

Asian Institute of Technology
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School of Environment, Resources and Development
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Department of Energy, Environment and Climate Change

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Department of Energy, Environment and Climate Change

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Asian Institute of Technology



Message From HEAD OF THE DEPARTMENT

Welcome to the EECC Department's Annual Report 2018

Thank you all for your generous support and encouragement to the EECC Department as well as to me personally.

In 2016, as part of the major academic administrative restructuring, I assumed the position of the Head of the Department of Energy, Environment and Climate. December 2018 marks the end of my two-year term as the department head, so this is a good opportunity to reflect on what we have achieved all together. There is much energy around the department with a strong focus on improving the teaching and learning experience. Coping with the digital transformation, the department website serves as the primary source of information, painting the accurate picture of the programs, showcasing the faculty & students research and other global engagements. Leveraging social media, email campaigns, video clips, brochures, and others, the department website had more than 12,000 visitors last year,

more than 3,400 Facebook followers and 3,600 monthly e-newsletter subscribers - helping the potential students to navigate through the courses & curriculum and other admission information. Needless to say, the department's visibility and digital presences have dramatically heightened.

EECC Department continues to shape the learning atmosphere with a series of EECC Seminars, Doctoral Program Seminars and Special Lectures, inviting visionaries, entrepreneurs, pioneers, researchers, academia and others to share their ideas and experiences with the AIT students, faculty and staff, and general public alike.

There is much more to do. Especially: consolidating curriculum, developing common front in the department beyond program-silos, making academic programs more innovative in delivery, innovation in teaching, procuring competitive research funding, developing new niche-programs in areas of high significance, and many others.

I hope you will continue to support, more than before, to my colleague Dr. P. Abdul Salam, who will be a new HoD of EECC Department from 1 January 2019.

Looking forward to a successful 2019.

Dr. Shobhakar Dhakal

Associate Professor & Head
Department of Energy, Environment and Climate Change
School of Environment, Resources and Development
Asian Institute of Technology



Message from
Head of the Department

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OVERVIEW

DEPARTMENT OF ENERGY, ENVIRONMENT AND CLIMATE CHANGE

Asian Institute of Technology is the premier international postgraduate institution serving for the sustainable development of emerging Asia. To address the key emerging issues of SDGs, energy, environmental and climate change issues of the 21st century, the Department of Energy, Environment and Climate Change strive for new academic programs, new ways of teaching, fostering skills and innovation, and carries out solutions-oriented research and outreach activities.

With rigorous curriculum and teaching methods specifically designed to produce leaders with communications and empathy who can shape the globalized tomorrow and foreseeable future, students will be equipped with technical and soft skills with knowledge to adapt with the changing world.

We offer **certificate** (1 semester), **diploma** (2 semesters), **masters** (4 semesters), and **doctoral** (7 semesters) degrees in

- Energy
- Environmental Engineering and Management
- Climate Change and Sustainable Development
- Urban Water Engineering and Management

We provide an excellent opportunity for the students to develop a rewarding career path. Not to mention our beautiful residential campus, multinational and multicultural ethos that makes it an ideal place for the future leadership that will need to work beyond cultural and national boundaries.

Department of Energy, Environment and Climate Change – Creating leaders for sustainable Asia and beyond

www.eecc.ait.ac.th



COURSES OFFERED

January Semester 2018

Climate Change and Sustainable Development

- ED82.02 Science of Climate Change and Impacts
- ED82.04 Climate Compatible and Sustainable Infrastructure Development
- ED82.05 Land Use and Climate Change
- ED82.06 Climate Change Impacts, Vulnerability and Adaptation: Concepts, Tools and Practices
- ED82.07 Climate Change Mitigation
- ED82.08 Economics of Climate Change
- ED82.09 Climate Change Seminar
- ED82.13 Analytical Tools for Climate Change Adaptation at Local Level

Energy

- ED72.13 Development and Evaluation of Energy Projects
- ED72.19 Biomass Conversion
- ED72.21 Power System Dynamics and Stability
- ED72.22 Power Sector Management Under Deregulation
- ED72.23 Optimization and AI Applications in Power System
- ED72.25 Energy Economic Modeling and Policy Analysis
- ED72.28 Solar Energy
- ED72.39 Clean Coal Technologies and Carbon Capture and Sequestration
- ED72.46 Carbon Markets and Carbon Finance
- ED72.48 Workshop on Energy Issues and Communication

Environmental Engineering and Management

- ED78.08 Environmental Quality Management
- ED78.10 Environmental Health and Sanitation
- ED78.14 Membrane Technology in Water and Wastewater Treatment
- ED78.16 Applied Microbiology and Laboratory
- ED78.17 Advanced Processes for Wastewater Treatment, Reuse and Recycling
- ED78.19 Environmental Impact Assessment
- ED78.20 Industrial Waste Abatement and Management
- ED78.24 Design of Air Pollution Control Systems

COURSES OFFERED

Intersem 2018

Climate Change and Sustainable Development

- ED82.03 Principles and Practices of Sustainable Development
- ED82.14 Adaptation to Climate Change: Policies and Practices

Energy

- ED72.47 Smart Grid and Electrical Energy Management Systems
- ED72.9028 Selected Topic: Renewable Energy Integration and DC Microgrid

Environmental Engineering and Management

- ED78.39 Design of Water Supply and Wastewater Systems
- ED78.9029 Selected Topic: Sustainable Consumption and Production
- ED78.9032 Selected Topic: Dispersion and System Dynamic Models for Air Quality Management

August Semester 2018

Climate Change and Sustainable Development

- ED82.02 Science of Climate Change and Impacts
- ED82.05 Land Use and Climate Change

Energy

- ED72.01 Energy Resources and Technologies
- ED72.06 Design and Management of Energy Systems
- ED72.07 Power System Design and Operation
- ED72.08 Power Distribution Systems
- ED72.10 Computer Aided Power System Analysis
- ED72.12 Energy Statistics and Energy Demand Forecasting
- ED72.30 Energy, Environment and Climate Change: Issues and Strategies
- ED72.37 Integrated Approach to Energy Auditing
- ED72.43 Energy Pricing and Applications
- ED72.44 Rational Use of Energy in Buildings
- ED72.46 Carbon Markets and Carbon Finance

Environmental Engineering and Management

- ED78.01 Environmental Chemistry & Laboratory
- ED78.07 Solid Waste Management
- ED78.23 Hazardous Waste Technology and Management
- ED78.35 Wastewater Treatment
- ED78.36 Drinking Water Treatment
- ED78.37 Air Pollution Engineering and Management
- ED78.39 Design of Water Supply and Wastewater Systems
- ED78.9033 Selected Topic: Environmental System Modeling

Prof. Ajit Annachhatre

Environmental Engineering & Management Program

Conferred the Title of Emeritus Professor

Prof Ajit Annachhatre has been bestowed with the title of Professor Emeritus. This was announced following the meeting of the AIT Board of Trustees held on 30 August 2018.

Prof. Ajit joined AIT as an Assistant Professor in 1994, and he was promoted to the rank of Associate Professor and Professor in 1995 and 2004 respectively. He has served AIT as a faculty member for 24 years and as a Professor for 14 years.

He obtained his Bachelor's in Technology from IIT Kanpur, India in 1979, and a Ph.D. from IIT Bombay, India in 1987.

His publication record includes 62 international-refereed journal articles, two books, six book chapters, 47 papers in conference proceedings, 34 workshops, presentations, and 79 non-refereed publications. Prof Annachhatre has delivered 23 invited lectures/keynote address at universities and industries in Belgium, China, Denmark, Finland, India, the Netherlands, Vietnam and Thailand.

Prof. Annachhatre has received a number of awards which include amongst others, the Alexander von Humboldt Foundation Award (1988-1991), and a Post-doctoral Research Fellowship Award by the New Zealand Government at Massey University, Palmerston North, New Zealand (1991-1993). Prof. Annachhatre served as member of the Editorial Board of the international journal "Water Science and Technology", (2005-2008) and as the Advisory Board member of the international journal "Reviews in Environmental Science and Bio/Technology" (RESB) (2002-2004).



Dr. Jai Govind Singh

Energy Program

Elected to the Grade of IEEE's Senior Member

Assoc. Prof. Dr. Jai Govind Singh, faculty of Energy Program at the Department of Energy, Environment and Climate Change, Asian Institute of Technology is elected to the grade of a Senior Member in recognition of professional standing by IEEE.

In receiving this honor, Dr. Singh joins the select few: less than 10% of the member achieves this level of professional recognition. Dr. Singh received the plaque celebrating the elevation from the IEEE. IEEE is the world's largest technical, professional organization dedicated to advancing technology for the benefit of humanity.

Dr. Jai Govind Singh joined AIT as an Assistant Professor in December 2009 was promoted to the rank of Associate Professor in 2016. Prior to working at AIT, he has served as a Postdoctoral Research Fellow at the University of Queensland, Brisbane, Australia (July 2009-October 2009); and as a Postdoctoral Research Associate at the Electric Power System Division of the Royal Institute of Technology-KTH, Sweden (April 2008-June 2009).

Dr. Singh obtained his Bachelor's in Electrical Engineering from Motilal Nehru National Institute of Technology, Allahabad, India in 2001; his Master's in Technology from the Indian Institute of Technology (IIT), Roorkee, India in 2003; and a Ph.D. from the Indian Institute of Technology (IIT), Kanpur, India in 2008.

Dr. Singh's research encompasses power system planning, operation and control, FACTS controllers, restructuring of electric industry, demand side management, grid integration of renewable energy resources, power distribution systems, smart grid, and microgrids.

Prof. Joyashree Roy joins AIT

Energy Program

Bangabandhu Chair Professor

Prof. Joyashree Roy has joined the Asian Institute of Technology (AIT) as the Bangabandhu Chair Professor in August 2018.

The Bangabandhu Chair on Sustainable Energy was formally inaugurated on 15 March 2018 following the signing of a Memorandum of Understanding (MoU) between the Asian Institute of Technology (AIT) and the Ministry of Foreign Affairs, Government of Bangladesh.

Prior to joining AIT, she was with Department of Economics, Jadavpur University where she initiated and was coordinator of the Global Change Programme and Ryoichi Sasakawa Young Leaders Fellowship Fund (SYLFF) Project.

She was Indian Council of Social Sciences Research (ICSSR) national fellow, and a Ford Foundation Postdoctoral Fellow at Lawrence Berkeley National Laboratory, Berkeley, USA.

Prof. Roy was among the network of scientists IPCC-2007 Nobel Peace Prize winning panel, has been a chapter author of Global Energy Assessment. She is in the winning team of Prince Sultan Bin Aziz award for water. She has published more than 100 peer reviewed journal articles, authored and edited books. Her research interests: Economics of Pollution and Climate Change, Modeling energy demand, Economy-wide modeling exercises for deriving policy implications, Water quality demand modeling, Water pricing, Sustainable development, Natural resource accounting, Valuing environmental services, Developmental and environmental issues relevant for informal sectors, Coastal Ecosystem service evaluation.



Prof. Nguyen Thi Kim Oanh

Environmental Engineering & Management Program

Conferred the Title of Emeritus Professor

Professor Nguyen Thi Kim Oanh has been honored with the title of Professor Emeritus. This follows approval by the Board of Trustees in its meeting held on 30 August 2018.

Prof. Kim completed Dipl.Eng., (First Honors, GPA 5.0/5.0) in 1978 from Odessa Hydrometeorology Institute, Ukraine, Master's and a Doctorate from AIT in 1991 and 1994 respectively. She joined AIT as a Research Specialist in May 1994. Prof. Kim Oanh was appointed as an Assistant Professor in 1997 and was promoted to Full Professor in 2009. She had been serving as a Full Professor at AIT for about 9 years, and had a distinguished career as an AIT faculty member for 21 years.

Her publication record includes 89 international-refereed journal articles, two books, 35 book chapters, 40 papers in conference proceedings, 97 workshop presentations, 45 project reports, nine monographs and seven non-refereed publications. Prof. Kim Oanh has delivered 70 invited lectures at universities and industries around the world including an invited lecture at MIT's Dept. of Earth, Atmospheric and Planetary Sciences in the US (2012).

Prof. Kim Oanh has received a number of awards which include amongst others, the Certificate of "Highly Cited Research" from the Journal of the Atmospheric Research, the "Alan Berman Annual Research Publication Award" by the Naval Research Laboratory in 2013, the "Air Quality Hero" award by the Better Air Quality (BAQ) 2010 Conference; the "EXTRA MILE" award in recognition of significant contributions to the Better Air Quality 2008 program naming her as "the Most Active Professor in Air Quality", and the "Distinguished Researcher Award for Senior Research Leader" by AIT in 2015.

Dr. P. Abdul Salam

Energy Program

Awarded the Distinguished Research Award 2018

Assoc. Prof. Dr. P. Abdul Salam, faculty of Energy program at the Department of Energy, Environment and Climate Change was awarded the Distinguished Research Award 2018 during the 129th AIT Graduation on Friday 18 May 2018. The distinguished researcher award is based on the evaluation of faculty's sponsored activities and publications during the years 2016-2017.

Dr. Salam has previously won the Thomson Reuters Thailand Frontier Researcher Award for 2016. The award was granted "in recognition of pioneering a new frontier in research, based on the core papers comprising the world's top 1% of Highly Cited Papers in the field of Engineering."

Dr. Salam is currently the Chair, Academic Senate of the Asian Institute of Technology. He joined AIT as an Assistant Professor in October 2009 and was promoted to the rank of Associate Professor in 2014.

Dr. Salam obtained both his Doctor of Engineering and Master of Engineering degrees (in Energy Technology) from AIT in 2005 and 1994, respectively. He graduated from the University of Paradeniya, Sri Lanka in 1991 with a Bachelor's of Science in Mechanical Engineering. His research encompasses the areas of bioenergy, renewable energy, and energy conservation and efficiency.



