inventories

The IPCC Task Force on National Greenhouse Gas Inventories (TFI) is one of the main four pillars of IPCC. TFI works on greenhouse gas inventories – related methodologies and practices including IPCC Guidelines for National Greenhouse Gas Inventories. During 18-20 August 2013, TFI organized the “25th Meeting of the Bureau of the Task Force on Greenhouse Gas Inventories (TFB25)” in Chiang Mai, Thailand. The meeting was hosted by the Office of Natural Resources and Environmental Policy and Planning (ONEP) in collaboration with JGSEE-CEE. Participants of the meeting included distinguished members of the Bureau of the Task Force on National Greenhouse Gas Inventories. One of the outputs of this meeting was a work plan of action for the next year of TFI activities. Assoc Prof Dr Sirintornthep Towprayoon, director of JGSEE-CEE contributed to the meeting in her capacity as a member of this Task Force.

## Contribution to Research Arena

### Roadmap for SWM Improvement and GHG Emission Reduction in Asia



The National Institute for Environment Studies (NIES), JGSEE-CEE and Kasetsart University (KU) under the NIES-KMUTT-KU Collaboration Research Laboratory on Waste Management Commemoration organized the 6th workshop on “Improvement of Solid Waste Management (SWM) and Reduction of GHG Emission in Asia” during 8-9 August 2013 at Pullman Hotel in Bangkok. This workshop aimed

at sharing information on the current situation of waste management in Asia and come up with a roadmap for improvement based on climate change issues. About 20 experts from Korea, Laos, Myanmar, Vietnam, Japan and Thailand contributed to the event.

## Co-benefit Values of Semi-aerobic Landfill Technology

The National Institute for Environment Studies (NIES in Japan), JGSEE-CEE and Kasetsart University (KU) under the NIES-KMUTT-KU Collaboration Research Laboratory on Waste Management Commemoration organized an open forum on “Estimation of Co-benefit Values of Semi-aerobic Landfill Technology” on 8 August 2013 at Pullman Hotel in Bangkok. The results of a comparative evaluation of landfill gas emission mitigation technology and greenhouse gas emission reduction were presented. The findings showed that semi-aerobic landfill can reduce the emission rate of methane gas by 75 percent over a 20 years period as compared to an equivalent aerobic landfill. The meeting was attended by 90 participants from the industry, government and academic sector both in Thailand but also neighboring countries.



## MECON Project Kick-off Meeting



The kick-off meeting of the project on “Effective Energy Efficiency Policy Implementation Targeting New Modern Energy Consumers in the Greater Mekong Sub-region” or MECON project, was organized by JGSEE-CEE during 26-27 June 2013 in Bangkok. The 2-year research project, which is led by Dr Milou Beerepoot, a visiting professor at JGSEE-CEE, is funded by the UK based Engineering and Physical Sciences Research Council (EPSRC). It aims at providing options for households to reduce their energy expenditure, especially those with access to grid electricity but with low income. In the near future, this target group is expected to see its income and standard of living increasing, including its energy

consumption. Therefore, the project is designed to be proactive in order to cope with the foreseen situation.

This project is a collaboration between five forefront research institutes in the Greater Mekong Subregion which are the Hanoi University of Science and Technology (Vietnam), the National University of Laos (Laos), the Myanmar Engineering Society (Myanmar), the Royal University of Agriculture (Cambodia), JGSEE-CEE (Thailand), and a research partner from the United Kingdom, the University College London (UCL). Another goal of the project is to enhance research capacity and strengthen networking between project partners.

## JGSEE-CEE and STI sign MoU



On 16 January 2013, Dr Pichet Durongkaveroj from the National Science Technology and Innovation Policy Office (STI) and Assoc Prof Dr Sirintornthep Towprayoon (Director of JGSEE-CEE) signed a Memorandum of Understanding for research cooperation focusing on energy security and resources, and environmental development. In this regard, a study on biomass potential in ASEAN countries, particularly Cambodia, Lao PDR, Burma, and Vietnam, was initiated.

