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The Joint Graduate School of Energy and Environment



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CENTER OF EXCELLENCE ON ENERGY TECHNOLOGY AND ENVIRONMENT



JGSEE Newsletter

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Contribution to Society

Research Network for LCA and Policy on Food, Fuel and Climate Change



Over the next few years, Prof Shabbir H Gheewala and his LCSAL team (JGSEE-CEE) in collaboration with 5 universities, including, Prince of Songkla University, Kasetsart University, Mahidol University, University of Phayao and Maharakam University, will be organising a series of public sustainability seminars. These seminars are part of a NSTDA funded project titled "Network for Research and Innovation for Trade and Production of Sustainable Food and Bioenergy (2017-2022)". These events will be organised three times a year in order to exchange knowledge on LCA and Sustainability assessment as well as to expand the network and disseminate the research results obtained from the project to other stakeholders.

The first sustainability seminar (Sustainability Seminar I) was held on 6 February 2017 at the Mahidol EcoLab, Department of Civil and Environmental Engineering, Faculty of Engineering, Mahidol University (Salaya campus). The seminar aimed at illustrating how LCA and other sustainability tools can be applied to support future decisions of government, and food and bioenergy industry towards Thailand 4.0. About 70 participants from the private sector, government, research institutes and academia joined the event.

A second seminar (Sustainability Seminar II) was organised on 23 May 2017 at KMUTT. This seminar aimed at presenting the research outputs obtained from the researchers in the "Network for Research and Innovation for Trade and Production of Sustainable Food and Bioenergy". The topics covered included : (1) Data Quality in LCA; (2) Policy on Sustainable Consumption and Production (SCP) and its relation to LCA; and (3) Tools for Sustainability Assessment of Biofuels and Water Footprint for Food and Fuel Crops. Information about available scholarships for potential Master and PhD candidates under the NSTDA Researcher Grant of Prof Gheewala was also provided. The seminar was attended by 35 participants from KMUTT and network partners.



JGSEE welcomes Representatives from HEDP and PERDO



On 11 May 2017, the subcommittee of the Directorial Board of the Higher Education Development Project (HEDP) and representatives from PERDO visited JGSEE-CEE at Bangkhunthien Campus, KMUTT. Assoc Prof Dr Bundit Fungtammasan, KMUTT Senior Vice President for Research and Innovation, and Dr Kanyawim Kirtikara, KMUTT Vice President for Research Strategy, joined the visit and welcomed the delegates. Assoc Prof Dr Sirintornthep Towprayoon, JGSEE director, presented the implementation, direction and future strategic plan of the CEE. This was followed by a Q&A session during which discussions and suggestions for improvement were exchanged among all participants. A tour of JGSEE's laboratory facilities was then organised, including, the gasification pilot plant of the Advanced Fuel Processing Laboratory (AFPL) and the net zero energy house of the Building Energy Science and Technology laboratory (BEST).

Contribution to International Forum

Renewable Energy Asia 2017: Moving Towards ASEAN's Smart Cities



UBM Asia and JGSEE-CEE successfully organised the 13th edition of Renewable Energy Asia 2017 (REA 2017) on the theme "Moving Towards ASEAN's Smart Cities" on 7 June 2017 at BITEC in Bangkok. The event aimed at providing a forum for participants to update and share their knowledge and experiences with regards to policy formulation, and technology and market developments. RE-Asia 2017 featured both plenary and parallel sessions during which local and international speakers delivering talks on the following key topics: 1) Green Buildings: More than Energy Efficient!; 2) PV, Wind and Smart Grid; 3) Electric Vehicle and Storage; 4) Bio-Energy and 5) Effective Energy from Waste for Smart City (Waste / Bio-Energy for City). The event was very successful gathering over 200 participants from the industry, government and academia from Thailand as well as neighboring countries and beyond.

Water Forum II: Sustainable Water for ASEAN



UBM Asia, KMUTT and JGSEE-CEE successfully organised the International Conference Water Forum II on “Sustainable Water for ASEAN” on 8 June 2017 at BITEC in Bangkok. The event aimed at providing a forum for participants to update and share their knowledge and experiences with regards to policy formulation, and technology and market developments. Water Forum II featured both plenary and parallel sessions during which local and international speakers delivered talks on the following key topics: 1) Smart Water Management; 2) Wastewater Treatment and Recovery; and 3) Water Purification. The event was very successful gathering over 200 participants from the industry, government and academia from Thailand as well as neighboring countries and beyond.