Dr. Shobhakar Dhakal

Energy Program

Coordinating Lead Author of IPCC's 6th Assessment Report

Dr. Shobhakar Dhakal, Head of the Department of Energy, Environment and Climate (EECC) was nominated as Coordinating Lead Author by Intergovernmental Panel on Climate Change (IPCC) for its 6th Assessment Report. He will be co-leading Chapter 2: Emission Trends and Drivers of Mitigation Report, which is due mid-2021. Seven-hundred and twenty one experts from 90 countries will participate in as Coordinating Lead Authors, Lead Authors, and Review Editors. They were selected among 2,858 experts representing 105 countries. Dr. Shobhakar and Ferenc Toth of Scientific and Technical Advisory Panel, Global Environment Facility share the responsibility for being CLAs for Chapter 2 of the Working Group (III) of IPCC.

"These author teams, drawn from the hundreds of excellent nominations the IPCC was fortunate to receive, provide us with the necessary expertise across a range of disciplines to conduct the assessment," a statement released by the IPCC said. Following their selection, the authors will now review the existing scientific literature and prepare drafts of the report on the basis of the outlines of the Working Group contributions already agreed by the Panel, the IPCC added.

Dr. Shobhakar was also associated with the Fifth Assessment Report of IPCC where he was invited by IPCC to lead its assessment on 'Human Settlements, Infrastructure and Spatial Planning' as a Coordinating Lead Author. He also took part in deliberating the content, structure and framework of the Sixth Assessment Report in IPCC's Addis Ababa meeting on 1-5 May 2017.

Prof. Thammarat Koottatep

Environmental Engineering & Management Program

Promoted to the Rank of Professor

Dr. Thammarat Koottatep of the Department of Energy, Environment and Climate (EECC), School of Environment, Resources and Development (SERD), AIT has been promoted to the rank of Professor.

His elevation was confirmed at the meeting of the AIT Board of Trustees held on 30 August 2018. Prior to his elevation, Dr. Thammarat was serving as Associate Professor in the Department of Energy, Environment and Climate Change. Dr. Thammarat lecture in the Environmental Engineering and Management Program.

Dr. Thammarat completed his Bachelor's in Engineering in Environmental Engineering from Chiang Mai University, Thailand, in 1991, and his Master's and Doctorate from the Asian Institute of Technology (AIT) in 1993 and 1999 respectively.

Dr. Thammarat joined AIT as an Assistant Professor in September 2002, and was promoted to the position of Associate Professor in April 2011. Dr. Thammarat's research encompasses the areas of strategic environmental sanitation, constructed wetlands for wastes and wastewater treatment, management of non-point source pollution, and treatment of micro-pollutants and infectious pathogens.



Dr. Wenchao Xue

Environmental Engineering & Management Program

Dr. Wenchao Xue has joined AIT

Dr. Wenchao Xue has joined the Asian Institute of Technology (AIT) as Assistant Professor in Environmental Engineering and Management in the Department of Energy, Environment and Climate Change, School of Environment, Resources and Development.

Dr. Wenchao received her PhD in Urban Engineering from the University of Tokyo, Japan, and her M.E. and B.E. in Environmental Science and Engineering from Tsinghua University, China.

She held positions at the Department of Environmental Engineering, Faculty of Engineering of Chulalongkorn University, Bangkok, Thailand as postdoctoral fellow and later as a foreign lecturer teaching and supervising research of foreign postgraduate students.

Her research interests cover environmental membrane and electrochemical technologies, resources/energy productive wastewater treatment, monitoring and elimination of environmental emerging contaminants, and sustainable watershed management. She also has consulting and engineering experience on contaminated site and groundwater remediation while working for an international consulting firm based in Yokohama, Japan.

Currently, Dr. Wenchao is undertaking various research projects granted by the National Natural Science Foundation of China and the National Research Council of Thailand such as "Simultaneous wastewater treatment with electricity generation based on pressure retarded osmotic microbial fuel cell technology" and "Biogeochemical changes and adaptation mechanisms in response to anthropogenic impacts in watersheds".



EECC SEMINAR SERIES

Aiming to kindle inspiration and motivation, the EECC Seminar Series invite visionaries, entrepreneurs and pioneers to share their ideas and experiences with AIT students, faculty and staff, and general public alike.

EECC SEMINAR SERIES

Global Challenges: A Perspective



Prof. Deepak Sharma

Prof. Deepak Sharma, Director of the Center for Energy policy (CEP) and Associate Dean (International), in the Faculty of Engineering and Information Technology at the University of Technology, Sydney (UTS), Australia delivered a special lecture on “Global Challenges: A Perspective”, on Wednesday, 10 January 2018

Revisiting the Income Elasticity of Energy Consumption



Dr. Brantley Liddle

Dr. Brantley Liddle, a Senior Research Fellow and Deputy Head of the Energy Economics Division at the Energy Studies Institute, National University of Singapore delivered a seminar on “Revisiting the Income Elasticity of Energy Consumption: An OECD & non-OECD Country Panel Analysis” on 17 August 2018.

Energy Transition or Energy Trilemma?



Dr. Thomas Brudermann

The third EECC Seminar entitled “Energy Transition or Energy Trilemma?” was delivered by Dr. Thomas Brudermann, an assistant professor at University of Graz, and the coordinator of the Joint International Master in Sustainable Development on 31 October 2018 at S101, SERD Meeting room, AIT.

Powering and Digitizing the Economy: The vision of Schneider Electric



Marc Pelletier

Marc Pelletier, the CEO of Schneider Electric Thailand and Laos delivered a special talk on “Powering and Digitizing the Economy: The vision of Schneider Electric on how IoT will transform cities, industries, infrastructures” at the Milton Bender Auditorium, AIT on 12 November 2018.

Mr. Marc shared Schneider’s vision on how it contributes to make energy safer, more sustainable, more comfortable, more efficient and more connected for a better world. Marc said “Schneider Electric’s technology ensures that Life is On Everywhere, for Everyone at every Moment”.



SPECIAL LECTURE SERIES

SPECIAL LECTURE SERIES

Fostering innovation and stirring up curiosity, the Special Lecture Series invites researchers, professors, academia and others to share their ideas and experiences with the AIT students, faculty and staff, and general public alike.



Dr. Wenchao Xue

Dr. Wenchao Xue, Research Specialist at Department of EECC, SERD, AIT delivered a special lecture on “Characteristics of Seawater Driven Forward Osmosis for Recovering Nutrients in Municipal Wastewater and Their Implications in Sustainable Water Solution” on 10 January 2018.



Prof. Maria Elektorowicz

Prof. Maria Elektorowicz, Department of Building, Civil and Environmental Engineering, Concordia University, Montreal, Canada delivered a special lecture on “Sustainable decentralized system for recovering water from wastewater using membrane electro-bioreactor (MEBR)” on 15 January 2018.



Dr. Anish Ghimire

Assist. Prof. Dr. Anish Ghimire, Research Coordinator, Nepal Engineering College (NEC), NEC-Center for Postgraduate, Studies (CPS), Nepal delivered a special lecture on “Closing the loop – Role of anaerobic fermentation based biorefinery utilizing waste” on 17th January 2018.



Prof. Raj Mohan B

Prof. Raj Mohan B., Department of Chemical Engineering, National Institute of Technology Karnataka (NITK), Surathkal, India delivered a special lecture on Synthesis of β -cyclodextrin Nickel Ferrite Nanoparticles for the Removal of Pharmaceutical Compounds from Aqueous Systems on 7 June 2018.



Dr. So (Soichiro) Tsuda,

Dr. So (Soichiro) Tsuda, Assoc. Professor at the Osaka University, Japan delivered a special lecture on Development of Low Cost Sensing Technology for Biological Activity Monitoring on 22 October 2018



Dr. Apipong Lamsam

Dr. Apipong Lamsam, Managing Director of Optima Tech Co., Ltd., Thailand delivered a special lecture on Innovative Food Waste Composting Technology on 16 November 2018



DOCTORAL SEMINAR SERIES

DOCTORAL SEMINAR SERIES

AIT thrives on fresh ideas and new ways of thinking. The Doctoral Seminar Series is aimed at promoting scholarly exchange of information, ideas, experiences and to establish networking among the students, researchers, faculty and other participants.



Mr. Muhammad I. Lodhi
Climate Change and Sustainable Development Program

Farmers' perception of climate change: Association with climate trends and factors influencing perception



Mr. Kok Sothea
Environmental Engineering and Management Program

Integrated Assessment Approach for the Atmospheric Polycyclic Aromatic Hydrocarbons (PAHs) in Phnom Penh, Cambodia



Ms. Dararat Khamchiangta
Energy Program

Characteristic of Urban Heat Island, Local Climate Classification and Policy for Bangkok, Thailand



Ms. Tanatip Uan-On
Energy Program

An Analysis on Thailand's 100 Percent Renewable Energy System Optimal Pathways



Mr. Chawalit Chaiwong
Environmental Engineering and Management Program

Development of Novel Biofilm Photobioreactor for Treatment of Nutrients and Pathogens in Septic Tank Effluent



Mr. Ta Hung Anh
Environmental Engineering and Management Program

Business Model Innovation for Faecal Sludge Management: Collection and Transportation Services



Mr. Nawhath Thanvisithpon
Climate Change and Sustainable Development Program

Development and Application of Framework to Assess the Adaptive of Cities to Flood Hazards Induced by Climate Change

ALUMNI RECOGNITIONS AND AWARDS

ALUMNI RECOGNITIONS AND AWARDS

AIT is proud of its graduates and their achievements, great and small. From educators to entrepreneurs, activist to politicians, scholar to scientists, our alumni are serving as leaders in the private sector, governments, universities, United Nation agencies and the development banks in Asia and beyond.

Here are some of the individual alumna or alumnus of AIT who, in the past year, has demonstrated outstanding traits of leadership and character and are recognized for excellence in their own field or for a specific achievement, contribution, or service to one's own community, state, nation.

Prof. Saravanamuth Vigneswaran



Kamal Fernando Mentoring Award (2018)

Mr. Gyem Dorji



Elected Member of Parliament, Bhutan (2018)

Dr. Yuttachai Sarathai



Outstanding Government Official Award (2018)

Mr. Dang Hoang An



Appointed Deputy Minister of Industry and Trade in Vietnam (2018)

Mr. Yeshey Penjor



Appointed Minister of Agriculture and Forestry in Bhutan (2018)

Dr. Somchint Pilouk



Appointed the Governor of IEAT (2018)

Mr. Ahmad Rashid Khoshbeen



40U40 Award from Kardan University (2018)

Mr. Sajid Sohail



Topped the Civil Engineering Examination in India (2018)



EECC DEPARTMENT VISITORS

- 23 March 2018** Embassy of Timor-Leste, Thailand
Mr. Paulino Henrique Ribeiro
Ms. Elisa Maria de Silva
- Universidade da Paz**
Prof. Dr. Lucas de Costa
Dr. Jose Cornelio Guterres
Mr. Santiago Jorge Pereira
- Office of Permanent Secretary for Defense, Thailand**
- 11 May 2018** INTI International University in Malaysia
17 students and 2 faculty members
- 30 May 2018** Asian Institute of Management's
12 students from the School of Executive Education

EECC DEPARTMENT VISITORS

- 7 June 2018** Mae Fah Luang University, Thailand
6 lecturers and 50 students from the School of Health Science
- 20 July 2018** UNESCAP and Department of Alternative Energy Development and Efficiency
To discuss on a suitable way forward for renewable energy policy planning in Thailand, particularly evidence based energy policies in the context of Sustainable Development Goals (SDGs)
- 12 July 2018** Korea Water and Wastewater Works Association
- 17 July 2018** AIT-Tiger Leong International Innovation and Leadership Camp Students
- 23 July 2018** College of Environment and Resource Science, Zhejiang University
- 31 July 2018** Tsinghua University
- 7 Nov. 2018** IB PYP (Primary Years Programme), Magic Years International School, Nonthaburi
- 9 Nov. 2018** Tunghai University, Taiwan
Prof. I-Kuan Yang
Prof. Chiung-Fen Chang
Prof. Chin-Yin Huang
- 26 Nov. 2018** Universiti Teknologi PETRONAS (UTP)
Dr. Lai Fong Woon
Dr Ting Ding Hooi
- Muslim Education Society (MES), India**
Prof. P. O. J. Lebba
Dr. K. P. Mohammed
Dr. Sasidharan Sreedharan
Asst. Prof. Sajeer Karattil



FIELD TRIPS 2018



Energy Field Trip

To supplement the classroom lessons and to provide clearer practical understanding and application of the energy technologies, Energy Resources and Technologies, the program annually arranges a field trip to industries across the Northern Thailand.



Dr. P. Abdul Salam, the course instructor, led the trip with assistance of Dr. Vu Duc Hien, Senior Laboratory Supervisor and Ms. Phornsinee Thanara, Administrative Secretary. The 5 days field trip covered nine energy establishments including seven power plants, one coal mine, and an oilfield.

- PV Power Plant, Bang Pa-in, Ayutthaya
- Geothermal Power Plant, Fang, Chiang Mai
- Micro Hydro Power Plant, Fang, Chiang Mai
- Biogas Power Plant, Chiang Mai University
- Mae Moh Coal Mine & Power Plant, Lampang
- 230/115 kV Transmission Sub-station, Phitsanulok
- Sirikit Oilfield, Lankrabue, Kampaengphet
- Rice-husk power plant, Phichit
- Wind-turbine and hydro (pumping/reservoir), Pakchong, Nakhon Ratchasima

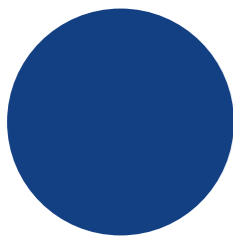
Environmental Engineering and Management Field Trip

Keeping the importance of practical learning to complement theoretical lessons, the Environmental Engineering and Management Program annually arranges field trips to various industry sites and facilities across Thailand.