## SATREP Program : Clean and Efficient Utilization of Low Rank Coals and Biomass



The Signing Ceremony of the Minutes of Meeting (MM) between JICA, JGSEE-CEE-KMUTT and PTT was held on 5 September 2013 at KMUTT. This event officially initiates collaboration of the above organisations in a major joint research project on “Development of Clean and Efficient Utilization of Low Rank Coals and Biomass by Solvent Treatment”. This project will be implemented under the Science and Technology Research Partnership for Sustainable Development or SATREPS – a program supported by Japan International Cooperation Agency (JICA) and Japan Science and Technology Agency (JST). The aims of SATREPS are to develop and implement new technologies enabling to tackle global issues, as well as to enhance the capacity of researchers and research institutes both in Japan and a recipient country. This is a multi-party Japan-Thai collaborative project involving researchers from universities and the industry. On the Japanese side, the project will be led by the Institute of Advanced Energy at Kyoto University, with partners from the University’s Graduate School of Engineering, Akita University, the Central Research Institute for Electric Power Industry (CRIEPI), and Kobe Steel Co. Ltd. On the Thai side, the project will be led by JGSEE-CEE, and the Research and Technology Institute (PTT RTI) of PTT Plc.

## Contribution to ASEAN Community

### Driving Biomass STI Policy for Thailand in the Context of AEC

JGSEE-CEE and the National Science Technology and Innovation Policy Office (STI) successfully organized the 1<sup>st</sup> Bioenergy Expert Meeting on 28 June 2013 at the Crowne Plaza Hotel in Bangkok. This meeting was held as part of a project entitled “Driving Biomass STI Policy for Thailand in the context of AEC”. This project aims at providing information concerning the status of biomass technology in ASEAN and at enabling the formulation of adequate policy recommendations for biomass technology, especially for Research, Development and Demonstration (RD&D) in biomass technology for the ASEAN region.



The meeting was a success with over 80 Thai bioenergy experts from government, academic and private sectors attending the event. They contributed to the workshop in providing information concerning the status of bioenergy in the region and sharing their views on opportunities/barriers for bioenergy implementation in Thailand in the context of AEC.

### ASEAN Coal Database Workshop in Indonesia



During 21-24 May 2013, JGSEE-CEE joined the workshop on “ASEAN Coal Database” that was held in West Bandung in Indonesia. This event was hosted by the Geological Agency and the Ministry of Energy and Mineral Resources of Indonesia and the ASEAN Centre for Energy. During this event, information on coal from ASEAN countries was gathered to help initiate a database on coal resources, utilization and trade in the region. Participants of this workshop included representatives from Indonesia, Lao PDR, Malaysia, Philippines, and Thailand.

## Public Hearing on Energy Efficiency and Conservation



The Energy Policy and Planning Office, Ministry of Energy and JGSEE-CEE successfully co-organized the Public Hearing of the study on “Energy Efficiency and Conservation Strategic Plan of Thailand for the ASEAN Economic Community” on 28 August 2013 at Pullman Hotel in Bangkok. The welcoming and opening ceremony was presided by Mr Natie Tabmanie, Deputy Director-General of the Energy Policy and Planning Office (EPPO), Ministry of Energy.

The seminar was a success gathering 50 participants from the academic sector, as well as representatives from the private and government sector.

## APN Project Closing Training Workshop on Strategic Rice cultivation in SEA



The Capacity Building Workshop on “Strategic Rice Cultivation with Energy Crop Rotation in Southeast Asia – A Path Toward Climate Change Mitigation in the Agricultural Sector” was organized by JGSEE-CEE during 29-31 May 2013 at Pullman Hotel in Bangkok. This workshop was held as part of a 2 year APN-ARCP funded Project on “Strategic Rice Cultivation for Sustainable Low Carbon Society Development in Southeast Asia”.

This 3-day workshop aimed at providing scientists and policy makers in the region with improved knowledge and understanding regarding strategic rice cultivation including rotation with energy crops in SEA with a focus on GHG emissions reduction via improved rice cultivation management. A total of 35 participants joined the workshop, including, aside from the project team, experts from Cambodia, Indonesia, Myanmar, Vietnam, and Japan, as well as officers and researchers from government agencies and universities in Thailand.

Prior to start the event, a welcome address was delivered by Assoc Prof Dr Sirintornthep Towprayoon, Director of JGSEE and APN Project Leader and an opening address by Assoc Prof Dr Bundit Fungtammasan, Vice President for Research at KMUTT. The first day of the workshop focused on providing an overview of the project main outcomes. At that occasion, a summary of the project activities and main results were presented, and keynote and country report presentations delivered by experts from the SEA region. The second day of the event focused on providing training on the DeNitrification-DeComposition (DNDC) model and the last day on the “Agriculture and Land-Use” (ALU) model. Both the tools were used in the project to simulate and assess GHG emissions and soil carbon stock dynamics associated to rice cultivation and rotation with energy crops. This capacity building workshop was very successful in enabling to transfer the knowledge gathered over the entire duration of the project and potentially opening new opportunities for further collaboration with scientists and policy-makers in the region.

