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The Joint Graduate School of Energy and Environment



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JGSEE Newsletter

Vol. 17, September - December 2013

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Dr Pornlada Daorattanachai

Ms Apinya Puapattanakul

Dr Agapol Junpen



 2014
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Outstanding Contribution

JGSEE-CEE awards Distinguished Professors

JGSEE-CEE over its past 15 years of existence has been benefiting from the contribution of several professors. The professors invited were involved in providing guidance and advice in terms of curriculum development, research development, networking and overall strategies for enhanced visibility both at the national and international level.

With approval from the Board of Trustee and appointment from the president of KMUTT, JGSEE is proud to announce that four professors have been selected to receive an award as “Distinguished Professor” for their outstanding services and the substantial support they provided to the school. The distinguished professors are, Prof Christoph Menke from Germany, Prof Pierre Joulain from France, Prof Monique Y. Leclerc from USA, and Prof Kouichi Miura from Japan.



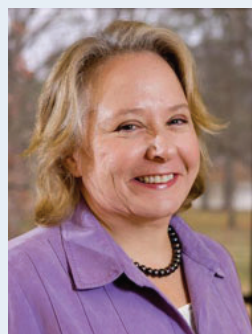
Christoph Menke: Professor at Trier University of Applied Sciences, Germany

In 2004, Prof Menke was sent by CIM (the Centre for International Migration and Development) to contribute as advisor to many of JGSEE's key activities, including, the establishment and strengthening of an industrial outreach program, the introduction of a new master program with internship, the capacity building of academic staff in project implementation, and the reorganization of research focus areas. He was also involved in the formation of an Energy Policy Research Group which few years back was in charge of coordinating a major national energy policy research project for the Energy Policy and Planning Office (EPPO). Prof Menke also provided guidance on strategies to enhance the international visibility of JGSEE including by ensuring the continuity of experts sent by CIM to work at JGSEE. Visibility was also enhanced through the initiation of an International Conference and Exhibition Event referred to as “Renewable Energy Asia” which Prof Menke is responsible in coordinating the organization each year in Bangkok in collaboration with UBM Asia. Over the years, Prof Menke has also been providing teaching and trainings on energy related subjects, and supervising several PhD and Master students. In more recent years, he has been providing guidance and advice concerning the restructuring of the Energy Policy Research Group of JGSEE, the evaluation of research performance, and the setting of a Joint International ASEAN Postgraduate Program on Energy and Environment.



Pierre Joulain: Director emeritus Research (CNRS) at P' Institute-ENSMA, France

Prof Joulain has been contributing to JGSEE over the last 10 years in providing expert guidance and advice on aspects related to academic, research and management performance. He served as the advisor of many students and researchers not only at JGSEE but also its consortium partner KMUTNB, on topics related to biomass combustion. He was also a key advisor of several research works on the subject at JGSEE. He also provided guidance in terms of directions, road mapping and quality assessment of research works on combustion. Prof Joulain played an important role in initiating collaboration between Thai and French researchers from JGSEE and his laboratory at ENSMA with support from the French government and the Thailand Research Fund (TRF). Prof Joulain also served as an invited speaker in many events organized by JGSEE including its bi-annual International Conference on Sustainable Energy and Environment.



Monique Y. Leclerc: Regent Professor at University of Georgia, USA

Over the past decade, Prof Leclerc has been contributing to JGSEE's research activities on climate change providing support for PhD students from JGSEE to perform part of their research activities at her laboratory at the University of Georgia (USA). She was also involved in providing guidance for the setting of the Advanced Greenhouse Gas and Aerosol Research Laboratory (AGAR) of JGSEE as well as for the design and set up of a monitoring tower for CO₂ exchange in Ratchaburi Campus. Prof Leclerc also pushed for the funding of many projects on climate change that involved JGSEE as a partner. The latest one was on the “Analysis of Tropical Monsoon Forecast and Carbon Stock Changes Response to Extreme Weather Events”. It was proposed to and received funding from the National Science Foundation of the USA under the Partner for Enhanced Engagement in Research (PEER) program.