Through field trips our students get an opportunity to relate the classroom learning to the real world situations; how to involve practically, helping to overcome global warming as an environmentalist with the motto of "do what you can".

- This year the EEM students visited
- Solid Waste Collection System, Suvarnabhumi Airport, Samutprakarn Province.
 - Wastewater Treatment Plant, Amata City Industrial Estate, Chonburi Province
 - Mangrove Forest planting activity in Rayong Province



Climate Change and Sustainable Deveopment

Actions Taken by Dairy Farmers to Face Climate and Non-Climate Challenges in Chiang Rai Province, Thailand

By: Ms. Supalak Prabsriphum
Supervisor: Dr. Nicolas Faysse
Committee: Dr. Indrajit Pal
Dr. Peeyush Soni

Adaptation Strategies for Drought Risk Reduction in Farmers' Livelihoods: A Case Study of Kabul, Afghanistan

By: Ms. Roya Quraishi
Supervisor: Dr. Indrajit Pal
Committee: Dr. Nicolas Fayyse
Dr. Sylvia Szabo

Assessing Climate Change Impacts on Drought and Adaptation Strategies in Tien Giang Province, Vietnam

By: Mr. Bui Phan Quoc Nghia
Supervisor: Dr. Indrajit Pal
Committee: Dr. Nophea Sasaki
Dr. Peeyush Soni

Assessment of Climate Change Impacts on Water Security in the Yang River Basin, Thailand

By: Mr. Thitiphath Ratanawaraha
Supervisor: Dr. Sangam Shrestha
Committee: Dr. Avishek Datta
Dr. Duc Hoang Nguyen

Climate Change and Sustainable Deveopment

Farmers' Perceptions and Adaptation Measures to Cope with Drought: A Case Study of Bamyan Province, Afghanistan

By: Mr. Qurban Aliyar
Supervisor: Dr. Avishek Datta
Committee: Dr. Sangam Shrestha
Dr. John K.M. Kuwornu

Farmers' Perceptions of Climate Change Impacts on Crop Production and Adaptation Measures in the Ganges Tidal Floodplain in Bangladesh

By: Mr. Rafid Mahmud Khan
Supervisor: Dr. Avishek Datta
Committee: Dr. Anil Kumar Anal
Dr. John K.M. Kuwornu

Puducherry's Emission Inventory Using Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC) and Future Emission Scenarios

By: Mr. Tejas Shah
Supervisor: Dr. Shobhakar Dhakal
Committee: Prof. Sivanappan Kumar
Dr. Aumnand Phundgslip

Energy

Analysis of a Three Phase Electric Spring in Solar PV Connected Power Networks

By: Mr. Swejan Rangishetti
Supervisor: Dr. Jai Govind Singh
Committee: Prof. Weerakorn Ongsakul
Dr. P. Abdul Salam

Assessing and Promoting Sustainability on AIT Campus

By: Mr. Ravi Anand
Supervisor: Prof. Sivanappan Kumar
Committee: Dr. Brahmanand Mohanty
Prof. Chettiyappan Visvanathan

Design and Evaluation of a Microalgae Cultivation System

By: Mr. Nilay Kumar Sarker
Supervisor: Dr. P. Abdul Salam
Committee: Prof. Sivanappan Kumar
Dr. Jai Govind Singh

Design, Implementation and Impact Assessment of Modern Energy Access to the Indigenous Community: The Energy Plus Approach in Sitio Patulangan, Bukidnon Philippines

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Estimation of CO₂ Emissions from Passenger Road Transport in India: A Vehicle Stock Modelling and Scenario Analysis Based Approach

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Harmonic Analysis of High Penetration of Solar Rooftop Systems in an Unbalanced EV Loading Distribution Network

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Energy

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Implications of Introducing Alternative Fuel Vehicles to Public Van Services in Chonburi Province

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Implications of the Large Scale Introduction of Electric Vehicles (EVs) on Energy and the Environment in Thailand

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Irregular Power Consumption Identification by Using Support Vector Machine and Neural Network Classification

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Multi-Objective Optimization for Enhancing System Coordination Restoration by Placement of Fault Current Limiters on an Active Distribution System with System Reliability Considerations

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Optimal and Stochastic Aggregation of Electric Vehicles in Smart Distribution System Considering Dynamic TOU Pricing

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Optimal Procurement of Energy and Ancillary Services in Smart Grid

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Short-term Solar Forecasting Using Deep Long Short-Term Memory Recurrent Network Program

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Environmental Engineering and Management

Anaerobic Digestion of Press-Mud with Biological Pretreatment

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Assessment of a Faecal Sludge Management Situation in Cambodia Using a Faecal Sludge Management Toolbox

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Assessment of Air Pollution Dispersion from Tigyt Coal-fired Power Plant to the Local Communities in Tigyt, Myanmar

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Assessment of Current Concentration of Particulate Matter in the Indoor Air on AIT Campus

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Assessment of Dioxins Emission from Point Sources in Thailand

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Assessment of Idling Emission at Intersection and Possible Emission Reduction Measures by Traffic Management in Bangkok

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Assessment of Levels and Contributing Sources of Airborne Polycyclic Aromatic Hydrocarbons in the Bangkok Metropolitan Region

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Assessment of Levels and Contributing Sources of Particulate Matter in the Bangkok Metropolitan Region

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Assessment of Multi-Functions Provided by Green Wetland Infrastructure in the Lower Chao Phraya River Basin

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Assessment of Particulate Matter, Surface Ozone Air Quality and Associated Health Burdens in the Bangkok Metropolitan Region Using a Photochemical Grid Model

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Assessment of Solid Waste Separation Practices: A Case Study of the AIT Campus

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Assessment of Spatial and Temporal Changes in Heavy Metals Loading in the Chao Phraya River Basin, Thailand

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Assessment of Spatial and Temporal Changes in Nitrogen Distribution in the River Sediments of Chao Phraya River Basin, Thailand

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Environmental Engineering and Management

Biosorption of Lead (II) from Industrial Wastewater by Using Pretreated Moringa oleifera Seed Residue

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Building Green Urban Resilience through Multi-functional Wetlands: The Case of Mandalay City, Myanmar

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Developing a Green 3R Roof/Walls Retrofitting Framework: A Case Study of Bang Kapi Area in Bangkok

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Developing an Integrated Solid Waste Management Plan for Kabul City, Afghanistan

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Developing Minimum Liquid Discharge Strategies for Bangchak Oil Refinery's RO Plant

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Development of an on-Road Emission Inventory Using a Dynamic Vehicle Population Model in Sri Lanka

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Development of Green 3R Roof/Walls Bio-Technology for Retrofits Integrating Waste, Food and Energy Aspects

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Development of Integrated Wastewater Treatment for a Hardboard Production Factory in Thailand

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Development of On-Road Emission Inventory Using Dynamic Vehicle Population Model in Naypyitaw, Myanmar

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By: Mr. Paradorn Akkakarn
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Performance Evaluation of a Pilot Scale Thermophilic Wet Anaerobic Digestion for Food Waste Treatment

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Performance Evaluation of Thermophilic Wet Anaerobic Digestion for Food Waste Treatment

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Performance Investigation of IoT based Pilot Scale Anaerobic Digestion of Food Waste

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Removal of Chromium (VI) from Synthetic Aqueous Solution by Adsorption onto Coal Bottom Ash

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Spatial Distribution and Temporal Variations of Non-Road Engine Emission in Thailand

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A Study on Biogas Production from Food Waste in Hosur, India

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A Study on Energy Use in an Educational Institution Using RETScreen

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A Study of Pyrolysis of Rice Residues in Andhra Pradesh, India

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Analysis of a Hybrid Renewable Microgrid System for Nainativu Island, Sri Lanka

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Analysis of Opportunities for Waste to Energy in Cassava Sago Industry

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Assessment of Cold Densified Pellets Derived from Rice Residues as Cooking Fuel

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Biogas Digestate as a Cooking Fuel

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Carbon Foot Print of the Cement Industry: A Case Study in India

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Cross-border Electricity Trade: Opportunities and Challenges for Bangladesh

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Estimation of Process and Energy CO₂ Emissions of the Indian Cement Industry

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Load Profile Management by Using Energy Storage and Solar PV in Power Distribution Systems

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Municipal Solid Waste to Energy Opportunities in Kakinada City, India

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Smoothing the Load Profile by Using a Fuzzy Control Strategy of Plug-in Electric Vehicles (PEVs) in Smart Grids

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Success Determinants for Off-Grid Rural Electrification Program

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Energy

Technical and Economic Analysis of Grid-Connected Household Solar Rooftop Photovoltaic System in Six Regions of Thailand Using RETScreen Program

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Energy Business

Barriers to Biomass Power Plant Business in Thailand

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Barriers to Upscale EV Charging Station Infrastructure in Thailand

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Analysis of Factors Facilitating and Impeding Renewable Energy Financing in Nepal

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Assessment of Indigenous Mound Burning Practice Using Animal and Human Wastes in Myanmar

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Abstract

Degradation of soil fertility is threatening the sustainability of the global agricultural production system, especially in developing countries. Unimproved onsite sanitation systems along with inappropriate disposal of faecal sludge (FS) are predominant in rural and urban areas of low-income countries where animal wastes are often used as soil fertilizer, but the use of human wastes, having high nutrient values, is still limited. Since global issues of waste disposal and soil infertility are becoming more serious, improvement of mound or heap burning, an indigenous agricultural practice in Myanmar could be a promising option in solving soil quality degradation and recover resources from organic wastes.

In traditional mound burning (MB) practice, dried cow dung (CD) is burnt and covered with soil to form a mound. Due to the expansion of mechanized agriculture system, cattle breeding rate is decreasing with the decreased availability of cow manure. Poor FS management system with inappropriate FS disposal is contributing the frequent diarrhoea infections caused by pathogen contamination in the study area. This research was conducted to; (1) examine the nutrient recovery from MB practice with respect to different sizes of mound, maturation period, nutrient distribution dynamic and feasibility of replacing CD with FS in MB, (2) identify the environmental challenges of the practice, such as pathogens contamination and air pollution, and (3) find out knowledge and perception of farmers and consumers in using FS on farms and FS fertilized crops.

Keywords: Indigenous practice, plant nutrients, air pollution, faecal sludge, cow dung.

Field experiments of MB were conducted in Kyauk Pon village, Ywa Ngan Township in the Taunggyi District of Shan State, Myanmar, to study plant available nutrient recovery and perception of farmers. Air emission analysis experiments were done under hood condition in Energy Park, Asian Institute of Technology (AIT) campus, Pathum Thani, Thailand. Out of three different ratio/sizes of mound, both MBFS (1) and MBCD (1) contributed pathogen free product with maximum nutrient values. In both sizes of mound plant nutrients such as available nitrogen (nitrate), phosphorous and potassium were increased from 9 ± 0.5 to 140 ± 6 and 5 ± 1 to 139 ± 3 mg kg⁻¹, 353 ± 3 to 686 ± 1 and 355 ± 6 to 753 ± 7 mg kg⁻¹, and 13 ± 2 to 29 ± 3 and 26 ± 1 mg kg⁻¹ in MBFS and MBCD, respectively, after the 3-month maturation period. Nutrient recovery from both biomass (FS and CD) used in MB was comparable, indicating the feasibility of using FS in MB. Moreover, it is observed that nutrients were recovered diversely within a single mound (by analysis of samples from different sampling points in a mound). The emission factors of CO, NO_x, PM_{2.1} and PM₁₀ from both MBFS and MBCD were comparable to other burning processes. The perceptions of farmers in the study area also revealed that 80% of respondents preferred to use the dried/treated FS in their farms, which was similar to the perceptions of consumers. This research revealed that MB could recover the nutrients from both human and animal wastes, which could then be used as fertilizers applied in agricultural fields with less environmental impact from pathogen contamination and air pollution.

COMPLETED DOCTORAL DISSERTATIONS



Vulnerability of Coastal Fishing Communities to Climate Change: A Case Study of Laemsing District, Chanthaburi Province, Thailand

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Abstract

Thailand has to inevitably withstand climate change and its impacts on the environment and quality of people's lives, especially in coastal areas where such problems occur more severely. Qualitative and quantitative data were collected from primary sources using several tools like key informant interviews, focus group discussion, questionnaires, and field measurements, and secondary sources using literature review. Scientific tools like climate model, GIS and remote sensing were applied to map and quantify the eroded and inundated areas as well as affected people. Descriptive and inferential statistical tools and several equations were applied to assess the degree of awareness and vulnerability of people to climate change and its impacts, respectively.

Laemsing District, Chanthaburi Province as study area, had been confronted with continuously increasing heavy rainfall, sea-level rise, coastal erosion and tidal flooding affecting livelihoods of coastal people. Awareness of the people is not adequate while severity of sea-level rise and its shoreline retreat and seawater inundation continue to increase. Comparative current and future vulnerability assessment is illustrated in three aspects: exposure, sensitivity and adaptive capacity.

The research provides recommendations for possible implementation by policy makers and the academe. Firstly, the options for reducing and coping with vulnerability should be considered in lowering the exposure, preventing the sensitivity and enhancing the adaptive capacity. Secondly, assessment of the effects of seawater inundation should be recognized, where results of the case study as a bottom-up approach could be adopted in conducting researches on climate adaptation, and the mixed method—awareness assessment and climate impact prediction—could be used to help the readers recognize whether the current level of people's awareness on climate change-relevant problems is valid in the future.

Keywords: Climate Change, Vulnerability, Awareness, Coastal Erosion, Seawater Inundation, Thailand

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Development of a Framework for the Assessment of Human Health Effects from Traffic Air Pollution in Urban Areas

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Urban air pollution in general and traffic-related air pollution in specific has been increasingly concerned issues in the world due to its significant impacts on both environment and human health. The problem has long been studied in developed countries, but not yet in the developing countries. This study aimed to develop a framework for assessment of health impacts from traffic-related air pollution emissions at both local (roadside) and urban scales. This study used integrated monitoring and modeling approach to test a hypothesis that it is possible to develop a comprehensive framework to assess health effects of traffic-related air pollution in urban areas where multiple sources and influencing factors exist.

