



JGSEE



Consortium involving five leading institutions

CENTRE OF EXCELLENCE ON ENERGY TECHNOLOGY AND ENVIRONMENT



JGSEE Newsletter

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Message from Director



Dear colleagues, friends and partners

I hope you are all doing well and are safe wherever you are. I would like to take this opportunity to inform you that my term as JGSEE-CEE Director has ended and Professor Navadol Laosiripojana has succeeded to the position since 7 December 2020. I would like to sincerely thank everyone for the support and contribution provided during my 3-year term. It was certainly a challenging time but also quite memorable and enjoyable. Please join me to congratulate Professor Navadol and assure him of our full commitment to JGSEE under his leadership over the years to come.

Looking back to the past few years, JGSEE's achievements have been remarkable. The school has positioned itself as a research body conducting high impact research on focused areas that serve the needs of the country, while maintaining excellence in research and education. With our strong competency, we successfully secured funding in areas within the National Agenda: Bio-, Circular- and Green economy (BCG), New S-curve Industries (mainly focusing on Biofuels and Biochemicals) and other strategic/urgent issues, including, municipal waste, air pollution ($PM_{2.5}$), climate change, and water (draught and flood). Also, international visibility has been enhanced through publications and conferences, global research partnerships, and international alumni. The establishment of long-term industrial collaborations has been another strategic milestone. The year 2020 has been particularly challenging. We worked hard to cope with the impact of COVID-19 and familiarise ourselves with the "new normal". Online activities, social distancing, working from home and keeping hygiene have been and will remain the basic components of our daily life activities over the years to come. With the mismatching of students, graduates and workforce, reinventing university will be an important keyword for the national education framework. So, the years ahead will be even more challenging and the transformation of the way we work may be necessary to ensure sustainability.

As we reach the end of the year 2020, I would like to wish you all wonderful yet safe festivities, and a Happy New Year 2021 with strength and good health, motivation and inspiration, and new activities and opportunities.

Assoc Prof Dr Suneerat Fukuda
Director of JGSEE

Contribution to International Arena

JGSEE Contributes to ASE2020 Webinar - ASEAN Energy Day

On 23 September 2020, the ASEAN Sustainable Energy Week 2020 (ASE 2020) was officially opened. The Opening Ceremony was presided by Mr Supattanapong Punmeechaow, Deputy Prime Minister and Minister of Energy, Thailand. ASE 2020 is the first exhibition of the year and was held during 23 -26 September 2020 at the Bangkok International Trade and Exhibition Center (BITEC) in Bangkok

As an integral part of this event, the King Mongkut's University of Technology Thonburi via the Joint Graduate School of Energy and Environment (JGSEE-CEE) in collaboration with Informa Markets, Electric Vehicle Association of Thailand (EVAT), Kasetsart Agricultural and Agro-Industrial Product Improvement Institute (KAPI), King Mongkut's Institute of Technology Ladkrabang and Asia Pacific Urban Energy Association (APUEA), successfully organised the international conference on "Sustainable Energy Solutions for Smart Cities" (formerly known as the international conference of Renewable Energy Asia) on 23 September 2020. The conference provided a forum for participants to update and share their knowledge and experience on policy formulation, and technology and market developments. The hybrid system implemented for ASE 2020 provided an opportunity for people not able to join the event in person to participate online.

In the morning of the conference day, a plenary session was held involving 4 plenary speakers from the Ministry of Energy (Thailand), the Electricity Generating Authority of Thailand (EGAT), the Asian Federation of Electric Vehicle Association and the International Renewable Energy Agency (IRENA). They contributed presentations on topics related to Sustainable Energy Solutions for Smart Cities. In the afternoon, parallel sessions were held during which local an international speakers were invited to deliver presentations. The topics covered included: 1) Smart Energy for Smart Cities

with a panel discussion on "Smart Energy for Smart City"; 2) Bioenergy for Sustainable Bioeconomy with a panel discussion on "Future of Bioenergy in ASEAN"; and 3) Energy Demand and Planning in Data Centers with a panel discussion on "Evolving Data Center Markets in Thailand and ASEAN". The conference was very successful gathering over 100 participants from academia, industry and government.



Contribution to Society

JGSEE Contributes to Forum on Systems Research

สิ่งแวดล้อม) กำลังถูกเรียกร้องให้มีการเปลี่ยนแปลง (Transformation):

- Climate change: transition to low-carbon system
- Technology disruption: Energy tech, Digitalization, Decentralization
- System disruption: technology, markets and business models



The Thailand Science Research and Innovation (TSRI), an agency under the Ministry of Higher Education, Science, Research and Innovation (MHESRI) was tasked with the role of setting up national policies, strategies and plans for science, research and innovation (SRI). In this regard, on 28 October 2020, TSRI organised a forum on "Systems research". On this occasion, Assoc Prof Dr Bundit Fungtammasan was invited to contribute to the forum. The term "Systems Research" refers to the type of research that is based on the concept that a system is a function of its parts or components, and that each component interacts, interconnects, interrelates, and in some cases influences each other. It is the approach usually employed where the topic area under investigation is expansive in scope and complex in nature, such as energy, agriculture, and health. Among the invited speakers were investigators on systems research in other areas, including, Professors Aree Wiboonpongse (agriculture) Vipan Prachuabmoh (age diversity and inclusion), Drs Supatida Siritwong (education) and Chol Bunnag (local economy). The event was held at the St. Regis Bangkok.