Kouichi Miura: Professor at Kyoto University, Japan

Over the years, Prof Miura has been providing strong support for students from Kyoto University to study at JGSEE and in recruiting students from the school to work as trainees and co-researchers at his University in Japan. Over his long-term connection with JGSEE, Prof Miura has strongly been supporting Kyoto-JGSEE research collaboration on biomass gasification and pyrolysis. Prof Miura has also been leading the JICA-JST project under SATREPS (Science and Technology Research Partnership for Sustainable Development) program in collaboration with several institutes, including, Kyoto University, CRIEPI and Akita University from Japan, and JGSEE and PTT-RTI from Thailand. Prof Miura was able to successfully secure 3 cycles of proposal submissions and therefore a large amount of

funding over a period of 5 years to perform bench and pilot scale research works. Kyoto and JGSEE are major contributing partners to this joint research work, i.e. the 7th SATREPS project in Thailand. This program promotes notably the strengthening of collaboration between universities and private companies, which is also one of JGSEE's (and KMUTT) main targets for the future. The outputs of this project, which include, development of innovative fuel processes and high value materials as well as capacity building and networking, are expected to provide JGSEE with higher visibility and enhanced recognition internationally. Over the entire duration of the project, Prof Miura is planning to stay at JGSEE for a couple months each year.

Contribution to International Organization

Seminar Workshop on Landfill Gas Utilization in ASEAN



The 3rd Seminar workshop on "Capacity Building on Landfill Gas Utilization in ASEAN" was held during 17-19 November 2013 in Chiang Mai. This event was supported by the Japan-ASEAN Integration Fund and jointly contributed by JGSEE-CEE, NUS and NIES.

This seminar workshop aimed at providing a forum for the exchange of knowledge and experiences on landfill gas conversion for energy in Thailand. Participants of this workshop included 30 Thai experts from the private sector, government sector, and academia as well as foreign experts from the ASEAN region.

Keynote lectures were delivered by experts on waste management and landfill gas utilization, including, Dr Tomonori Ishigaki (NIES, Japan), Assoc Prof Dr Sirontornthep Towprayoon (JGSEE), Assoc Prof Dr Chart Chiemchaisri (Kasetsart University), Dr Komsilp Wangyao (JGSEE), Mr Atthavute Ruenruengjai (Kasetsart University) and Dr Boonrod Sajjakulnukit (JGSEE). Also Country reports on the current status of solid waste management in ASEAN countries were presented by representatives from Brunei Darussalam, Indonesia, Lao PDR, Malaysia, and the Philippines.

On 19 November, the participants of this event visited a landfill gas-to-energy project operated by Tha Chiang Thong Co., Ltd at the Hot district in Chiang Mai province.

Keynote on Sustainability of Biomass-based Fuels and Fibres in France



Prof Shabbir H Gheewala of the Life Cycle Sustainability Assessment Lab (LCSAL) of JGSEE-CEE was invited to deliver a keynote on "How Green are Biomass-based Fuels and Fibres? Considerations from a Life Cycle Perspective" at the EPNOE 2013: "Polysaccharides and polysaccharide-derived products, from basic science to applications", held at Nice, France during 21-24 October 2013. The conference was organized jointly by the European Polysaccharide Network of Excellence (EPNOE) and the American Chemical Society (ACS). It featured about 250 oral presentations and 200 posters and was widely attended by researchers from several continents.

Contribution to Research Arena

Kick-off Meeting of ASEAN Network of Excellence in Green Energy Research (ANEGER)

The Regional EU-ASEAN Dialogue Instrument (READI) and JGSEE-CEE as host, successfully organized the Kick-off Meeting of “ASEAN Network of Excellence in Green Energy Research” (ANEGER) during 6-8 November 2013 at KMUTT.

ANEGER aims at supporting the implementation of the ASEAN plan of action on science, technology and innovation and contributing to policy-level discussions on suitable regional research cooperation schemes in ASEAN.

The meeting gathered members of the network and external experts from Thailand, Indonesia, Malaysia, Vietnam and Europe. Information was shared on current research activities, and organizations details of the network as well as potential directions for future research activities.