Air quality monitoring was designed focusing on traffic-related air pollutants including PM₁₀, PM_{2.5}, PM₁, black carbon (BC), and BTEX (benzene, toluene, ethylbenzene, and xylenes) group. Simultaneously, the meteorological conditions and traffic flows were recorded at 2 selected roads in Hanoi. The monitoring was done in a winter period (31st December 2014 to 9th February 2015) and a transitional period (23rd September to 11th November 2015) at roadside of 2 roads (a busy road TC and small residential road NN) and one ambient site (AA) located in between the roads in a heavy traffic urban area of Hanoi. High levels of air pollutants were measured at the sites for all monitored pollutants with winter levels were generally above the transitional period levels. BTEX levels dropped significantly from the highest at the TC roadside (131±71 µg/m³ winter, 94±19 µg/m³ transitional), followed by the NN roadside (101±29 µg/m³ winter, 75±22 µg/m³ transitional) and the lowest at AA (30±15 µg/m³ winter, 14±5

µg/m³ transitional) while PM_{2.5} and BC were rather uniformly distributed among the 3 sites, with levels at AA approaching those measured at roadsides. The multivariate analysis (PCA) for the datasets of bi-hourly air pollutants, meteorology and traffic flows of 4 major vehicle categories (MC&DTC, PC&Taxi, Van&Pick, and Diesel), the BTEX species ratio, and the HYSPLIT airmass trajectories all showed the overwhelming influence of traffic emissions to BTEX and PM measured at the roadsides while air quality at the ambient site presented complex interactions of traffic emission nearby, meteorological conditions, and regional/long-range transport. Indoor and outdoor air quality monitoring at two representative residences in the study area showed the average of I/O ratio of >1.0 for BTEX species indicating the presence of indoor sources. For PM_{2.5}, the I/O ratios were all below 1.0 for both roadside and non-roadside residences implying the dominance of pollutants intruded from outdoor sources.

The photochemical model system of WRF/CAMx was used to simulate PM air quality in the Hanoi Metropolitan Region domain (HRM) for the base year 2010. The model performance for PM simulation was satisfactorily evaluated with limited ground-based observations in term of MFB and MFE statistical criteria. The model captured reasonably the temporal variation of the observed PM levels but underestimated the point-based measurements which may be due to the grid averaging effect. A “what-if” scenario of depletion of 50% motorcycle population in the Hanoi Capital was analyzed following a master plan of development of public transport in the city. The results showed more reduction of annual PM_{2.5}

COMPLETED DOCTORAL DISSERTATIONS

concentration at urban districts, by 1.1±0.5 µg/m³ with the range of 0.9–1.7 µg/m³ while sub-urban areas experienced only a moderate reduction (<0.5 µg/m³) ranging between 0.2–0.5 µg/m³.

The risk of exposure to traffic-related pollutants was assessed using the monitoring data of BTEX and PM_{2.5}. The results showed a severe risk for those living at roadside residences as compared to those living at non-roadside residences. The cancer risk from exposure to benzene at roadside residents was between 2.6 – 14x10⁻⁵ vs. 0.7 – 2.9x10⁻⁵ estimated for non-roadside residents. The health benefit from reduction in traffic emissions due to elimination of 50% MC population in Hanoi Capital was analyzed using the CAMx simulated PM_{2.5} and BenMAP model. BenMAP outputs showed that the benefits were not only confined to the Hanoi Capital but also spreading to neighboring provinces. The number of avoided mortality in the Hanoi Capital would be 3.9/100,000 people and that for the whole HRM domain would be 2.73/100,000 people. Using the value statistical life (VSL) transferred from the base VSL of OECD countries, the total monetary benefit for the scenario was ranged between \$101–275 million USD in 2010 based on all-cause mortality, which account for 0.08–0.2% of total GDP in Vietnam in 2010.

A comprehensive framework for health assessment was developed which showed the need to use both monitoring and modeling tools to link between the traffic emissions and health effects. Future studies should be conducted to overcome several limitations of this study. Specifically, the air quality monitoring should be done over a long period and for additional traffic-related air pollutants such as PAHs. Exposure assessment should be conducted using personal monitoring and also with specific biomarker monitoring to better link to the traffic emissions. Street models could also be applied to study the detail exposure on different side of a studied road and relate the pollution levels to the health effects of people living at each side. A comprehensive questionnaire/survey and toxicological studies should be done to better assess the health effects of traffic emissions.

Keywords: Hanoi, traffic-related air pollutants, human exposure assessment, photochemical modeling, health benefit analysis.

GRANTS AND SPONSORED RESEARCH PROJECTS

Completed Projects

Assessment of Dioxin Emissions from Point Sources in Thailand

Duration: 1 November 2017 – 31 December 2018
 Investigators: Prof. Nguyen Thi Kim Oanh
 Dr. Ekbordin Winijkul
 Sponsor: Integrated Consultancy on Infrastructure Development and Environmental Conservation (IDEA Consultants, Inc.)
 Amount: Baht 865,500

Assessment of Impacts to the Emission Reduction Measures of Short-lived Climate Forcing Pollutants on Air Quality and Climate in Southeast Asia

Duration: 1 September 2017 – 30 December 2018
 Investigator: Prof. Nguyen Thi Kim Oanh
 Sponsor: United States Agency for International Development (USAID/National Academy of Sciences (NAS))
 Amount: Baht 1,056,930

Biogeochemical Changes and Adaptation Mechanisms in Response to Anthropogenic Impacts in Watersheds: A Comparative Study between Jiulong River (China) and Chao Phraya River (Thailand)

Duration: 13 July 2017 – 12 December 2018
 Investigators: Prof. Thammarat Koottatep
 Prof. Rajendra Prasad Shrestha
 Sponsor: National Research Council of Thailand (NRCT)
 Amount: Baht 1,457,583.12

Community Scale, Decentralized Anaerobic Digestion for Energy and Resource Recovery

Duration: 1 May 2016 – 31 October 2018
 Investigators: Prof. Chettiyappan Visvanathan
 Dr. P. Abdul Salam
 Sponsor: British Council
 Amount: Baht 12,430,000

Creating Wider Impacts of Rice Straw Derived Fuel Use as Cooking

Duration: 1 July 2017 – 15 June 2018
 Investigator: Prof. Nguyen Thi Kim Oanh
 Sponsor: Stockholm Environment Institute (SEI) Asia Centre
 Amount: Baht 184,821.66

Develop a Comprehensive Background Paper on “Water Quality and Security in Asia-Pacific – What 3R and Circular Economy Can Offer?” and Substantive input to Eighth Regional 3R Forum in Asia and the Pacific

Duration: 1 August 2017 – 31 December 2018
 Investigator: Prof. Chettiyappan Visvanathan
 Sponsor: United Nations (UN)
 Amount: Baht 463,000

Developing an Operational Framework for River Health Assessment in the Mekong River Basin

Duration: 1 December 2014 – 1 December 2018
 Investigators: Prof. Mukand S. Babel
 Dr. Oleg Shipin
 Dr. Sangam Shrestha
 Dr. Victor Shinde
 Sponsor: Consultative Group on International Agricultural Research (CGIAR)
 Amount: Baht 12,899,700

Developing Policy Framework and Business Model to Promote Sustainable Use of Biomass Briquettes in Nepal

Duration: 1 September 2017 – 31 December 2018
 Investigators: Dr. P. Abdul Salam
 Dr. Shobhakar Dhakal
 Sponsor: CTCN-PCA
 Amount: Baht 1,650,000

Completed Projects

Development and Dissemination of Fecal Sludge Management Toolkit for Investors, Planners and Consultants

Duration: 1 October 2014 – 30 June 2018
 Investigator: Prof. Thammarat Koottatep
 Sponsor: Bill & Melinda Gates Foundation
 Amount: Baht 35,305,799.77

Development of a Thermophilic Anaerobic Membrane Bioreactor by Using PTFE Membrane for Wastewater Treatment and Biogas Production

Duration: 1 October 2017 – 30 September 2018
 Investigator: Prof. Chettiyappan Visvanathan
 Sponsor: Sumitomo Electric Industries, Ltd., Japan
 Amount: Baht 213,562.50

Establishment of Fecal Sludge Management Twinning Program

Duration: 7 September 2017 – 31 December 2018
 Investigator: Prof. Thammarat Koottatep
 Sponsor: Bill and Melinda Gates Foundation
 Amount: Baht 29,975,970.61

Exposure visit FSM in Thailand

Duration: 24 October 2017 – 30 April 2018
 Investigator: Prof. Thammarat Koottatep
 Sponsor: East Meets West Foundation
 Amount: Baht 139,179

Evaluating the Performance of Mitsubishi Membrane Aerated Biofilm Reactor (MABR) Lab Scale Membrane Modules

Duration: 1 June 2017 – 6 June 2018
 Investigator: Prof. Chettiyappan Visvanathan
 Sponsor: Mitsubishi Chemical Aqua Solutions Co., Ltd.
 Amount: Baht 145,794.60

GRANTS AND SPONSORED RESEARCH PROJECTS

GRANTS AND SPONSORED RESEARCH PROJECTS

Completed Projects

Foundations for Climate Resilient and Sustainable Growing Settlements (U-Res)

Duration: March 2017- August 2018
 Investigator: Dr. Shobhakar Dhakal
 Sponsor: NERC/ Tyndall Center
 Amount: Baht 436,383.58

Global Science, Technology and Innovation Conference

Duration: July 2017- September 2018
 Investigator: Dr. Shobhakar Dhakal
 Sponsor: VITO, Belgium
 Amount: Baht 360,804.56

Green 3R Wall/Roofs Development on AIT Campus

Duration: 2 April 2018 - 2 May 2018
 Investigator: Dr. Oleg Shipin
 Sponsor: Thai Pipe Industry Co., Ltd.
 Amount: Baht 57,690

Reports on Drinking Water Services and Technologies in Asian Countries - Phase III

Duration: 1 April 2017 - 30 September 2018
 Investigator: Prof. Chettiyappan Visvanathan
 Sponsor: Japan Water Research Center (JWRC)
 Amount: Baht 179,000

Solar Energy Storage in Nanomaterial Enhanced Batteries

Duration: 31 August 2017 - 31 December 2018
 Investigators: Prof. Weerakorn Ongsakul
 Dr. Louis Hornyak
 Sponsor: White Group Public Company Limited
 Amount: Baht 1,000,000

Solar Power Plugged in Hybrid Electric Vehicle

Duration: 31 August 2017 - 31 December 2018
 Investigator: Prof. Weerakorn Ongsakul
 Sponsor: GMS Power Public Company Limited
 Amount: Baht 1,000,000

Sustainable Decentralized Wastewater Management in Developing Countries

Duration: 15 October 2011 - 30 June 2018
 Investigator: Prof. Thammarat Koottatep
 Sponsor: Bill & Melinda Gates Foundation
 Amount: Baht 164,917,116.54

Technology Needs Assessment (Phase II) for Asia and CS Region - Missions

Duration: 8 January 2015 - 28 February 2018
 Investigators: Prof. Sivanappan Kumar
 Prof. Rajendra Prasad Shrestha
 Dr. P. Abdul Salam
 Sponsor: UNEP-DTU Partnership, Denmark
 Amount: Baht 320,000

Technology Needs Assessment (Phase II) for Asia and CS Region - Technical

Duration: 8 January 2015 - 28 February 2018
 Investigators: Prof. Sivanappan Kumar
 Prof. Rajendra Prasad Shrestha
 Dr. P. Abdul Salam
 Sponsor: UNEP-DTU Partnership, Denmark
 Amount: Baht 2,514,000

Technology Needs Assessment (Phase II) for Asia and CS Region - Workshop

Duration: 8 January 2015 - 28 February 2018
 Investigators: Prof. Sivanappan Kumar
 Prof. Rajendra Prasad Shrestha
 Dr. P. Abdul Salam
 Sponsor: UNEP-DTU Partnership, Denmark
 Amount: Baht 1,744,000

Ongoing Projects

AIT BORDA Collaboration

Duration: 1 January 2017 - 30 December 2019
 Investigator: Prof. Thammarat Koottatep
 Sponsor: Bermen Overseas Research Association
 Amount: Baht 5,550,000

ICUE 2018 - Green Energy for Sustainable Development

Duration: 1 October 2017 - 31 March 2019
 Investigators: Dr. Jai Govind Singh
 Dr. Shobhakar Dhakal
 Prof. Weerakorn Ongsakul
 Prof. S. Kumar
 Dr. P. Abdul Salam
 Sponsor: ICUE 2018
 Amount: Baht 1,753,830.63

Innovative Toilet City: From Reinventing to Realization at Scale

Duration: 1 September 2016 - 28 February 2019
 Investigator: Prof. Thammarat Koottatep
 Sponsor: The Thailand Research Fund (TRF)
 Amount: Baht 5,044,150

Knowledge and Innovation Support for Asian Development Bank's Water Financing Program

Duration: 17 July 2017 - 31 March 2019
 Investigator: Prof. Thammarat Koottatep
 Sponsor: Asian Development Bank (ADB)
 Amount: Baht 2,038,634

Optimizing Decentralised Low-cost Wastewater Infrastructure by Managing the Microbes

Duration: 1 May 2017 - 30 April 2020
 Investigator: Prof. Thammarat Koottatep
 Sponsor: Engineering and Physical Sciences Research Council (EPSRC GCRF)
 Amount: Baht 12,616,798.50

GRANTS AND SPONSORED RESEARCH PROJECTS

GRANTS AND SPONSORED RESEARCH PROJECTS

Ongoing Projects

Provincial Electricity Authority (PEA) - AIT Scholarship Program

Duration: 15 February 2016 – 14 February 2020
 Investigator: Prof. Weerakorn Ongsakul
 Sponsor: Provincial Electricity Authority (PEA)
 Amount: Baht 20,212,000