AGAR Introduces the Rice GHG Mobile Application



At JGSEE-CEE, the Advanced Greenhouse Gas and Aerosol Research Laboratory (AGAR) led by Assoc Prof Dr Sirintornthep Towprayoon released an application for Android phones and tablets named “Rice GHG”. This application is the result of a collaborative work between JGSEE, ESS (KMUTT) and Atthajariya Co., Ltd as part of a research project funded by the National Research Council of Thailand (NRCT) and titled: “Innovation of Geographic Information System for Sustainable Water Management and Rice Cultivation”. The purpose of this project is to develop a tool to estimate the greenhouse gas (GHG) emissions and carbon footprint associated to rice production. The Rice GHG application is therefore a smart GHG calculator for rice cultivation in Thailand that also offers the capability of producing high resolution GHG emission maps and providing a data service system for relevant departments, entrepreneurs and interested parties.

Contribution to Knowledge Platform

ThaiFlux Workshop 2020

During 16-18 November 2020, Thailand Science Research and Innovation (TSRI) via the Thailand Research Fund’s Coordinating and Research Development Center on Global Warming and Climate Change (THAI-GLOB), in collaboration with members of ThaiFlux successfully organised the ThaiFlux Workshop 2020 on “CO₂/H₂O Vapor Exchange Monitoring by Eddy Covariance Technique (EC) in Agriculture and Forestry Ecosystem” at the Faculty of Agriculture at Chiang Mai University. The workshop aimed at training participants on monitoring methods and climate data analysis. Also information was shared on recent developments pertaining to climate change in order to highlight the importance climate change research plays for adequate policy making.



On this occasion, Assoc Prof Dr Amnat Chidthaisong (JGSEE-CEE), Head of the ThaiFlux Network, delivered a special lecture on “Overview of ThaiFlux Network and Study on Adaptation of Forestry and Agriculture Ecosystem on Climate Change”. Another special lecture was delivered by Assoc Prof Dr Sirintornthep Towprayoon, Head of the Advanced Greenhouse Gas and Aerosol Research Laboratory (AGAR), JGSEE-CEE, on “Implementation of EC Technique with Digital Camera on Monitoring Phenology of Forestry Ecosystem at Different Latitudes”.

Contribution to Research Platform

White Paper on Research and Innovation System for Future Energy System

On 6 August 2020, JGSEE-CEE organised a Focus Group meeting of energy experts and stakeholders (via Zoom) to deliberate on the issue of technology priorities to transform the Thai energy system. The meeting was held as part of the process to solicit inputs for the write-up of a white paper on “Research and Innovation System for Future Energy System”. This is a project commissioned by Thailand Science, Research and Innovation (TSRI). The purpose of the project is to develop a national research, development and innovation (RD&I) support program that is critical to meeting Thailand’s long-term (20-year) goals in energy security, affordability, and sustainability. Part of the project is the identification and prioritisation of the technologies that should be developed and deployed in Thailand and elsewhere.

The project team, which comprises experts from various fields drawn from JGSEE, KMUTT (Faculty of Engineering, Faculty of Liberal Arts, and Science, Technology and Innovation Institute - STIPI), King Mongkut’s University of Technology North Bangkok, King Mongkut’s Institute of Technology Ladkrabang, Energy Research Institute (Chulalongkorn University), Thammasat University and the National Science and Technology Development Agency, identified a suite of technology options in five key sectors. These are power systems, industry, transportation, buildings, and cross-cutting sectors that include bioenergy; hydrogen; carbon capture, utilisation and storage; energy storage, and energy and “industry 4.0”. The options were then prioritised based on a multi-criteria decision analysis tool by about 70 participants across the country. This multi-institution project is led by Assoc Prof Dr Bundit Funthammasan and assisted by Assoc Prof Dr Suneerat Fukuda, Dr Athikom Bangwiwat and Ms Apinya Puapattanakul.

Welcome New Comers

Dr Chuntima Chunti



In 2019, Dr Chuntima Chunti earned a PhD degree in Science and Technology from the Department of Environmental Engineering Science, Graduate School of Science and Technology, Gunma University, Japan on the research topic titled: “Heavy Tar Upgrading by Co-pyrolysis with Plastic for Chemical Feedstock/ Liquid Fuel Production”. During her PhD studies, Dr Chuntima received financial support as an exchange student under the researcher of Sakura Science Program from Indonesia (in 2017 and 2018) and Myanmar (in 2019). She is now working on a project titled: “Development of Efficient Combustion Process of Bio-mass with Coal for Energy Production in Industry” under the CEE’s program on “Development of Bioenergy Technology and Value Added Products based on Circular Economy Concept for Sustainable Bioeconomy: Bioeconomy Program” under the supervision of Assoc Prof Dr Nakorn Worasuwanarak.

Achievements

Congratulations!

**TWO JGSEE PROFESSORS
AMONG THE WORLD
FIRST TOP 2% MOST CITED SCIENTISTS !**

(based on a study by the Stanford University)



Professor Navadol Laosiripojana
(Energy)



Professor Shabbir H. Gheewala
(Environmental Sciences)

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