

Assoc. Prof. Dr. Sirintornthep Towprayoon
รศ.ดร. สิรินทรเทพ เต๋อประยูร

EDUCATIONAL BACKGROUND

Year A.D. 1991	Ph.D. (Food Science and Technology), Kyushu University, Japan
Year A.D. 1980	M.Sc. (Microbiology), Kasetsart University, Thailand (วท.ม. (จุลชีววิทยา), มหาวิทยาลัยเกษตรศาสตร์, ประเทศไทย, 2523)
Year A.D. 1977	B.Sc. (Biology), Kasetsart University, Thailand (วท.บ. (ชีววิทยา), มหาวิทยาลัยเกษตรศาสตร์, ประเทศไทย, 2520)

WORKING EXPERIENCE:

1981 – 1984	Lecturer,
1984 – 1998	Assistant Professor,
1998-present	Associate Professor
2001 – 2007	Chair of Environment Division and Deputy Director, The Joint Graduate School of Energy and Environment, King Mongkut's University of Technology Thonburi
2001-2011	Deputy Director, The Joint Graduate School of Energy and Environment, King Mongkut's University of Technology Thonburi
2011-2017	Director, The Joint Graduate School of Energy and Environment, King Mongkut's University of Technology Thonburi

RESEARCH AREAS

- Inventories mitigation and impact of Greenhouse Gases
- Methane emission from paddy field and landfill
- Bioenergy conversion of municipal solid waste: Anaerobic digestion and composting process
- Climate model (RegCM3)
- Greenhouse Gases mitigation

HONOUR

- 2003 Outstanding research award by National Research Council of Thailand on The Efficient Management of Municipal Solid Waste
- 2008 Certificate of recognition from IPCC on substantial contribution to the award of the Nobel Peace Prize for The 2007 to IPCC

PUBLICATIONS

International Journal

- Pudcha, T., Phongphiphat, A., Wangyao, K. and Towprayoon, S. (2023). Forecasting Municipal Solid Waste Generation in Thailand with Grey Modelling. Environment and Natural Resources Journal, 21(1), pp. 35-46. Jan-Feb 2023
- Pudcha, T., Phongphiphat, A., and Towprayoon, S. (2023) Greenhouse Gas Mitigation and Energy Production Potentials from Municipal Solid Waste Management in Thailand Through 2050. Earth Systems and Environment. 7(1): p. 83-97. January 2023

- Kamsook, S., Phongphiphat, A., Towprayoon, S., and Vinitnantharat, S., (2023) Investigation of plastic waste management in Thailand using material flow analysis. *Waste Management & Research: The Journal for a Sustainable Circular Economy*. 41(4): p. 924–935. April 2023
- Bhatsada, A., Patumsawad, S., Towprayoon, S., Chiemchaisri, C., Phongphiphat, A., and Wangyao, K., (2023) Modification of the Aeration-Supplied Configuration in the Biodrying Process for Refuse-Derived Fuel (RDF) Production. *Energies*. 16(7). April 2023
- Bhatsada, A., Patumsawad, S., Itsarathorn, T., Towprayoon, S., Chiemchaisri, C., Phongphiphat, A., and Wangyao, K., (2023) Improvement of energy recovery potential of wet-refuse-derived fuel through bio-drying process. *Journal of Material Cycles and Waste Management*. 25(2): p. 637-649. March 2023
- Wulyapash, W., Phongphiphat, A., and Towprayoon, S., (2022) Comparative study of hot air drying and microwave drying for dewatered sludge. *Clean Technologies and Environmental Policy*. 24(1): p. 423-436. January 2022
- Payomthip, P., Towprayoon, S., Chiemchaisri, C., Patumsawad, S., and Wangyao, K., (2022) Optimization of Aeration for Accelerating Municipal Solid Waste Biodrying. *International Journal of Renewable Energy Development*. 11(3): p. 878-888
- Sriphirom, P., Chidthaisong, A., Yagi, K., Tripetchkul, S., Boonapatcharoen, N., and Towprayoon, S., (2021) Effects of biochar on methane emission, grain yield, and soil in rice cultivation in Thailand. *Carbon Management*. 12(2): p. 109-121. Mar 4
- Ngamket, K., Wangyao, K., and Towprayoon, S., (2021) Comparative Biodrying Performance of Municipal Solid Waste under Greenhouse and Non-greenhouse Conditions. *Journal of Environmental Treatment Techniques*. 9(1): p. 211-217. March 2021
- Chommontha, N., Phongphiphat, A., Wangyao, K., Patumsawad, S., and Towprayoon, S. (2021) Effects of operating parameters on co-gasification of coconut petioles and refuse-derived fuel. *Waste Management & Research*. 40(5), DOI: 10.1177/0734242X211003974.
- Boonsakul, P., Buddhawong, S., Towprayoon, S., Vinitnantharat, S., Suanburai, D., and Wangyao, K. (2021) Applying electromagnetic surveys as pre-screening tools prior to open dump mining. *Journal of Material Cycles and Waste Management*. 23, pp. 518–1530.
- Sriphirom, P., Chidthaisong, A., Yagi, K., Tripetchkul, S., Boonapatcharoen, N., and Towprayoon, S. (2021) Effects of biochar on methane emission, grain yield, and soil in rice cultivation in Thailand. *Carbon Management*. 12(2). Marc-April 2021
- Ngamket, K., Wangyao, K., and Towprayoon, S. (2021) Comparative Biodrying Performance of Municipal Solid Waste under Greenhouse and Non-greenhouse Conditions. *Journal of Environmental Treatment Techniques*. 9(1): p. 211-217. March 2021
- Chungam, B., Vinitnantharat, S., Towprayoon, S., Suanburi, D., Buddhawong, S., and Wangyao, K. (2021) Evaluation of the potential of refuse-derived fuel recovery in the open dump by resistivity survey prior to mining. *Journal of Material Cycles and Waste Management*. 23(4): p. 1320 - 1330. July 2021
- Wisethaksorn, U., Towprayoon, S., Chidthaisong, A., Jiaphasuanan, T., and Buddhaboorn, C. (2020) Effect of biochar and compost application on nitrogen dynamics in organically managed nutrient-poor paddy soil system and in organic rice cultivation system. *Journal of Agricultural and Crop Research*. 8(10): p. 221-236. October 2020
- Vat, V., Chidthaisong, A., and Towprayoon, S. (2020) Effect of biochar and its combined application with manure and fertilizer on nitrogen leaching, greenhouse gas (GHG) emissions, and grain yield under alternate wetting and drying (AWD) system. *Journal of Agricultural and Crop Research*. 8(2): p. 33-47. February 2020