## Contribution to Society

### Conference and Exhibition of Centers of Excellence Under the S&T Postgraduate Education and Research Development Office (PERDO)



PERDO and 11 Centers of Excellence successfully organized the conference on “The Motion for the Future of Thailand by the Center of Excellence System” and the “Exhibition of Research and Activities” on 31 July 2013 at CRI Convention Center, Chulabhorn Research Institute, Bangkok. During the conference, representatives of each center of excellence delivered presentations. For JGSEE, the Center of Excellence on Energy Technology & Environment (CEE), two talks were delivered; the first one by Assoc Prof Dr Sirintornthep Towprayoon on “Fighting Global Warming by Low Carbon City” and the next by Assoc Prof Dr Navadol Laosiripojana on “Transformation of Agricultural Raw Materials to Biofuels and High-valued Chemicals”. The conference and exhibition were a

great success gathering over 1,000 participants from the academic sector, as well as representatives from the private and government sector.

## Renewable Energy Asia 2013

UBM Asia and JGSEE-CEE successfully organized the Renewable Energy Asia (RE-Asia) 2013 on “New Opportunities in the ASEAN Community – Focus on Renewable Energy and Energy Efficiency” on 5 June 2013 at BITEC in Bangkok. The event aimed at providing a forum for local and international technology leaders, policy makers, and industrialists to share knowledge and experience in technology and market developments. RE-Asia 2013 featured both plenary and parallel sessions with local and international speakers presenting talks on the following key topics, 1) Renewable Energy and Energy Efficiency - New Opportunities in the ASEAN Economic Community; 2) Policies and Investment Opportunities in Neighboring Countries; 3) Photovoltaic, Wind and Smart Grid; 4) Biogas; 5) Biofuel & Biomass; 6) Energy Efficiency and 7) Carbon Footprint and Carbon Markets. The event was very successful with over 200 participants joining from the industry, government and academia, from Thailand as well as neighboring countries and beyond.



## Thai Water 2013

UBM Asia in collaboration with JGSEE-CEE and KMUTT successfully organized the Thai Water 2013 on the theme of “Water for the Future” during 6-7 June 2013 at BITEC in Bangkok. The event aimed at providing a forum for the sharing of knowledge and experiences in water technology and businesses in Thailand and Southeast Asia. Thai Water 2013 complements well the Water Summit Declaration looking at the future of water management and technology, particularly in the ASEAN region. The conference was a success gathering over 100 participants from Southeast Asia and beyond.

## Contribution to Knowledge Platform

### Coal Fired Power Plant Training for BLP Power Station in Map Ta Phut Industrial Estate

JGSEE-CEE successfully organized a technical training on “Coal Fired Power Plant” during 4-5 July and 10-11 July 2013 for the BLP power station at Map Ta Phut Industrial Estate in Rayong. About 40 staff from the power plant joined the training event. It aimed at providing the participants with technical knowledge on pulverized coal fired power plant including the production process. The training program focused on topics including (1) Fuels & Combustion, (2) Concept of Pulverized Coal-Fired Power Plant, (3) Boiler Combustion Optimization and Tune-up, (4) and Flue Gas Treatment and other related issues.

### Innovative Thin Film Solar Cells by Dr Scott Watkins from CSIRO



Dr Scott Watkins is the stream leader for Organic Photovoltaics in CSIRO’s Future Manufacturing Flagship and is based in the Division of Materials Science and Engineering in Melbourne, Australia. JGSEE-CEE in collaboration with the Research Promotion and Administration Unit, International Affairs, KMUTT invited Dr Watkins on 16 August 2013 for a presentation on “Renewable Energy – Thin Film Solar Cells”. His talk focused on nanoparticle solar cells and the innovative materials and processes that are used to produce fully printed organic solar cells. The talk was very informative gathering 25 participants mainly from universities and some representatives from the private and government sector.

## Institutionalization of the Energy Efficiency Policies in China by Dr David Crossley



Dr David Crossley is a senior expert on energy efficiency (EE) in Asia. He established in the mid-nineties his consultancy company Energy Futures Australia to provide consultancy services on sustainable energy policy and programs. Dr Crossley was invited as an honorary guest lecturer to deliver a presentation on 'Institutionalization of the Energy Efficiency Policies in China' on 23 August 2013 at JGSEE-CEE. In his lecture, Dr Crossley gave an overview of China's energy situation and historical perspective of energy efficiency policies, including, measurements and regulations attempting to improve energy efficiency.

Dr Crossley is also supervising the work of a PhD student, Ms Verena Streiferdt, who is currently hosted by JGSEE and conducting research on Thailand's public finance mechanisms and private sector investment in energy efficiency.