Potential Collaboration with University of Seoul on Waste-to-Energy Systems



In 2013, JGSEE-CEE joined the University of Seoul to initiate research collaboration on “Developing Customized Waste-to-Energy (MBT) Systems for Tropical Developing Countries”. This research supported by the Korea Institute of Energy Technology Evaluation and Planning (KETEP), focuses on the application of biodrying to treat mixed and moist waste in tropical countries in order to produce Refuse Derived Fuel (RDF).

In this regard, on 15 November 2013, Prof Dong-Hoon Lee and his team from the Waste Research Laboratory of the University of Seoul visited a Mechanical-Biological Treatment (MBT) Plant at a waste facility in Phitsanulok. During this trip, Prof Dong-Hoon Lee had a chance to discuss with Dr Sirintornthep Towprayoon, Dr Komsilp Wangyao and Dr Awassada Pongpipat about waste treatment and management options, and notably the conversion of some waste materials into solid fuel. There were also discussions about possibilities of students’ exchange and other activities that could be planned for 2014 to support such research works. The outcome of such collaboration is expected to help increase the potential of energy conversion from waste and so to support the AEDP policy targets related to renewable energy in Thailand.

KMUTT and ICCES sign MOU for Scientific Research and Education Cooperation

JGSEE-CEE at KMUTT and the International Center of Climate and Environment Sciences (ICCES) under the Institute of Atmospheric Physics (IAP), Chinese Academy of Science (CAS) are working on common environmental issues, including climate change impacts related to energy conversion. Hence, both parties agreed therefore to collaborate and engage in scientific and academic activities on the basis of equality, mutual understanding and partnership.

On 29 November 2013, Prof Zhaohui Lin, the Director of ICCES, Prof Feng Xue, the Deputy Director of ICCES, Assoc Prof Dr Bundit Fungtammasan, the Vice President for Research at KMUTT and Assoc Prof Dr Sirintornthep Towprayoon, the Director of JGSEE-CEE, signed a MOU for Research and Development Collaboration in the areas of Atmospheric Science and Environmental Science to contribute enhancing understanding and tackling challenges affecting both Thailand and China, and at large the international community. The related collaborative activities include joint supervision of graduate students, exchange of technical experts and scientists, exchange of students, and publications.



2nd MECON Project Meeting in Vietnam

During 28-30 November 2013, the Hanoi University of Science and Technology (HUST) hosted the Second MECON Project Meeting in Hanoi, Vietnam. The first day of the meeting focused mainly on ongoing tasks for the project, including review of baseline information and energy data analysis (task 1), market survey (task 2) and household survey (task 3). Before the meeting, each project partner had launched market and household pilot surveys in their respective countries. Results of those surveys were discussed during the meeting. The second day of the meeting focused mainly on the set of activities to be undertaken for the next 6 months of the project.

On the last day of the meeting, JGSEE with assistance from HUST and University College London (UCL) conducted an introductory training on "Long-range Energy Alternatives Planning System (LEAP)". LEAP model plays a crucial role in energy data analysis which is part of task 1 of the project. Although scheduled for only half of day, the event received positive feedbacks from the project partners being trained. More advanced training on the subject is likely to be held again as part of the next project meeting to be held in Cambodia in May 2014.

As for upcoming tasks, MECON project partners will revise the questionnaires designed and tested during the market and household pilot surveys, and plan for the full scale surveys to be conducted in all participating countries. Moreover, each partner will start to work on the LEAP model in order to process and analyze the energy data collected as part of task 1.

THAI-GLOB pushes Forward Research Collaboration between Thailand and China

During 28-29 October 2013 – the Thailand Research Fund's Research Development and Coordination Center for Global Warming and Climate Change (THAI-GLOB), a TRF supported research coordination unit at JGSEE-CEE in collaboration with the National Natural Science Foundation of China (NSFC) and The Thailand Research Fund (TRF) organized the 3rd China-Thailand Joint Seminar on "Climate Change" at Katathani Phuket Beach Resort. The 80 scientists from both countries gathered at the event were welcomed by Prof Suthipun Jitpimolmard, Director of TRF, Mr Ukkrit Satapoomin, Director of Phuket Marine Biological Center and Dr Wei Li, Program Manager of NSFC. This event is the third consecutive joint seminar between TRF and NSFC; the first one was held in Bangkok in 2009 and the second in Kunming (China) in 2011.