- Sriphirom, P., Chidthaisong, A., Yagi, K., Tripetchkul, S., and Towprayoon, S. (2020) Evaluation of biochar applications combined with alternate wetting and drying (AWD) water management in rice field as a methane mitigation option for farmers' adoption. *Soil Science and Plant Nutrition*. 66(1): p. 235-246. Jan
- Sriphirom, P., Chidthaisong, A., Yagi, K., Boonapatcharoen, N., Tripetchkul, S., and Towprayoon, S. (2020) Effects of Biochar Particle Size on Methane Emissions from Rice Cultivation. *Journal of Renewable Materials*. 8(10): p. 1199-1214
- Prangbang, P., Yagi, K., Aunario, J.K.S., Sander, B.O., Wassmann, R., Jakel, T., Buddaboon, C., Chidthaisong, A., and Towprayoon, S. (2020) Climate-Based Suitability Assessment for Methane Mitigation by Water Saving Technology in Paddy Fields of the Central Plain of Thailand. *Frontiers in Sustainable Food Systems*. 4: p. 17. Nov
- Juntueng, S., Towprayoon, S., and Chiarakorn, S. (2021) Assessment of energy saving potential and CO₂ abatement cost curve in 2030 for steel industry in Thailand. *Environment Development and Sustainability*. 23, pp. 2630–2654.
- Win, S., Towprayoon, S., and Chidthaisong, A. (2019) Adaptation of mangrove trees to different salinity areas in the Ayeyarwaddy Delta Coastal Zone, Myanmar. *Estuarine, Coastal and Shelf Science*. 228: p. 106389. November 2019
- Sriphirom, P., Chidthaisong, A., and Towprayoon, S. (2019) Effect of alternate wetting and drying water management on rice cultivation with low emissions and low water used during wet and dry season. *Journal of Cleaner Production*. 223: p. 980-988. Jun 2019
- Jakrawatana, N., Gheewala, S.H., and Towprayoon, S. (2019) Carbon flow and management in regional rice production in Thailand. *Carbon Management*. 10(1): p. 93-103. Jan 2019
- Pimple, U., Simonetti, D., Sitthi, A., Pungkul, S., Leadprathom, K., Skupek, H., Jaturong, S.-a., Gond, V., and Towprayoon, S. (2018) Google Earth Engine Based Three Decadal Landsat Imagery Analysis for Mapping of Mangrove Forests and Its Surroundings in the Trat Province of Thailand. *Journal of Computer and Communications*. 6: p. 247-264. January 2018
- Lee, C.T., Rozali, N.E.M., Van Fan, Y., Klemes, J.J., and Towprayoon, S. (2018) Low-carbon emission development in Asia: energy sector, waste management and environmental management system. *Clean Technologies and Environmental Policy*. 20(3): p. 443-449. April 2018
- Lee, C.T., Rozali, N.E.M., Klemes, J.J., and Towprayoon, S. (2018). "Advancing low-carbon emissions in Asia: mitigation of greenhouse gases and enhancing economic feasibility for major sectors". *Clean Technologies and Environmental Policy*, 20(3), pp. 441-442. April 2018
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- Chidthaisong, A., Cha-un, N., Rossopa, B., Buddaboon, C., Kunuthai, C., Sriphirom, P., Towprayoon, S., Tokida, T., Padre, A.T., and Minamikawa, K. (2018) Evaluating the effects of alternate wetting and drying (AWD) on methane and nitrous oxide emissions from a paddy field in Thailand. *Soil Science and Plant Nutrition*. 64(1): p. 31-38. Jan - Feb 2018
- Bulsathaporn, A., Suekhum, D., Hanpattanakit, P., Sanwangsri, M., Chidthaisong, A., Towprayoon, S., Inubushi, K., and Limtong, P. (2018) Soil CO₂ emissions measured by closed chamber and soil gradient methods in dry dipterocarp forest and sweet sorghum plots. *Scienceasia*. 44(1): p. 1-10. February 2018