Contribution to Knowledge Platform

JGSEE Student Visits Trier University of Applied Sciences in Germany



During March and April 2017, Mr Peerawat Payakkamas, a Master student in Energy Technology and Management at JGSEE-CEE, visited Germany to explore its electricity supply system, pricing and policies. This visit was organised as part of his thesis concerning the impact of external costs, wheeling charges and transmission losses on electricity costs, which is co-supervised by Dr Athikom Bangviwat of JGSEE and Prof Christoph Menke of Trier University of Applied Sciences.

With the assistance of Prof Menke and his student, Mr Fabian Kugler who specialises on regenerative and efficient energy systems, Mr Peerawat was able to meet several experts from regulating bodies in Germany, discuss about the country’s electricity situation and gather possible suggestions for Thailand. He also had an opportunity to visit several research institutes located at Trier University including, the Institute for Energy Efficient Systems (IES), the Hartard’s Institute of Applied Material Flow Management (IfaS) and the Environmental Campus Birkenfeld. Mr Peerawat was also introduced by Prof Menke to the Solar Competence Centre to learn more about the large-scale thermal solar heating system that is used on campus.

In addition to fulfilling his research needs, Mr Peerawat’s visit to Germany is hoped to contribute strengthening the already existing collaboration between JGSEE and Trier University. Having learned from Germany’s experience, the outputs from this visit are also hoped to contribute encouraging Thailand’s initiatives on shaping a more sustainable electricity market.

Special Talk on Spontaneous Combustion and Prevention



On 18 May 2017, JGSEE-CEE invited Prof Kouichi Miura from the Institute of Advanced Energy at Kyoto University (Japan) to deliver a special talk on “Spontaneous Combustion of Low-rank Coal, Biomass and Prevention”. The presentation aimed at providing an understanding of the causes of spontaneous combustion occurring in low-rank coal and biomass which are critical issues for fuel transportation and storage. At present, his research results provide new findings in the area of fuel processing with regard to spontaneous combustion behaviour. Prof Miura has also successfully formulated the kinetic equations enabling to predict the spontaneous combustion propensity of low-rank coal and biomass. During his talk, he suggested some interesting techniques to prevent this situation from occurring.

Dr Komsilp Wangyao delivers Talk on Waste to Energy at KX



On 23 June 2017, Dr Komsilp Wangyao of JGSEE-CEE was invited by the KMUTT Knowledge Exchange for Innovation Center (KX) to deliver a talk on “Waste to Energy”. The talk was organised under the activity on “Knowledge Exchange for SMEs”. This was followed by a panel discussion on the same subject. Panelists included, Assoc Prof Dr Sirintornthep Towprayoon (JGSEE-CEE), Asst Prof Dr Suthum Patumsawad (KMUTNB), Mr Jetapon Aimmanee (Green Conservation Solution Co Ltd), Mr Thawatchai Jungmongkolkarn (Pairoj Sompong Co Ltd) and Mr Chanchai Pongprothong (Choakchai Environmental Co Ltd).

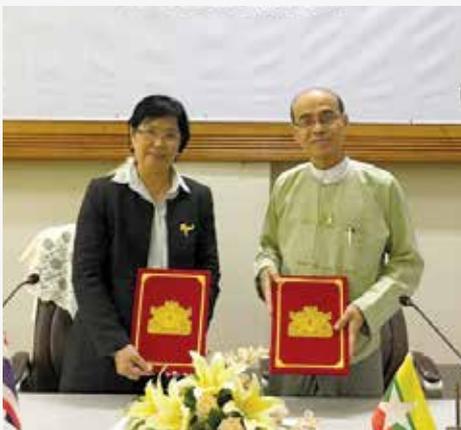
MOU between MTU (Myanmar) and KMUTT



On 29 June 2017, the Memorandum of Understanding (MOU) for academic exchange and collaboration between MTU and KMUTT was signed by Prof Sint Soe, Rector of Mandalay Technological University (MTU) in Myanmar, and Assoc Prof Dr Sirintornthep Towprayoon, Director of JGSEE-CEE and acting representative of KMUTT President.