Many leading scientists from both sides have participated to these seminars which provide a good opportunity for capacity building of both Thai and Chinese graduate students. The seminars also constitute a good platform for Thai and Chinese scientists to present their research findings, to exchange knowledge and experiences, and to discuss further collaborations between the two countries. The research focus of these seminars is on four main areas: (1) understanding monsoon and its variability; (2) land surface-atmosphere interactions; (3) regional climate change, extreme events, and impact assessment; and (4) seasonal precipitation forecast and others.

Contribution to ASEAN Community

Joint International ASEAN Postgraduate Program on Energy and Environment



The integration of the ASEAN energy market is one of the most challenging topics for the future development of the region. It is anticipated that energy demand and supply will serve as the basic framework for the further development of AEC. Understanding energy and environmental issues in AEC is therefore essential to adequately address the energy situation in ASEAN and the challenges of energy security in the context of a single market. So far, universities and academic institutions in ASEAN have not been able to join hands in dealing with this challenge for instance through adequate joint academic programs.

It is in this context that JGSEE-CEE, in collaboration with four leading energy technology universities in ASEAN, is planning to initiate a Joint International ASEAN Master Program on "Energy and Environment". This program would aim at producing postgraduate students with a good understanding of energy and environmental issues particularly in the context of ASEAN and so in producing competent human resources for the region.

A consultative meeting to discuss the establishment of such a Joint International Postgraduate Program was organised in Bangkok during 4-5 November 2013. Representatives from the Hanoi University of Science and Technology (Vietnam), the University of Malaya (Malaysia), the Bandung Institute of Technology (Indonesia), the University of the Philippines (Philippines) and JGSEE joined the meeting. This joint activity should contribute to provide an adequate pool of knowledge and produce competent human resources in the years to come and to constitute a network of leading experts to drive the energy market integration process. It will also serve as a platform to strengthen research and development cooperation among involved universities of ASEAN member countries.



Lao PDR joins Energy Efficiency and Conservation (EE&C) Study Tour in Thailand

JGSEE-CEE in cooperation with Envir Tech Consultant Co., Ltd. hosted delegates from the Ministry of Energy and Mines of Laos PDR under the lead of Dr Bountheung Phengthavongsa, General Director of Cabinet Office, during 11-15 November 2013 in Thailand. During the study tour, experiences on energy efficiency and renewable energy policies as well as practical applications were shared.

During the first 2 days of the tour, lectures were delivered on a series of topics, including, (1) Energy Management in Buildings, (2) Energy Efficiency in the Building Sector and (3) Promotion of Energy Efficiency Investment in Thailand. These were delivered by Prof Surapong Chirarattananon, Dr Pipat Chaiwiwatworakul and Dr Athikom Bangviwat, respectively. A visit of the KMUTT Laboratory at Bangkhuntien campus was also organised. The next 3 days of the tour were dedicated to visits, including, the Energy Policy and Planning Office (EPPO) and the Department of Alternative Energy Development and Efficiency (DEDE), which are under the Ministry of Energy, the Electricity Generating Authority of Thailand (EGAT) and PTT PCL.



Training on Water Footprint at Workshop Organised by UNEP and MGTC in Malaysia

The Life Cycle Initiative of the United Nations Environment Programme (UNEP) along with the Malaysian Green Technology Corporation (MGTC) organized a training course on "Water Footprinting" in Putrajaya,

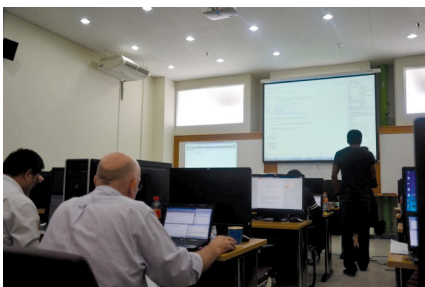
Malaysia during 4-5 December 2013. Prof Shabbir H Gheewala of the Life Cycle Sustainability Assessment Lab (LCSAL) of JGSEE-CEE was invited as one of the trainers along with Dr. Anne-Marie Boulay of CIRAIG, Canada. The training course was attended by about 30 participants representing industry, government and academia from Malaysia, Indonesia, China and the Philippines. Prof Shabbir has successfully completed the train-the-trainers course organized by UNEP in 2012 after which he has conducted training courses in Thailand and Malaysia. LCSAL has also been conducting scientific research on water stress funded by the Thailand Research Fund as well as helping PTT Plc conduct corporate water accounting.