Short Term Actions 2017, BMGF project 106990

Duration: 22 November 2017 – 31 December 2018
 Investigator: Prof. Thammarat Koottatep
 Sponsor: Subgrant from UNESCO IHE - BMGF Grant
 Amount: Baht 954,093.66

Standard Methods for the Analysis of Faecal Sludge

Duration: 30 June 2017 – 31 December 2018
 Investigator: Prof. Thammarat Koottatep
 Sponsor: University of KwaZulu-Natal (UKZN) - BMGF Grant
 Amount: Baht 1,400,000

Technical Assistance for Technology transfer and commercialization support of the AIT Toilet Innovations

Duration: 7 November 2017 – 30 April 2019
 Investigator: Prof. Thammarat Koottatep
 Sponsor: Bill and Melinda Gates Foundation
 Amount: Baht 51,283,398.95

Toward an Open Resources Upon Services: Cloud Computing of Environmental Data TORUS

Duration: 15 October 2015 – 30 June 2019
 Investigator: Prof. Nguyen Thi Kim Oanh
 Sponsor: European Union (Erasmus + Capacity Building)
 Amount: Baht 1,814,296

Initiated Projects

Biofuel Production from Innovative Algal Bioreactor Treating Domestic Wastewater

Duration: 2 January 2018 – 31 December 2019
 Investigator: Prof. Thammarat Koottatep
 Sponsor: Bangkok Initiative and Innovation Centre at AIT (BIIC@AIT)
 Amount: Baht 2,000,000

Capacity Building Activities of the Asia Pacific Clean Air Partnership (APCAP)

Duration: 12 July 2018 – 31 January 2019
 Investigator: Prof. Nguyen Thi Kim Oanh
 Sponsor: United Nations Environment Programme (UNEP)
 Amount: Baht 2,691,100

CTCN Incubator Programme for Implementation of Nationally Determined Contributions in Timor-Leste

Duration: 1 September 2018 – 31 July 2019
 Investigators: Assoc. Prof. Dr. P. Abdul Salam
 Prof. Mukand S. Babel
 Sponsor: CTCN
 Amount: Baht 744,352

Effective Faecal Sludge Planning to Minimize Environmental Pollution and Protect Public Health

Duration: 1 August 2018 – 31 December 2019
 Investigator: Prof. Thammarat Koottatep
 Sponsor: The Thailand Research Fund (TRF)
 Amount: Baht 5,267,640

Effects of Climate Change and Variability on Community Vulnerability and Exposure to Dengue in South East Asia (DENCLIM)

Duration: 1 January 2018 – 31 December 2021
 Investigator: Dr. Oleg Shipin
 Sponsor: Research Council of Norway
 Amount: Baht 3,678,400

GRANTS AND SPONSORED RESEARCH PROJECTS

Recirculation pipe



GRANTS AND SPONSORED RESEARCH PROJECTS

Initiated Projects

Evaluating the Performance of Mitsubishi Multi-Layer Hollow Fiber Membrane for Membrane Aerated Biofilm Reactor (MABR) Application

Duration: 1 July 2018 – 30 December 2019
 Investigator: Prof. Chettiyappan Visvanathan
 Sponsor: Mitsubishi Chemical Co., Ltd.
 Amount: Baht 148,500

Evidence-based policies for the Sustainable use of Energy Resources in the Asia-Pacific Region

Duration: 15 November 2018 – 31 July 2019
 Investigators: Dr. Shobhakar Dhakal
 Prof. S. Kumar
 Dr. Ekbordin Winijkul
 Sponsor: UN ESCAP
 Amount: Baht 1,830,576

Exposure Visit for Resource Recovery option of Faecal sludge Management (FSM) Value Chain

Duration: 1 May 2018 – 31 December 2018
 Investigator: Prof. Thammarat Koottatep
 Sponsor: SNV Asia Bangladesh
 Amount: Baht 787,072

Faecal Sludge Management Toolbox Optimisation

Duration: 1 June 2018 – 31 December 2018
 Investigator: Prof. Thammarat Koottatep
 Sponsor: Athena Infonomics LLC.
 Amount: Baht 2,143,384

Forward Osmosis for Nutrient Recovery from Black Water

Duration: 1 August 2018 – 31 January 2019
 Investigator: Dr. Wenchao Xue
 Sponsor: AIT Research Initiation
 Amount: Baht 50,000

Mastering Energy Supply focusing on Isolated Areas (MESfIA)

Duration: 14 June 2019 – 15 November 2021
 Investigators: Dr. Shobhakar Dhakal
 Prof. S. Kumar
 Sponsor: Erasmus +
 Amount: Baht 345,6588.38

Reduced Agrochemicals and Local Food Chain GHG Emissions through Organic Farming and Smart Factories in Thailand

Duration: 4 December 2018 – 31 March 2019
 Investigator: Dr. Ekbordin Winijkul
 Sponsor: United Nations Industrial Development Organization (UNIDO)
 Amount: Baht 300,000

Reports on Drinking Water Services and Technologies in Asian Countries-Phase IV

Duration: 1 April 2018 – 30 September 2019
 Investigator: Prof. Chettiyappan Visvanathan
 Sponsor: Japan Water Research Center (JWRC)
 Amount: Baht 144,000

Retscreen Expert - Trainer

Duration: 1 March 2018 – 1 December 2018
 Investigator: Prof. S. Kumar
 Sponsor: CanmetEnergy, Canada
 Amount: Baht 120,000

Technology Needs Assessments Phase 3 - Technical

Duration: 1 June 2018 – 31 May 2021
 Investigators: Prof. S. Kumar
 Dr. P. Abdul Salam
 Prof. Rajendra P Shrestha
 Sponsor: UNEP-DTU, Denmark
 Amount: Baht 1,267,200

Regional Energy Resources Information Center (RERIC)

International Energy Journal (IEJ)

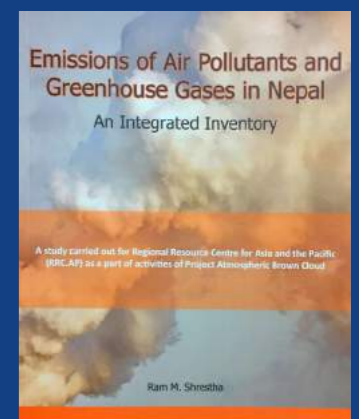
The center houses the publication arm of the Energy Academic Program at the Department of Energy, Environment and Climate Change, School of Environment, Resources and Development (SERD), Asian Institute of Technology (AIT). The IEJ, formerly known as RERIC International Energy Journal is published since 1979. It is dedicated to the advancement of knowledge in energy through vigorous examination and analysis of theories and good practices, and by encouraging innovations needed to establish a successful approach to solve identified energy-related problems. IEJ is a quarterly journal that publishes peer-reviewed papers on technical, socio-economic and environmental aspects of energy planning, energy conservation, renewable sources of energy, electric power transmission, generation and management. The papers are reviewed by renowned referees. IEJ also maintains an online journal system wherein not only current volumes are available but also archives containing past volumes and past special issues.

In 2018, the IEJ published four issues. IEJ is indexed in the SCOPUS and in the Scimago Journal Rank (0.212) and is the only Thailand-based journal focusing on energy-related issues. The journal is also honoured to be listed in the EI Compendex source list, which according to Elsevier, is the broadest and

Editor: Prof. Sivanappan Kumar
 Associate Editor: Dr. P. Abdul Salam
 Assistant Editor: Maria Kathrina B. Gratuito

RERIC Publication

A book on Emissions of Air Pollutants and Greenhouse Gases in Nepal: An Integrated Inventory by AIT's Emeritus Professor Ram M. Shrestha



CONFERENCES & WORKSHOPS

Organised by EECC Department Faculty Members

Annachhatre, A. P. (2018). Workshop on Technovation and Management of Organic Residues, Asian Institute of Technology, Pathum Thani, Thailand, 15 May 2018.

Dhakal, S. (2018). Co-chair of Steering Committee, CitiesIPCC Climate Change Science Conference, Edmonton, Canada, 5-7 March 2018.

Ongsakul, W. (2018). The 22nd Joint Meeting of the GMSARN Board and Council of Advisors, Guangxi University, Nanning, 30 November 2018.

Ongsakul, W. (2018). Conference Executive Director, The GRAND GMSARN International Conference on Energy, Connectivity, Environment, and Development in GMS, Nanning, 28-30 November 2018.

Salam, A., P. & Dhakal, S. (2018). Organised the Stakeholder Consultation Workshop on Promotion of Sustainable Use of Biomass Briquettes in Nepal, Dining Park Restaurant and Lounge, Kathmandu, Nepal, 22-23 January 2018.

Salam, A., P. & Dhakal, S. (2018). Stakeholder Dissemination Workshop on Promotion of Sustainable Use of Biomass Briquettes in Nepal, Dining Park Restaurant and Lounge, Kathmandu, Nepal, 20-22 June 2018.

Singh, J. G., (2018). Conference Coordinator, ICUE 2018 on International Conference on Green Energy for Sustainable Development, Phuket, Thailand, 24-26 October 2018

Visvanathan, C. (2018). Co-chair, 11th International Conference on Challenges in Environmental Science and Engineering, CESE-2018, The Sukosol Hotel, Bangkok, Thailand, 4-8 November, 2018.

SPEAKERS TO CONFERENCES

Conferences

Aruswamy, R. N. R., Singh, J. G., & Ongsakul, W. (2018). PSO based Economic Dispatch of a Hybrid Microgrid System, presented at the 4th International Conference on Power, Signals, Controls and Computation (EPSCICON 2018), Vidya Academy of Science & Technology, Thrissur, Kerala, India, 6-10 January 2018.

Aruswamy, R. N. R., Singh, J. G., & Ongsakul, W. (2018). PSO based Unit Commitment of a Hybrid Microgrid System, presented at the International Conference and Utility Exhibition on Green Energy for Sustainable Development (ICUE), Phuket, Thailand, 24-26 October 2018.

Bhatt, A., Tiwari, S., & Ongsakul, W. (2018). A Review on Re-Utilization of Electric Vehicle's Retired Batteries, proceedings of International Conference on Utilities and Exhibition (ICUE) 2018, Phuket, Thailand, 24-26 October 2018.

Chaweewat, P., Singh, J. G., & Ongsakul, W. (2018). A Two Stage Pattern Recognition for Time-of-Use Customers Based on Behavior Analytic by Using Gaussian Mixture Model and K-Mean Clustering: A Case Study of PEA, Thailand, proceedings of International Conference on Utilities and Exhibition (ICUE) 2018, Phuket, Thailand, 24-26 October 2018.

Dhakal, S. (2018). Rapid transition to low carbon cities: reflections from past assessments, plenary keynote speaker at Cities & Climate Change Science Conference, Edmonton, Canada, 5-7 March 2018.

Huo, M-Q., Sato, K., Kim Oanh, N. T., Tanatat, R., Uaeaungkool, M., Atitaya, S., Permadi, D. A., Narita, D., & Akimoto, H. (2018). Chemical characteristics and deposition amounts of precipitation components in Bangkok metropolitan region. IGAC-iCAPGP2018 conference, Takamatsu, Japan, September 2018.

Islam, M. A., Jahan, I., Rahimi, M. J., & Singh, J. G. (2018). Performance Analysis of LTE in Rich Multipath and Rural Environments for Wireless Communication in Smart Grid, presented at the International Conference and Utility Exhibition on Green Energy for Sustainable Development (ICUE), Phuket, Thailand, 24-26 October 2018.

Karki, M., & Singh, J. G. (2018). An Approach to Enhance the Life of Transformer and the Battery of Gridable Vehicles, presented at the 5th IEEE Uttar Pradesh Section International Conference, MMMUT Gorakhpur, UP, India, 2-4 November 2018.

Kim Oanh, N. T., Tanatat, R., Uaeaungkool, M., Atitaya, S., Permadi, D. A., Sato K., Huo, M-Q, Narita, D., & Akimoto, H. (2018). Assessment of fine particulate levels and compositions for source apportionment study in the Bangkok Metropolitan Region. IGAC-iCAPGP2018 conference, Takamatsu, Japan, September 2018.

SPEAKERS TO CONFERENCES

Kim Oanh, N. T., Ha Chi, N. N., Permadi, D. A., Ranatajaratroj, T., Mahawong, U., Saensud, A., Sato, K., & Huo, M-Q. (2018). Source apportionment of fine PM in Bangkok Metropolitan Region by different approaches, presented at Better Air Quality Conference 2018 (BAQ 2018), Kuching, Malaysia, 14-16 November 2018.

Kim Oanh, N. T., Bridhikitti, A., Ngoc Ha, D. T., & Iqbal, A. (2018). Atmospheric Dry Deposition Fluxes of Selected Air Pollutants into Water and Land Surfaces in Tropical Area, presented at AGU100, Washington, D. C., 10-14 December 2018.

Laopaiboon, T., Ongsakul, W., Panyainkaew, P., & Sasidharan, N. (2018). Hour-Ahead Solar Forecasting Program Using Back Propagation Artificial Neural Network, proceedings of International Conference on Utilities and Exhibition (ICUE) 2018, Phuket, Thailand, 24-26 October 2018.

Li, L., Phungsai, P., Furumai, H., Song, K., & Visvanathan, C. (2018). Orbitrap Mass Spectrometry for Molecular Characterization of Low Molecular Weight Dissolved Organic Matters in aMBR for Treating Polluted Surface Water, presented at Challenges in Environmental Science & Engineering (CESE-2018) conference, Bangkok, Thailand, 4-8, November 2018.

Logan, M., Safi, M., & Visvanathan, C. (2018). Investigating the Performance of IoT based Mesophilic Wet Anaerobic Digestion of Food Waste, presented at Challenges in Environmental Science & Engineering (CESE-2018) conference, Bangkok, Thailand, 4-8, November 2018.