## Train-the-trainers Workshop on Water Footprint for Thai Practitioners and Academia

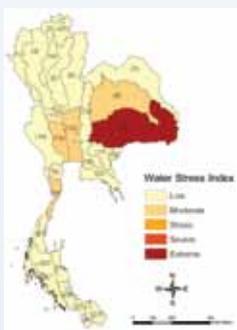
A "Train-the-trainers" workshop on Water Footprint was organized at the Thailand Science Park in Bangkok, Thailand during 2-3 July 2013 by the National Metal and Materials Technology Center (MTEC-NSTDA) with support from the United Nations Environment Programme (UNEP). The workshop was organized for Thai practitioners and academia with multiple aims of developing local capacity and professional network on water footprint as well as developing local trainers to transfer knowledge.



Prof Shabbir H Gheewala from JGSEE-CEE conducted this workshop along with Dr Stephan Pfister of ETH, Zurich. The topics covered the various issues in freshwater, the state-of-the-art in water footprint methods as well as industrial applications. Hands-on exercises were organized for the participants on using some of the water footprint methods.

The workshop was attended by about 35 participants from universities, government organizations, industry and private consultants. The feedback from the participants was very positive though they also realized that there are many different methods of assessment which are still "work-in-progress". This motivated them for working in the future towards having a method tailored for needs in Thailand. Also, an informal network was created for problem sharing and discussions on water related issues.

## Successful Completion of TRF Project on Water Footprinting for Effective Water Resource Management



The Life Cycle Sustainability Assessment Lab at JGSEE-CEE recently concluded a project on "Water Footprinting of Food, Feed and Fuel for Effective Water Resource Management" funded by the Thailand Research Fund (TRF). The one-year project resulted in the evaluation of water stress indices of the 25 watersheds of Thailand. Calculations were made on the water demand due to the 10 major agricultural crops in Thailand, including biofuel feedstocks. Policy recommendations were made to reduce the effects on water stress due to ethanol production following the Alternative Energy Development Plan. The results of the evaluation of effects of ethanol on water demand have been published in the journal, *Bioresource Technology*. Following the success of this project, a follow up project has been proposed to the Thailand Research Fund for a more detailed study of the critical areas identified in the first phase following a "bottom up" approach.

## Corporate Water Accounting for PTT Plc



Considering the expertise of water being developed at JGSEE-CEE, the Life Cycle Sustainability Assessment Lab (LCSAL) was invited by PTT Plc to help them evaluate their corporate water accounting of their entire operations. This is a one-year project and will result in water accounting of their operations and a roadmap on water management. The results will also be used for reporting at international level via initiatives such as the Global Reporting Initiative, Carbon Disclosure Project, etc.

## Welcome new comers



**Mr Pan Piyasil** is the coordinator of the project on "Effective Energy Efficiency Policy Implementation Targeting New Modern Energy Consumer in the Greater Mekong Sub-region" or MECON project. He graduated in 2006 with a Bachelor of Art in Economics from Thammasat University and in 2012 with a Master of Science in Sustainable Development from Uppsala University (Sweden). His master thesis focused on risk and profitability in photovoltaic technology in Thailand.

His main research interests are in rural development, cost-benefit analysis, agricultural and environmental economics, and renewable energy and energy efficiency.

**Dr Penwadee Cheewaphongphan** completed her PhD degree in Environmental Technology from JGSEE in 2012. While working on her PhD thesis, she was also involved as a research assistant in a collaborative research activity between JGSEE and Kyoto University under the support of NIES and IGES on Low Carbon Society (LCS) development based on a quantitative model. She is currently working as a researcher at JGSEE in the Advanced Greenhouse Gas and Aerosol Research Laboratory (AGAR).

Her main research interests include estimation of biomass open burning emissions, GHG inventory related to land use, land use change, and forestry sector (LULUCF), mitigation of GHG emissions from agricultural activities, low carbon society (LCS) development, quantification of biomass resources, and bioenergy potential assessment.



## Upcoming Event



### Workshop on Capacity Building in Landfill Gas Utilization in ASEAN

As part of the JAIF project on "Capacity Building in Landfill Gas Utilisation in ASEAN" a third and final workshop on "Landfill Gas" will be organized during 17-19 December 2013 in Chiang Mai, Thailand. The event aims at enabling the sharing of experiences and knowledge on landfill gas-to-energy systems for ASEAN countries. Main collaborators for the organization of the event include the Association of Southeast Asian Nations (ASEAN), the National University of Singapore (NUS) and JGSEE-CEE.

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