JGSEE-CEE and the National University of Malaysia to initiate Academic and Research Collaboration



Prof Ir Dr Mohd Sobri Takriff from the National University of Malaysia visited JGSEE-CEE on 31 October 2013 to discuss possible opportunities for academic and research collaboration in areas related to biomass conversion technologies and biorefinery systems. Following discussions with Dr Sirintornthep Towprayoon and Dr Navadol Laosiripojana, it was suggested to organise a workshop on topics of common interest during 2014 to initiate and encourage exchange of students between the two academic organisations.

Contribution to Knowledge Platform



Training on Climate Data Analysis using R

JGSEE-CEE at KMUTT successfully organized the training on "Climate Data Analysis with R" during 24-25 September 2013 at KMUTT. The 2 days training was conducted by Mr Uday Pimple, a researcher of JGSEE who has expertise in GIS and R programming. The major objective of the training was to provide participants with an effective learning platform to process real climate data using R. Therefore, the workshop was designed so that apart from theoretical knowledge, participants could also practice processing climate data during hands-on training sessions. The training program was divided into various milestones and composed of 3 modules, including, presentations, practical demonstrations and exercises.

After completion of the training course, participants received a Training Completion Certificate. The training curriculum was particularly helpful for participants to learn about the R programming language and the handle large climate datasets for time series analysis, predictions and high quality maps production. The event, which included a registration fee and had limited seats available, was very successful gathering over 35 participants from the academic sector, as well as representatives from the private and government sectors.

In-house Training Workshops on Energy Modeling

The Energy and Environment Policy Laboratory (EEPL) of JGSEE-CEE successfully organized two in-house Training Workshops. The first workshop focused on "Energy System Modeling by LEAP". It was conducted by Dr Jakapong Pongthanaisawan from the National Science Technology and Innovation Policy Office (STI), Ministry of Science and Technology and Ms Jirapa Kamsamrong from JGSEE during 15-17 October 2013. The second training event focused on "Computable General Equilibrium Modeling for Planning and Policy Analysis" and was conducted by Dr Nattapong Puttanapong from the Faculty of Economics at Thammasat University, Dr Mayurachat Watcharejyothin from PTT MCC Biochem Co.,Ltd and Dr Atit Tippichai from JGSEE. It was held during 19-21 November 2013. The objectives of both workshops were to build capacity of researchers at JGSEE and its research network, including, participants from the government and private sectors, on energy modeling and its applications.

Contribution to Industry

Ms Streiferdt from UTS Investigates Energy Efficiency Finance in Thailand



Ms Verena Streitferdt, a German PhD candidate from the Institute for Sustainable Futures (ISF), University of Technology in Sydney (UTS), visited JGSEE-CEE as part of her six weeks stay in Thailand from the beginning of August until the mid of September 2013. Her PhD research focuses on public finance mechanisms that incentivise the private sector to invest into energy efficiency. Thailand was selected as a case study, due to its long history of Energy Efficiency (EE) policies and financing mechanisms such as the Energy Conservation Promotion Fund.

Prof Surapong Chirattananon of JGSEE-CEE acted as her field advisor and Mr Pan Piyasil as her research assistant. As a result of this cooperation, Verena could conduct 22 key expert interviews, with key figures from the government, academia, private sector and international organisations. Furthermore her co-supervisor, Dr David Crossley, who visited Thailand during that time, shared his knowledge with the JGSEE team on the institutionalisation of EE policies in China.