Madhu, N., Mohan, V., & Singh, J. G. (2018). Risk Adjusted Co-optimization of ATC in High-Low Voltage Interconnected Power System, presented at the 2018 IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES), IIT Madras, Chennai from 18-21, December 2018.

Mohanty, B. (2018). A Paradigm Shift in Urban Sustainability: Sharing the Experience of a Regenerative City in the Making, presented at International Urban Sustainability and Green Buildings Conference 2018 on Towards Net Zero Energy Buildings, Malaysia Green Building Confederation (MGBC), Kuala Lumpur, Malaysia, 18 October 2018.

SPEAKERS TO CONFERENCES

Mohanty, B. (2018). Achieving Higher Prosumption by Prioritizing Energy Demand Management over Renewable Energy Investment: The Case of an Office Building presented at the International Conference on Green Energy for Sustainable Development, Phuket, 24-26 October 2018.

Mohanty, B. (2018). Environmentally sustainable health care delivery, keynote address at the Conference on Eye Care Delivery and Environmental Impact, Pondicherry, India, 21-22 September 2018.

Mostafa, S. M. G., & Singh, J. G. (2018). A Probabilistic Approach for Power Loss Minimization in Distribution Systems, presented at the International Conference and Utility Exhibition on Green Energy for Sustainable Development (ICUE), Phuket, Thailand, 24-26 October 2018.

Nagini, C. & Dhakal, S. (2018). A global city CO2 emissions dataset with ancillary data for 187 cities from CDP, presented at Cities & Climate Change Science Conference, Edmonton, Canada, 5-7 March 2018.

Narita, D., Kim Oanh, N. T., Sato, K., Huo, M-Q., & Permadi, D. A (2018). Fine Particle Pollution and Acid Deposition in Bangkok Metropolitan Region: Project Overview and Policy Implications. IGAC-iCAPGP2018 conference, Takamatsu, Japan, September 2018.

Nivedha, R. R., Singh, J. G., & Ongsakul, W. (2018). PSO based economic dispatch of a hybrid microgrid system, proceedings of 2018 International Conference on Power, Signals, Control and Computation (EPSCICON), pp. 1-5, Thrissur, India, 2018.

Permadi, D. A., & Kim Oanh, N. T. (2018). Modeling air quality in Bangkok Metropolitan Region, presented at Better Air Quality Conference 2018 (BAQ 2018), Kuching, Malaysia, 14-16 November 2018.

Puangskura, R., Singh, J. G., Ongsakul, W., & Gonzalez-Longatt, F. (2018). Multi-Objective Optimization for Enhancing System Coordination Restoration by Placement of Fault Current Limiters on an Active Distribution System with System Reliability Considerations, proceedings of International Conference on Utilities and Exhibition (ICUE) 2018, Phuket, Thailand, 24-26 October 2018.

Ramakrishnan, R., Singh, J. G., & Ongsakul, W. (2018). PSO based Unit Commitment of a Hybrid Microgrid System, proceedings of International Conference on Utilities and Exhibition (ICUE) 2018, Phuket, Thailand, 24-26 October 2018.

SPEAKERS TO CONFERENCES

Reddy, M. S., & Singh, J. G. (2018). Optimal Scheduling of Customers' Demand based upon Power Availability and its Price in Smart Grid, presented at the 5th IEEE Uttar Pradesh Section International Conference, MMMUT Gorakhpur, UP, India, 2-4 November 2018.

Roy, J. (2018). Strengthening Global Response and Sustainable Development, Poverty Eradication and inequality implications, presented at the Dissemination conference of IPCC special Report on 1.5 Global warming, New Delhi, India, 16 October 2018.

Roy, J. (2018). Natural Gas as Transition Fuel in Indian Power Sector, presented at the ICUE-2018, International Conference on Green Energy for Sustainable Development, Phuket, Thailand, 24-26 October 2018.

Sasidharan, N., Ongsakul, W., Varghese, M. P., Anooja, V. S., & Akhila, R. (2018). Efficient Improvement of Solar Photovoltaic System using Artificial Cooling Methods, proceedings of 2018 International Conference on Power, Signals, Control and Computation (EPSCICON), Thrissur, India, 2018.

Sasidharan, N., Singh, J. G., & Ongsakul, W. (2018). Static ZIP Load Modelling of Microwave Ovens and its Impact on Distribution System, proceedings of International Conference and Utility Exhibition on Green Energy for Sustainable Development (ICUE), 24-26 October 2018, Phuket, Thailand.

Shubham Tiwari, Ankit Bhatt, Arjun C. Unni, Jai Govind Singh, and Weerakorn Ongsakul (2018). Control of DC Motor using Genetic Algorithm based PID Controller, presented at the International Conference and Utility Exhibition on Green Energy for Sustainable Development (ICUE), Phuket, Thailand, 24-26 October 2018.

Sothea, K., & Kim Oanh, N. T. (2018). Source Apportionment of PAHs in Phnom Penh, Cambodia, presented at Better Air Quality Conference 2018 (BAQ 2018), Kuching, Malaysia, 14-16 November 2018.

Sudta, P., Veerachayapornkul, N., Ongsakul, W., Sasidharan, N., & Singh, J. G. (2018). Optimal Placement and Sizing of DG Based on Single Phase Wind Turbine Generator in Distribution System, proceedings of International Conference on Utilities and Exhibition (ICUE) 2018, Phuket, Thailand, 24-26 October 2018.

SPEAKERS TO CONFERENCES

Tiwari, S., Bhatt, A., Unni, A. C., Singh, J. G., & Ongsakul, W. (2018). Control of DC Motor using Genetic Algorithm based PID Controller, proceedings of International Conference on Utilities and Exhibition (ICUE) 2018, Phuket, Thailand, 24-26 October 2018.

Unni, A. C., Ongsakul, W., Ramakrishnan, R., & Tiwari, S. (2018). Optimizing Generation Mix Using Markovitz Mean-Variance Theory, proceedings of International Conference on Utilities and Exhibition (ICUE) 2018, Phuket, Thailand, 24-26 October 2018.

Visvanathan, C. (2018). Revolution in Waste Management Sector: Technology Innovations in Solid Waste Management, presented at the conference on The Future of Waste Management- Seizing the Potential of Digitalization, Phnom Penh, Cambodia, 30 November 2018.

Winijkul, E.. (2018). Residential Combustion of Solid Fuels: Emissions, Mitigation Scenarios, and Lessons Learned from Developing Countries, presented at T&T International Aerosol Conference, Siem Reap, Cambodia, 6-7 August 2018.

Winijkul, E. (2018). Idling Emission at the intersections and Traffic Emission Reduction Measures: A case study at Saladaeng intersection in Bangkok, Thailand, presented at Better Air Quality Conference 2018 (BAQ 2018), Kuching, Malaysia, 14-16 November 2018.

Xue, W., (2018). Integrating TiO₂ Nanoparticles on Forward Osmosis Membranes for Advanced Filtration Performance, presented at the World Water Congress & Exhibition 2018, Tokyo, Japan, 16-21 September 2018.

Xue, W., (2018). Global Development with Environmental Sustainability, presented at The 3rd Environment and Natural Resources International Conference (ENRIC 2018), Chonburi, Thailand, 22-23 November 2018.

Yee, T. L., Rathnayake, T., & Visvanathan, C. (2018). Performance Evaluation of a Thermophilic Anaerobic Membrane Bioreactor (TAnMBR) for Palm Oil Wastewater Treatment, presented at Challenges in Environmental Science & Engineering (CESE-2018) conference, Bangkok, Thailand, 4-8, November 2018.

SPEAKERS TO WORKSHOPS

Abdul Salam, P. Organic Residues as a Source of Energy and Value Added Products: Options and Issues. Workshop on Technovation and Management of Organic Residues. AIT, 15th May, 2018.

Abdul Salam, P. Best Waste Management Practices and Business Models for Community to Promote Food Waste to Energy and Resource Recovery. Food Waste to Energy and Resource Recovery in Thailand: Options, Opportunities, Issues and Challenges. Bangkok, Thailand. July 19th, 2018.

Annachhatre, A. P. (2018). Technovation and Management of Organic Residues Workshop, Jointly organized by Asian Institute of Technology and IHE Delft, Pathum Thani, Thailand 15 May 2018.

Dhakal, S. (2018). South-South Energy and Climate Change Research Network. Jointly organised by University of Cape Town's Energy Research Centre and African Climate & Development Initiative in partnership with the UK's Tyndall Centre for Climate Change Research, University of Cape Town, South Africa, 25-27 September 2018.

Kim Oanh, N., T. (2018). The 6th Thematic Workshop on Toward an Open Resources Upon Services (TORUS) services using HUPI platform. Walailak University, Nakhon Si Thammarat, Thailand, 5-9 February 2018.

Kim Oanh, N., T. (2018). The 7th International Workshop on cloud computing of environmental data. Organised by International School of the Information Processing Sciences (EISTI), France, 17-23 June 2018.

Kim Oanh, N. T. (2018). Modeling and communication tools to support policy-making in Asia: ICP Vegetation-Asia. Keynote speech at the International Workshop on Applications of Atmospheric Modelling: Air Pollution and Impact Research in South Asia. ICIMOD, Nepal.

Koottatep, T. (2018). Regional Partnership for Basic Human Right in ASEAN Developing Countries. Regional workshop organised by AIT-BORDA (Bremen Overseas Research and Development Association), Asian Institute of Technology, Thailand, 3-4 September 2018.

Kumar, S. (2018). Renewables and energy conservation: Energy efficiency and sustainable development, Asia-Pacific Leadership Programme on Environment for Sustainable Development – Resource efficiency and sustainable development, Shanghai, China, 17-21 September 2018.

SPEAKERS TO WORKSHOPS

Kumar, S. (2018). (a) Stakeholder consultation: What and why? (b) Technology prioritisation: How and why? (c) Technology action plan (tap): How and why?, Technology Needs Assessment Workshop, Nay Pyi Taw, Myanmar, 27 September 2018.

Roy, J. (2018). Thoughts on demand side solutions for mitigation, chaired and presented in the workshop on New Frontiers of Energy Demand in Nara, Japan, 24-27 September 2018.

Roy, J. (2018). Chapter 5 of IPCC Special Report on 1.5C Global Warming, presented in Incheon at the Approval session of the IPCC special report on 1.5C global warming approval and launch as Coordinating Lead Author, South Korea, 30 September – 8 October 2018.

Roy, J. (2018). Decarbonisation: How Indian manufacturing industries are doing?, presented the invited paper in Aspen, Colorado, USA, 11-16 November 2018.

Salam, P., A. & Dhakal, S. (2018). Promotion of Sustainable Use of Biomass Briquettes in Nepal. Stakeholder Consultation Workshop jointly organised by Asian Institute of Technology and Alternative Energy Promotion Centre (AIT-AEPC, Nepal), Dining Park Restaurant and Lounge, Kathmandu, Nepal, 22-23 January 2018.

Salam, P., A. & Dhakal, S. (2018). Promotion of Sustainable Use of Biomass Briquettes in Nepal. Stakeholder Dissemination Workshop jointly organised by Asian Institute of Technology and Alternative Energy Promotion Centre (AIT-AEPC, Nepal), Dining Park Restaurant and Lounge, Kathmandu, Nepal, 20-22 June 2018.

Shipin, O. (2018). Land Cover/Land Use Changes (LCLUC) and Impacts on the Environment in South/Southeast Asia. Organised by the University of the Philippines, Manila, Philippines, 28 - 31 May 2018.

Visvanathan, C. & Salam, P., A. (2018). Food Waste to Energy and Resource Recovery in Thailand: Options, Opportunities, Issues and Challenges. Dissemination Workshop of the AIT-LU Newton Fund Project, Hotel Novotel, Bangkok, Thailand, 19 July 2018.

Winijkul, E. (2018). Methods and Results of Emission Inventory of AIT. Workshop on the Japan-Thailand Clean Air Partnership for Particulate Matter Reduction Strategy and Measure Development Project, Bangkok, Thailand, 3 August 2018.

Xue, W., (2018). Spatial and Temporal Distribution of Sedimentary Heavy Metals in Response to Anthropogenic Impact in Lower Chao Phraya River watershed, Thailand. The 3rd International Workshop on Urbanization in Watersheds, Xiamen, China, 31 October – 2 November 2018.

SPEAKERS TO SEMINARS

Mohanty, B. (2018). Prosumption in the Era of Rapidly Dwindling Resources. Naresuan University, Phitsanulok, Thailand, 12 November 2018.

Mohanty B. (2018). French low carbon policy and initiatives for districts and buildings, presented at Indonesia-France Joint Seminar on Rethink the city for a low carbon future, Yogyakarta, Indonesia, 30 April 2018.

Shipin, O. (2018). Capacity Building on Environmental Surveillance & Management, International Seminar, Cebu City, Philippines, 21-27 May 2018.

Visvanathan, C. (2018). Role of Japanese Water Experts in Developing Asian Countries, National seminar organized by Japan Water Research Centre, 25 January 2018, Tokyo, Japan.

Xue, W., (2018). Seminar on Digital Belt and Road - Use of Earth Observation Science and Technology and Big Data Applications for Implementation of Sustainable Development Goals and DBAR International Centre of Excellence on Integrated Climate Change, Disaster Risk and Environmental Research and Capacity Building (DBAR ICoE-Bangkok) Launching Ceremony, Bangkok, Thailand, February 27, 2018.

SPEAKERS TO INTERNATIONAL FORUMS

Dhakal, S. (2018). De-carbonization Benefitting from Improving Renewable Energy's Economics and Better Knowledge on Co-benefits, Tenth meeting of the Research Dialogue (RD 10) of SBSTA of UNFCCC, Dialogue Room Santiago de Chile, World Conference Centre Bonn, Germany, 3 May 2018.