A Seminar was also held on “Sustainable Urban Development” aiming at furthering research, training, teaching and recruitment of students as well as promoting the organisation of a summer school on “Sustainable Urban Development” scheduled during 24-31 July 2017 in Thailand.

MOU between ECD (Myanmar) and JGSEE-CEE



Mr Hla Maung Thein, Director-General of the Environmental Conservation Department (ECD), Ministry of Natural Resources and Conservation (MONREC), Myanmar, and Assoc Prof Dr Sirintornthep Towprayoon, Director of JGSEE-CEE and acting representative of KMUTT President, signed a Memorandum of Understanding (MOU) on research activities related to forest carbon mapping and climate change between ECD and JGSEE. The signing ceremony was held in Nay Pyi Taw on 14 July 2017. The purpose of this MOU is to establish a framework for research collaboration between MONREC and JGSEE aiming at advancing scientific knowledge and the development of Myanmar in relation to forest and climate change related challenges. The Agreement sets forth the terms and conditions of cooperation between both parties for the execution of the above mentioned collaboration including enabling activities for the preparation of National Communications and Capacity Building events. In this regard, a three-year plan of activities has been developed.

Exhibition of Thailand's CoEs at OHEC



During 12-21 July 2017, JGSEE-CEE in collaboration with PERDO and 4 Centers of Excellence (CoEs), including, HSM, PETROMAT, EHT and CEM, organised the exhibition titled "Smart Life by CoE" on the theme "Bio-economy". The event was held at the Office of Higher Education Commission (OHEC). At this occasion, JGSEE-CEE presented its research activities under the program "Efficient Biomass Conversion Technologies for Biofuel and Bioenergy Production" (or BBB in short). Focus was mainly on efficient utilisation and conversion of biomass into fuels (solid, liquid and gas) and energy (heat and power) as well as production of high value-added chemicals and materials.

During 24-27 July 2017, a second exhibition was held on the theme "Thailand 4.0". It was co-organised by all 11 CoEs of Thailand, which in addition to the above mentioned organisations include, AG-BIO, PERCH-CIC, BDC, ThEP, PHTIC and CEMB. During the exhibition, under the BBB program, JGSEE presented some of its studies on climate, food and bioenergy as illustrative examples of its contributing efforts towards the sustainable development of the country and transition to Thailand 4.0. Aside from the above works, The BEST laboratory of JGSEE also presented a research project on "Sustainable Urban Development (SUD)" aiming at developing a net zero energy house integrating renewable energy and efficient technologies for eco-smart city/community development.

During 7-11 August 2017, a third exhibition was held on the theme "STEM Education". It was co-organised by 5 CoEs, including, CEM, EHT, ThEP, PERCH-CIC and JGSEE-CEE. During the exhibition, under the BBB program, ABBA-EIP presented some of its studies on climate while IBL (Integrated Biorefinery Laboratory) presented some of its works on bioenergy, including, biorefinery technology, and energy from biomass and waste materials.

During 21-25 August 2017, a last exhibition was held at OHEC on the theme "Climate Change". It was co-organised by 3 CoEs, including, EHT, HSM and JGSEE-CEE. During the exhibition, under the Climate Technology & Innovation (CTI) program, the THAI-GLOB team presented some of its climate related works.

JGSEE holds Summer School on Sustainable Urban Development for ASEAN



During 24-31 July 2017, under a project called "Enhanced Networking on Urban Sustainability Development" JGSEE-CEE with support from KMUTT and Hua Hin Municipality successfully organised a summer school on "Sustainable Urban Development for ASEAN". The key objectives of this summer school were (1) to enhance research networking on sustainable urban development among researchers in ASEAN countries and (2) to raise awareness and equip young ASEAN researchers with knowledge in planning and selecting suitable technologies and solutions for sustainable urban development in their countries.

The summer school welcomed 20 participants from 7 countries, including, Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Vietnam and Thailand. The participants were trained through a series of lectures and hands-on workshops delivered by JGSEE-CEE and KMUTT lecturers and researchers as well as guest speakers from Phanatnikhom Town Municipality, Kasetsart University, University of Technology Malaysia and the National Institute for Environmental Studies (Japan).