The purpose of this visit was to conduct a scoping analysis of the current status of EE finance in Thailand. The results will help to shape the focus for her in-depth research next year. Preliminary findings indicate that there is a broad and comprehensive environment for energy efficiency policies in Thailand. However, a complex role division among Ministries lead to challenges in the implementation. Further the environment seems suitable for energy efficiency finance. The financial markets seem liberalised, the energy price is relatively high and a dynamically evolving ESCO market exists. However, ESCO quality issues, complex legal processes and new licensing regulations seem to form some barriers for energy efficiency finance. Also public incentive mechanisms for EE have been successful in establishing awareness and capacity within financial institutions and the private sector. However, the institutionalisation of EE finance into mainstream market practice still needs further public support. This could be via guarantee mechanisms or via other innovative financing mechanisms such as EE technology leasing or ESCO financing. Verena Streitferdt will still conduct an in-depth evaluation of the collected data before deciding on the focus for her second field trip to Thailand next year.

Welcome new comers

Dr-Ing Robert Himmler



JGSEE-CEE is pleased to welcome Dr Himmler as new visiting professor and advisor on Energy Efficiency related issues. He received his PhD degree from the Institute of Energy and Process Systems Engineering of the Technical University of Brunswick in Germany.

Dr Himmler was Partner and Managing Director of EGS-plan International GmbH Stuttgart in Germany. His research interests include energy efficient and sustainable buildings and neighborhoods, buildings and system simulations, life cycle cost of buildings, green building certification and building evaluation.

At JGSEE, Dr Himmler will contribute to strengthen the school's capacity in terms of education and trainings as well as R&D and technical services, particularly through linkages with German and international institutions. He will also help to enhance JGSEE's capacity with regards to policy research and the initiation of policy dialogues with stakeholders.



Dr Pornlada Daorattanachai

Dr Pornlada earned her PhD degree in Energy Technology from JGSEE-CEE in 2013. Her doctoral studies were based on "Catalytic Conversion of Lignocellulosic Materials to Furan Compounds by Hydrolysis/Dehydration Process". She also had an opportunity during her PhD studies to work with NSTDA (Nanotec) on nanomaterials for catalytic processes and also to join the research activities of the Nanomaterials for Energy and Catalysis Laboratory of Kyoto University. She is currently working as a researcher in the Advanced Fuel Processing Laboratory (AFPL) of JGSEE on 2 projects, (1) Ethanol Conversion to 1,3-butadiene and (2) Biomass STI Policy for Thailand in the Context of AEC. Her main research interests include, biofuels, fuel additives and industrial chemicals production, catalytic conversion of biomass materials, and steam reforming.



Ms Apinya Puapattanakul

Ms Apinya holds a Master degree in Energy Technology and Management which she obtained from JGSEE-CEE in 2012. Her thesis was on the topic of "The flowing-zing alkaline electrolyte gel for zing-air fuel cell". She also worked during that time as a research assistant on 2 main projects, (1) Preparation of Clean Coal Technology Roadmap and Potential of Research and Development in the Industrial Sector of Thailand, supported by EGAT and TRF, and (2) Energy Efficiency and Conservation Strategic Plan of Thailand for ASEAN Economic Community (AEC), supported by EPPO. She joined the Energy and Environment Policy Laboratory (EEPL) as a researcher in October 2013. Her main research interests include, coal utilization, clean coal technology and applications, coal policies and regulations in Thailand, direct organization responsible for the whole chain of coal businesses, Code of Practice (CoP) for coal utilization, and biomass energy.



Dr Agapol Junpen

Dr Agapol earned his PhD degree in Environmental Technology from JGSEE-CEE in 2012. His PhD thesis was on "Spatial and Temporal Variation of Biomass Open Burning Emission Estimation by Using Remote Sensing Information". He is now a researcher at JGSEE in the Advanced Greenhouse Gas and Aerosol Research Laboratory (AGAR) working on several projects, including, (1) Biomass STI Policy for Thailand in the Context of AEC and (2) Air Quality in Asia, in Particular Thailand. His main research interests include, open biomass burning and related emissions, development of fire spread model prediction, and greenhouse gas emissions inventory.

Upcoming Events

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