Dhakal, S. (2018). Cities contributing to Climate Change Mitigation in 1.5°C constrained world, South Asian Network for Development and Environmental Economics (SANDEE) Summer School, Asian Institute of Technology, Bangkok, 8 May 2018.

Dhakal, S. (2018). Invited panelist and speaker on Climate Science, IPCC and key issues for Asia, Agenda Item 2: Environmental challenges in the context of the implementation of the 2030 Agenda for Sustainable Development, Committee on Environment and Development, Fifth Session, United Nations Conference Centre, CR2, Bangkok, Thailand, 21-23 November 2018.

SPEAKERS TO INTERNATIONAL FORUMS

Dhakal, S. (2018). The Future of Urban Governance and Capacities for Resilient Cities, keynote presentation at the Expert Group Meeting on the Future of Urban Governance and Capacities for Resilience, Meeting Room A, United Nations Conference Centre, Bangkok, Thailand, Friday 23 November 2018.

Koottatep, T. (2018). The feasibility study on potential climate change mitigation target in Thailand's domestic wastewater sector. Reduction of GHG Emissions in Wastewater. Organised by Water and Wastewater Companies for Climate Mitigation Thailand (WaCCliM), Centara Grand Hotel, Central Plaza Ladprao, Bangkok, 11 September 2018.

Roy, J. (2018). Economic and Societal Impacts and Energy Considerations in the First and Third worlds, invited talk at the climate dialogue on climate policy choices: Payoffs and Tradeoffs in Portsmouth, New Hampshire, USA, 18-19 October 2018.

Roy, J. (2018). Strengthening Global Response to climate Change: Special reference to Asia, presented in the IPCC organized sessions in COP 24, Katowice, Poland, 5-8 December 2018.

Roy, J. (2018). Sustainable Development, Poverty Eradication and Inequality, presented in the IPCC organized sessions in COP 24, Katowice, Poland, 5-8 December 2018.

Roy, J. (2018). Behaviour and demand side solutions for mitigation-new chapter in AR6 presented in IPCC organized sessions in COP 24, 2018, Katowice, Poland, 5-8 December 2018.

Shipin, O. (2018). Africa and Asia: Exchange on Science-based observation for monitoring, mitigation and adaptation. The 3rd International Forum on Sustainability in Asia, Kuala Lumpur, Malaysia, 23-24 January 2018.

Visvanathan, C. (2018). Water Quality and Water Security in Asia and the Pacific - What 3R and Circular Economy can offer?, keynote presentation at the 8th Regional 3R Forum in Asia and the Pacific, Indore, India, 9-12 April, 2018.

Visvanathan, C. (2018). The 3R and Clean Water - The Role of the Circular Economy in Reducing Water Pollution. Eighth Regional 3R Forum in Asia and the Pacific, Indore, Madhya Pradesh, India, 9-12 April, 2018.

Visvanathan, C. (2018). Revolution in Waste Management Sector by Internet of Things and Industry 4.0, International Solid Waste Association (ISWA) World Congress 2018, Kuala Lumpur, Malaysia, 22-24 October, 2018.

INVITED LECTURES

Roy, J. (2018). Energy Pricing in sustainable development context of Bangladesh, invited talk at the Power and Energy Week of Bangladesh, Bashundhara International Convention Center, Bangladesh, 5-7 September 2018.

Visvanathan, C. (2018). Industrial Resource Management and Cleaner Production and Design for Sustainability. IHE Delft Institute, Netherlands, 26 February - 2 March 2018.

Visvanathan, C. (2018). Water Supply. Prof. Vilnius Gediminas Technical University, Vilnius, Lithuania, 20-26 May 2018.

Visvanathan, C. (2018). Beat Plastic Pollution: Key Issues and Solution, World Environment Day Webinar, organized by UNEP- IETC and Centre for Environmental Education, India, 5 June 2018.

Visvanathan, C. (2018). Development of a Membrane Bioreactor System for Polluted Surface Water Treatment, invited lecture at The International Symposium on Advanced Membrane Bioreactors for Environment Sustainability (IBA - AMBRES 2018), Tianjin, China, 15-18 April, 2018.

Winijkul, E. (2018). Air Pollution Control, Burapha University, Chon Buri, Thailand, April 2018.

Xue, W. (2018). Innovative membrane technologies for sustainable Urban Water Solution-An exploration on the future potential of forward osmosis technology, Sun Yat-Sen University, Guangzhou, China, 25-28 March 2018.

Xue, W. (2018). Membrane technologies for sustainable wastewater treatment: Is forward osmosis a potential solution?, King Mongkut's University of Technology Thonburi, Bangkok, Thailand, 14 November 2018.

ICUE CONFERENCE 2018



Green Energy towards sustainable development has been the topic of the ICUE 2018, an international conference organized by the Energy Program of the Department of Energy, Environment and Climate Change of the Asian Institute of Technology (AIT). Incorporating elements of renewable energy, low carbon strategies into economic, technological and social progress were the highlights of the conference.

The flagship biannual conference of the EECC Department's Energy Program saw the participation of 150 delegates from 34 countries. Delegates came from as far as South Africa, Colombia, Netherlands, and New Zealand (to name a few countries) for the conference held last 24 -26 October 2018 at the Thavorn Palm Beach Resort in Karon, Phuket.

The conference was supported and sponsored by Provincial Electricity Authority (PEA), Electricity Generating Authority of Thailand (EGAT), PTT Exploration and Production Public Company Limited (PTTEP), Metropolitan Electricity Authority (MEA), Banpu Infinergy and Phuket Solar Company Limited. The conference brought together energy professionals, researchers, members of the academia, policymakers, engineers and students.

The conference was also technically co-sponsored by the IEEE Power and Energy Society (IEEE PES). On the first day of the conference, the former Minister of Energy of Thailand, Dr. Piyasvasti Amranand, shared his insights about the future of Thailand's energy systems during this address entitled "Thailand: Path towards 1.5'C". On the second day, Dr. Venkatachalam Anbumozhi, a senior energy economist of the Economic Research Institute for ASEAN and East Asia (ERIA) and an alumnus of AIT discussed the "Challenges and Opportunities for Green ASEAN Grid System". Field trips were also arranged for conference delegates, to see a solar PV installation site of Phuket Solar Co. Ltd. at the HeadStart International School; and a scenic wind turbine installation site operated and managed by EGAT in Phromthep Cape.



Journals

Alvarado, M.J., Winijkul, E., Adam-Selin, R., Hunt, E., Brodowski, C., Lonsdale, C. R., Shindell, D. T., Faluvegi, G., Kleiman, G., Mosier, T. M., & Kumar, R. (2018). Sources of black carbon deposition to the Himalayan glaciers in current and future climates, *Journal of Geophysical Research*, 123, 7482–7505. doi:10.1029/2018JD029049

Amornpon, C., & Kim Oanh N. T. (2018). Catalytic Oxidation of Volatile Organic Compounds by 13X Zeolite Coated with nZnO in Presence of UV and Ozone at High Bed Temperature, *Water, Air, & Soil Pollution*.

Bai, X., Dawson, R. J., Üрге-Vorsatz, D., Delgado, G. C., Barau, A. S., Dhakal, S., Dodman, D., Leonardsen, L., Masson-Delmotte, V., Roberts, D. C., & Schultz, S. (2018). Six research priorities for cities and climate change. *Nature*, 555, 23–25. doi:10.1038/d41586-018-02409-z

Cai, B., Li, W., Dhakal, S., & Wang, J. (2018). Source data supported high resolution carbon emissions inventory for urban areas of the Beijing-Tianjin-Hebei region: Spatial patterns, decomposition and policy implications, *Journal of Environmental Management*, 206, 786–799. doi:10.1016/j.jenvman.2017.11.038

Cathy, N., Anna, P., Philippe, C., Ulf, W., Felix, V., Jun, W., François-Marie, B., Simeran, B., Yilong, W., Kevin, G., Yoshiki, Y., Kyra, A., Sara, T., Josep, C., Arnulf, G., Dhakal, S. & Felix, C. (2018). A global dataset of CO₂ emissions and ancillary data related to emissions for 343 cities, *Nature Scientific Data*. doi:10.1594/PANGAEA.884141

Journals

Chakraborty, D. & Roy, J. (2018), Implementing Environmental Management Accounting (EMA): Case Study of a Paperboard & Paper Production Unit in India, *International Journal of Business Insights and Transformation*, 11(2), 228

Chanthawong, A., Dhakal, S., Kuwornu, J. K. M., & Farooq, M. K. (2018). Impact of subsidy and taxation related to biofuels policies on the economy of Thailand: A dynamic CGE modelling approach, *Waste and Biomass Valorization*, 1–21. doi:10.1007/s12649-018-0417-4

Creutzig, F., Lohrey, S., Bai, X., Dawson, R., Dhakal, S., Lamb, W., McPhearson, T., Minx, J., Munoz, E., & Walsh, B. (2018). Upscaling urban data science for global climate solutions, *Global Sustainability*, Cambridge.

Creutzig, F., Roy, J., Lamb, W. F., Azevedo, I. M., Bruin, W. B., Dalkmann, H., Edelenbosch, O. Y., Geels, F. W., Grubler, A., Hepburn, C., Hertwich, E. G., Khosla, R., Mattauch, L., Minx, J. C., Ramakrishnan, A., Rao, N. D., Steinberger, J. K., Tavoni, M., Üрге-Vorsatz, D., & Weber, E. U. (2018). Towards demand-side solutions for mitigating climate change, *Nature Climate Change*, 8, 260–263. doi:10.1038/s41558-018-0121-1

Kim Oanh, N. T., Huy L. N., Didin D. A., Zusman, E., Nakano, R., Nugroho, S. B., Lestari, P., & Sofyan, A. (2018). Assessment of urban passenger fleet emissions to quantify climate and air quality co-benefits resulting from potential interventions, *Carbon Management*.

Kim Oanh, N. T., Permadi D. A., Hopke, P. K., Smith R. K., Dong N. P. & Anh Nguyet, D. (2018). Annual emissions of air toxics emitted from crop residue open burning in Southeast Asia over the period of 2010–2015, *Atmospheric Environment*. doi:10.1016/j.atmosenv.2018.05.061

Li, L., Song, K., & Visvanathan, C. (2018). Performances study of UV/O₃-aMBR recirculation system in treating polluted surface water, *Bioresources Technology*, 267, 797–801. doi:10.1016/j.biortech.2018.07.041

Logan, M. & Visvanathan, C. (2018). Management Strategies for Anaerobic Digestate of Organic Fraction of Municipal Solid Waste: Current Status and Future Prospects, *Waste Management and Research*.

Journals

Munshi, A. H., Sasidharan, N., Pinkayan, S., Barth, K. L., Sampath, W. S., & Ongsakul, W. (2018). Thin-film CdTe photovoltaics – The technology for utility scale sustainable energy generation. *Solar Energy*, 173, 511–516. doi:10.1016/j.solener.2018.07.090

Permadi, D. A., Kim Oanh, N. T., Vautard, R. (2018). Integrated emission inventory and modeling to assess distribution of particulate matter mass and black carbon composition in Southeast Asia. *Atmospheric Chemistry and Physics*, 18, 2725–2747. doi:10.5194/acp-18-2725-2018

Permadi, D. A., Kim Oanh, N. T., & Vautard, R. (2018). Assessment of emission scenarios for 2030 and impacts of black carbon emission reduction measures on air quality and radiative forcing in Southeast Asia. *Atmospheric Chemistry and Physics*, 18, 1–11. doi:10.5194/acp-18-1-2018

Phuc, N. H., & Kim Oanh, N. T. (2018). Determining factors for levels of volatile organic compounds measured in different microenvironments of a heavy traffic urban area, *Science of the Total Environment*, 627, 290–303. doi:10.1016/j.scitotenv.2018.01.216

Rajput, A. A., Zeshan & Visvanathan, C. (2018). Effect of thermal pretreatment on chemical composition, physical structure and biogas production kinetics of wheat straw, *Journal of Environmental Management*, 221, 45–52. doi:10.1016/j.jenvman.2018.05.011

Journals

Roy, J., Chakravarty, D., Dasgupta, S., Chakraborty, D., Pal, S., & Ghosh, D. (2018). Where is the hope? Blending modern urban lifestyle with cultural practices in India, *Current Opinion in Environmental Sustainability*, 31, 96–103. doi:10.1016/j.cosust.2018.01.010

Rupakheti, D., Kim Oanh, N. T., Rupakheti, M., Sharma, R. K., Panday, A., Praveen, P. S., & Lawrence, M. G. (2018). Indoor levels of black carbon and particulate matters in relation to cooking activities using different cook stove-fuels in rural Nepal, *Energy for Sustainable Development*, 48, 25–33; doi:10.1016/j.esd.2018.10.007

Solecki, W., Rosenzweig, C., Dhakal, S., Roberts, D., Barau, A. S., Schultz, S., & Ürge-Vorsatz, D. (2018). City transformations in a 1.5 °C warmer world. *Nature Climate Change*, 8, 177–181. doi:10.1038/s41558-018-0101-5

Sothea, K., & Kim Oanh, N. T. (2018). Characterization of emissions from diesel backup generators in Cambodia, *Atmospheric Pollution Research*. doi:10.1016/j.apr.2018.09.001. Ürge-Vorsatz, D., Rosenzweig, C., Dawson, R. J., Rodriguez, R. S., Bai, X., Barau, A. S., Seto, K. C., & Dhakal, S. (2018). Locking in positive climate responses in cities. *Nature Climate Change*, 8, 174–177. doi:10.1038/s41558-018-0100-6

Visvanathan, C. & Logan, M. (2018). Biogas Plants 4.0 – Performance Investigation of IoT based Anaerobic Digestion, *Technology: Asian Outlook on Engineering and Technology*, November, 17–23, 2018.