The first part of the summer school was held during 24-26 July at KMUTT. The participants were introduced to sustainable urban development (SUD) and related aspects. They were then familiarised with examples of SUD in Thailand, ASEAN countries and non-ASEAN countries. Teaching were also delivered on topics covering: Sustainability Assessment, Urban Climate and Pollution, Sustainable Buildings, Sustainable Waste Management, and Sustainable Energy Production. A tour was also organised to visit research laboratories in Bangkhuntien, the Thai Health Promotion Foundation and the Bangkok municipal waste treatment facility including the King's Royally Initiated Laem Phak Bia Environmental Research and Development project.

The second part of the summer school was held during 27-31 July at Hua Hin Municipality. With generous contributions from the municipality, a hands-on workshop focusing on "Low Carbon Scenarios and Sustainable Development in Hua Hin" was organised. Outputs from the workshop included assessment of GHG emissions from the city, analysis and suggestion of possible GHG mitigation options, forecast of emissions and future mitigation scenarios, and establishment of a GHG reduction target for the city.

Apart from the knowledge and experiences gained during the classes and workshop, participants also had a chance to learn more about each other through presentations and discussions about SUD in their respective countries. The summer school also arranged various cultural-learning and entertaining outdoor activities ensuring strong networking and friendship among participants. The results of the case studies carried out by the participants and other related activities as well as updates and future news will be published at: www.jgsee.kmutt.ac.th.

Knowledge Sharing Seminar on RDF Production, Utilisation and Standardisation



On 2 August 2017, JGSEE-CEE in collaboration with the National Institute for Environmental Studies (NIES, Japan) organised a Knowledge Sharing Seminar on "RDF Production, Utilisation and Standardisation" at the KMUTT Knowledge Exchange for Innovation Center (KX) in Bangkok. The event was organised with support from NSTDA. At the start of the seminar, opening remarks were delivered by Assoc Prof Dr Sirintornthep Towprayoon, JGSEE director, and Asst Prof Dr Suthum Patumsawad, Program Director of Renewable Energy and New Energy Technology, NSTDA.

The morning session focused on the current situation of waste management in Thailand and Japan. On the Thai side, Ms Rungrawee Yingyuad from DEDE delivered a talk on "Current Status of Waste-to-energy Policy" and Mr Vuttichai Kaewkrajang from PCD provided some insights on "Development of RDF Standard in Thailand". From NIES in Japan, Dr Tomonari Ishigaki and Ms Reiko Kubota shared their respective experiences on "Production of SRF and RDF in Japan" and on "Development of SRF Standard in ISO TC300 in Japan". During the afternoon, a panel discussion moderated by Dr Sirintornthep was held during which fruitful discussions and experiences were shared among Thai and Japanese experts on RDF production, utilisation and standardisation, including, the possibility of RDF utilisation in ASEAN in the future.

Award

Photocat Team wins Award at the PTTGC Open Innovation Challenge 2016



On 26 May 2017, the Photocat team composed of Dr Surawut Chuangchote (KMUTT), Prof Navadol Laosiripojana (JGSEE-CEE), Dr Verawat Champreda (BIOTEC) along with JGSEE students, including, Ms Kamonchanok Roongraung, Ms Nattida Srisasiwimon and Ms Oranoot Sittipunsakda, won the PTTGC Open Innovation Challenge 2016 on "Smart-Eco Innovation". The award they received includes a royal trophy from HRM Princess Maha Chakri Sirindhorn and a 500,000 THB cash prize. This award relates to their innovation titled "Upgrading Sugar to High Value Products and Chemicals by Green Technology". In this regard, the team proposed an innovation to upgrade cane sugar to xylitol, a high value sugar acid that can be used in replacement of sugar. The upgrading of sugar and biomass is part of the JGSEE-NSTDA Integrative Biorefinery Laboratory (IBL). This collaborative work is now extended to other laboratories, including, the Advanced Materials for Energy and Environmental Technology laboratory.

Upcoming Event

Joint International Conference on
"Sustainable Low Carbon Emission Development in Asia"
Incorporating
The 3rd International Conference of
Low Carbon Asia and Beyond (ICLCA 2017)
and
The 6th LoCARNet Annual Meeting

1-3 November 2017, Century Park Hotel, Bangkok, Thailand

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www.iclca2017.com

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