Xue, W., Sint, K. K., Ratanatamskul, C., Praserttham, P., & Yamamoto, K. (2018). Binding TiO₂ nanoparticles to forward osmosis membranes via MEMO-PMMA-Br monomer chains for enhanced filtration and antifouling performance. *RSC Advances*, 8(34), 19024–19033. doi:10.1039/C8RA03613F

Xue, W., Xiao, K., Liang, P., & Huang, X. (2018). Roles of membrane and organic fouling layers on the removal of endocrine disrupting chemicals in microfiltration. *Journal of Environmental Sciences*, 72, 176–184. doi:10.1016/j.jes.2018.01.004

Zaman, R., Bruderer, T., Kumar, S., & Islam, N. (2018). A multi-criteria analysis of coal-based power generation in Bangladesh, *Energy Policy*, 116, 182–192. doi:10.1016/j.enpol.2018.01.053



Book and Book Chapters

Bhari, B., & Visvanathan, C. (2018). Socio-Economic and Environmental Assessment for Sustainable Aquaculture Production. In F. I. Hai, C. Visvanathan, & R. Boopathy (Eds.), *Sustainable Aquaculture* (pp. 63-94). Springer. ISBN: 978-3-319-73256-5.

Hai, F. I., Visvanathan, C., & Boopathy, R. (2018). *Sustainable Aquaculture*. Springer. ISBN: 978-3-319-73256-5.

Karna, D., & Visvanathan, C. (2018). From Conventional Activated Sludge Process to Membrane Aerated Biofilm Reactors: Scope, Applications and Challenges. In Bui, X. T., Chiemchaisri, C., Fujioka, T., & Varjani, S. (Eds.), *Water and Wastewater Treatment Technologies* (pp. 237-264). Springer. ISBN: 978-981-13-3258-6.

Kim Oanh N. T., Permadi, D. A., Salam, P. A., Lieu, P. K., Hieu, D. V., Pongkiatkul, P., Kositkanawuth, K., Sothea, K., Elyan, C., Hopke, P., & Hoanh, C. T. (2018). Assessment of co-benefits of using rice straw derived solid fuel for cooking to reduce emissions of agro-residue open burning in selected GMS countries. In Chapter 8, *SUMERNET* book, 2018.

Man-Im, A., Ongsakul, W., & Singh, J. G., (2018). Multi-Objective Optimal Power Flow Considering Wind Power Cost and Emission by Stochastic Weight Trade-Off Chaotic Mutation Based NSPSO. In *Unconventional Modelling, Simulation and Optimization of Geo Science Engineering*, Springer, March 21, 2018.

Polprasert, C., & Koottatep, T. (2018). *Organic Waste Recycling*. International Water Association Publishing, Water Intelligence Online Digital Reference Library. ISBN13: 9781780408200. eISBN: 9781780408217.

Book and Book Chapters

Rosenzweig, C., Solecki, W., Romero-Lankao, P., Mehrotra, S., Dhakal, S., Bowman, T., & Ibrahim, S. A. (2018). *Climate Change and Cities - Second Assessment Report of the Urban Climate Change Research Network*, Cambridge, UK: Cambridge University Press. ISBN: 9781316603338. doi:10.1017/9781316563878.

Rosenzweig, C., Solecki, W., Romero-Lankao, P., Mehrotra, S., Dhakal, S., & Ibrahim, S. A. (2018). Pathways to urban transformation. In C. Rosenzweig, W. Solecki, P. Romero-Lankao, S. Mehrotra, S. Dhakal, & S. Ali Ibrahim (Eds.), *Climate Change and Cities: Second Assessment Report of the Urban Climate Change Research Network*. Cambridge, UK: Cambridge University Press. ISBN: 9781316603338. doi:10.1017/9781316563878.

Safari, A., Das, N., Jafari, S., Langhelle, O., Roy, J., & Assadi, M. (2018). Role of Gas- Fuelled Solutions in Support of Future Sustainable Energy World: Part II: Case Studies. In S. De, S. Bandyopadhyay, M. Assadi, & D. A. Mukherjee (Eds.), *Sustainable Energy Technology and Policies: A Transformational Journey*, 2(pp. 35-128). Singapore: Springer. doi:10.1007/978-981-10-8393-8_2. ISBN:978-981-10-8392-1. eISBN:978-981-10-8393-8

Shrestha, R. M., (2018). *Emissions of Air Pollutants and Greenhouse Gases in Nepal: An Integrated Inventory*. Regional Energy Resources Information Center (RERIC), Asian Institute of Technology. ISBN: 978-974-8257-96-9.

Urmee, T. & Kumar, S. (2018). On-grid solar energy in Asia: status, policies and future prospects. In S. Bhattacharyya, Taylor & Francis (Eds.), *Routledge Handbook of Energy in Asia* (pp. 173-188).

Visvanathan, C (2018). Industrial Waste Auditing. In M. Kutz, & J. Wiley (Eds.), *Handbook of Environmental Engineering* (pp.709 -724). Wiley. ISBN: 978-1-118-71294-8

Visvanathan, C. (2018). State of the 3Rs in Asia and the Pacific. In *Regional 3R Forum in Asia and the Pacific*, UNCRD and IGES, April 2018.

Visvanathan, C., & Anbumozhi, V. (2018). Evolutionary Acts and Global Economic Transition: Progress of the Circular Economy in ASEAN. In V. Anbumozhi & F. Kimura (Eds.), *Industry 4.0: Empowering ASEAN for the Circular Economy* (pp. 67-105). Indonesia: Economic Research Institute for ASEAN and East Asia. ISBN: 978-602-5460-09-8, 2018.

Reports and Others

Dhakal, S., A. Shrestha, S. Singhal, S. Moloney, P. Vaughter, R. Darnsawasdi, S. M. Kim, C. Pharino, & E. Haryono (2018). Tracking Climate Actions for Climate Compatible Development in Cities. Prosper.Net Policy Briefs, United Nations University, Tokyo.

Dhakal, S., A. Shrestha, S. Singhal, S. Moloney, P. Vaughter, R. Darnsawasdi, S. M. Kim, C. Pharino, & E. Haryono (2018). Transitioning Towards Climate Compatible Cities. Prosper.Net Policy Briefs, United Nations University, Tokyo.

Kim Oanh, N. T. (2018). Coordinating lead author of Chapter 1.4 Air quality, agriculture and ecosystems of the UNEP Asian regional assessment (2018), Air Pollution in Asia and the Pacific: Science-Based Solutions. Published by UNEP, Asia Pacific Clean Air Partnership and Climate and Clean Air Coalition.

Visvanathan, C. (2018). Principle of Sustainable Consumption and Production SCP: Electronic Educational Resource Package Prepared for Sri Lankan Universities as an output of the SWITCH Asia Policy Support Project, April, 2018.

Visvanathan, C. (2018). 7 Case Study Reports on drinking water services and technologies in Asian countries, Japan Water Research Center (JWRC).

Visvanathan, C. (2018). Report on Development of water treatment equipment for high-rate sedimentation filtration system suitable for Thailand water quality characteristics, NOX KOREA Co., Ltd.

Visvanathan, C. and P. Abdul Salam (2018). Project Report on Community Scale, Decentralised Anaerobic Digestion for Energy and Resource Recovery, British Council Thailand.

Reports and Others

Visvanathan, C. (2018). 10 Case Study Reports on drinking water services and technologies in Asian countries, Japan Water Research Center (JWRC)

Visvanathan, C. (2018). Comprehensive background paper on Water quality and security in Asia-Pacific – What 3R and circular economy can offer? and substantive input to Eighth Regional 3R Forum in Asia and the Pacific, United Nations.

Visvanathan, C. (2018). Project Report on Evaluating the Performance of Mitsubishi Membrane Aerated Biofilm Reactor (MABR) Lab Scale Membrane Modules, Mitsubishi Chemical Aqua Solutions Co., Ltd., Japan.

Visvanathan, C. (2018). Report on Performance Evaluation of Cube Mini Flat Sheet Membrane in treating canal water for portable use, Martin Membrane Systems, Germany.

Visvanathan, C. (2018). Project Report on Development of a Thermophilic Anaerobic Membrane Bioreactor by Using PTFE Membrane for Wastewater Treatment and Biogas Production, Sumitomo Electric Industries Ltd., Japan.

Xue, W. (2018). Project Report on Biogeochemical changes and adaptation mechanisms in response to anthropogenic impacts in watersheds: A comparative study between Jiulong River (China) and Chao Phraya River (Thailand).

Professional Training and Curriculum Development

Dhakal, S. & Shrestha, S. (2018). Consultation Workshop on Curriculum Development for Master of Science in Climate Change. Organised by Royal University of Phnom Penh, Cambodia, 6 February 2018.

Kim Oanh, N. T., & Winijkul, E. (2018). Training on Capacity building of Asia Pacific Clean Air Partnership (APCAP), Kuching, Malaysia, 11-13 November 2018.

Visvanathan, C. (2018). Course Co-coordinator of the Professional Development Program on Sustainable Consumption and Production, AIT Extension, 5-16 February 2018.

Visvanathan, C. (2018). Principle of Sustainable Consumption and Production SCP: Electronic Educational Resource Package Prepared for Sri Lankan Universities as an output of the SWITCH Asia Policy Support Project, April 2018.

Visvanathan, C. (2018). Invited by the Ministry of Mahaweli Development and Environment, Sri Lanka, to conduct the Training of Trainers (TOT) program to test run the Resource Package on Sustainable Consumption and Production, 28-31 August 2018.

GLOBAL ENGAGEMENTS

Journal Editorial Board Members

Abdul Salam P (2018). Associate Editor. International Energy Journal. RERIC. Asian Institute of Technology.

Mohanty B. (2018). Members of the International Jury for the Green Solutions Awards 2018.

Dhakal, S. (2018). Member of Editorial Board, Sustainable Cities and Societies, Elsevier.

Dhakal, S. (2018). Member of Editorial Board, Carbon Management, Taylor and Francis Publishers.

Dhakal, S. (2018). Member of Editorial Board, Urban Climate, Elsevier Publishers.

Dhakal, S. (2018). Guest Co-Editor of Special Issue on Urban Pathways: Transition towards Low-Carbon, Sustainable Cities in Emerging Economies, Sustainability, MDPI.

Dhakal, S. (2018). Guest co-editor of Special Issue on Urban Data and Climate Information Services, Urban Climate Journal, Elsevier Publishers.

Dhakal, S. (2018). Member of Editorial Board, Journal of Asian Energy Studies (JAES). Hong Kong Baptist University.

Dhakal, S. (2018). Member of Board of Editorial Advisors, International Energy Journal, RERIC, Asian Institute of Technology.

Kim Oanh, N. T. (2018). Guest editor of Journal of Atmospheric Chemistry and Physics, Special Issue Atmospheric pollution in the Himalayan foothills: The SusKat-ABC international air pollution measurement campaign, 2016 - 2018.

Kim Oanh, N. T. (2018). Editor of the journal, Aerosol and Air Quality Research.

Roy, J. (2018). Editorial Board Member of Annual Review on Energy and Resources (ARER)

Roy, J. (2018). Editorial Board Member of the Journal of Current Opinion in Environmental Sustainability

Roy, J. (2018). Editorial Board Member of the Journal of Environmental Development

Roy, J. (2018). Editorial Board Member of the Journal of Industrial Statistics

Visvanathan, C. (2018). Editorial Board Member of the Journal of Waste Management, Elsevier Publishers.

Visvanathan, C. (2018). Editorial Board member of the Journal of Bioresource Technology, Elsevier Publishers.

Visvanathan, C. (2018). Special Editor of the Journal of Environmental Management, Vol: 213, 2018.

Visvanathan, C. (2018). Associate Editor of Global Journal of Environmental Science and Technology.

Visvanathan, C. (2018). Editorial Board Member of the Reviews in Environmental Science & Bio/Technology.

Visvanathan, C. (2018). Editorial Board Member of the International Journal of Membrane Water Treatment.

Visvanathan, C. (2018). Member of Board of Advisors of the Canadian Journal of Pure and Applied Sciences.

GLOBAL ENGAGEMENTS

International Recognition and Scientific Leadership

Dhakal, S. Coordinating Lead Author, Working Group III, Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), 2018.

Dhakal, S. Member, Global Management Team, Urban Climate Change Research Network (UCCRN), Earth Institute- Columbia University, United States, 2018.

Dhakal, S. Member, Scientific Committee, Global Carbon Project, Future Earth, 2018.

Dhakal, S. Co-Chair, Scientific Steering Committee, CitiesIPCC - Cities and Climate Change Science Conference, 5-7 March 2017, Edmonton, Canada.

Dhakal, S. Coordinating Lead Author, Enhancing Energy Security, Hindu Kush Himalayan Monitoring and Assessment Programme (HIMAP), Coordinated by International Center for Integrated Mountain Development (ICIMOD), 2018.

Ongsakul, W. Adjunct Professor, SM80.32 High-tech Entrepreneurship & Business Plan Development, School of Management, AIT, 5 October 2018.

Ongsakul, W. Adjunct Professor, FIN 612 Fixed Income Securities, MSc. in Management, KMUTT, Jan-May 2018.

Ongsakul, W. Member, Power and Energy Society, Institute of Electronics and Electrical Engineering (IEEE), No. 01373968, 1995 - Present.

Ongsakul, W. Editor-in-Chief and Founder, GMSARN International Journal (indexed by SCOPUS) Greater Mekong Subregion Academic Research Network (GMSARN), June 2007 - present.

Roy, J. Coordinating Lead Author of IPCC special report on 1.5 Global warming.

Roy, J. Coordinating Lead Author of Hindu Kush Himalayan Monitoring and Assessment Programme (HIMAP) report from International Center for Integrated Mountain Development (ICIMOD), 2018.

Visvanathan, C. Visiting Faculty, Vilnius Gediminas Technical University, Vilnius, Lithuania, May, 2018.

Visvanathan, C. Visiting Professor, Faculty of Engineering, Kyoto University, Kyoto, Japan from December 2018 to April, 2019.

Xue, W. Visiting Associate Professor, Tianjin Polytechnic University, Tianjin, China.

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