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- Cha-un, N., Chidthaisong, A., and Towprayoon, S. (2017) Using the DNDC model to predict methane emissions from crop-rice rotation systems. *Research Journal of Chemistry and Environment*. 21(3): p. 43-53. April 2017
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- Boonrod, K., Towprayoon, S., Bonnet, S., and Tripetchkul, S. (2015) Enhancing organic waste separation at the source behavior: A case study of the application of motivation mechanisms in communities in Thailand. *Resources, Conservation and Recycling*. 95(0): p. 77-90. February 2015
- Sutthasil, N., Chiemchaisri, C., Chiemchaisri, W., Wangyao, K., Towprayoon, S., Endo, K., and Yamada, M. (2014) Comparison of Solid Waste Stabilization and Methane Emission from Anaerobic and Semi-Aerobic Landfills Operated in Tropical Condition. *Environmental Engineering Research*. 19(3): p. 261-268. Jul.-Sep. 2014
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- Mander, Ü., Dotro, G., Ebie, Y., Towprayoon, S., Chiemchaisri, C., Nogueira, S.F., Jamsranjav, B., Kasak, K., Truu, J., Tournéize, J., and Mitsch, W.J. (2014) Greenhouse gas emission in constructed wetlands for wastewater treatment: A review. *Ecological Engineering*. 66(5): p. 19-35. May 2014
- Juntueng, S., Towprayoon, S., and Chiarakorn, S. (2014) Energy and carbon dioxide intensity of Thailand's steel industry and greenhouse gas emission projection toward the year 2050. *Resources, Conservation and Recycling*. 87(0): p. 46-56. June 2014
- Jiaphasuanan, T. and Towprayoon, S. (2014) Effects of Burnt and un-burnt Rice Straw on Methane and Nitrous Oxide Emissions in Water drainage Rice Fields. *Research Journal of Chemistry and Environment*. 18(3): p. 75-81. March 2014
- Torsri, K., Octaviani, M., Manomaiphiboon, K., and Towprayoon, S. (2013) Regional Mean and Variability Characteristics of Temperature and Precipitation over Thailand in 1961-2000 by a Regional Climate Model and Their Evaluation. *Theoretical and Applied Climatology*. 113(1-2): p. 289-304. July 2013
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- Smith, P.M., Daniel; Cai, Zucong; Gwary, Daniel; Janzen, Henry; Kumar, Pushpam; McCarl, Bruce; Ogle, Stephen; O'Mara, Frank; Rice, Charles; Scholes, Bob; Sirotenko, Oleg; Howden, Mark; McAllister, Tim; Pan, Genxing; Romanenkov, Vladimir; Schneider, Uwe; Towprayoon, Sirintornthep (2007) Policy and technological constraints to implementation of greenhouse gas mitigation options in agriculture. *Agriculture, Ecosystems & Environment*. 118(1-4): pp. 6-28. January 2007
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- Netpradit, S.T., Paitip; Towprayoon, Sirintornthep (2004) Adsorption of three azo reactive dyes by metal hydroxide sludge: effect of temperature, pH, and electrolytes. *Journal of Colloid and Interface Science*. 270(2): p. 255-261.15 February 2004
- Netpradit, S.T., Thiravetyan, P.; Towprayoon, S. (2003) Application of 'waste' metal hydroxide sludge for adsorption of azo reactive dyes. *Water Research*. 37(4): p. 763-772 February
- Rummasak, T.T., Towprayoon, S.; Bashkin, V.N. (2002) Chemical properties of mangrove sediments in relation to sulfur dynamics. *TROPICS*, 12(1), pp. 43-57. December
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International Conference

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- Payomthip, P., Towprayoon, S., Chiemchaisri, C., Pathumsawad, S., and Wangyao, K. (2020) Effect of intermittent negative ventilation in biodrying progress for treating preshredded waste. in The 10th International Conference on Future Environment and Energy (ICFEE 2020). Kyoto, Japan. 7-9 Jan 2020.
- Sriphirom, P., Chidthaisong, A., Yagi, K., Tripeetchkul, S., Boonapatcharoen, N., and Towprayoon, S. (2020) Effect of mangrove biochar on methane production, oxidation and emission of rice cultivation in clay loam soil. In [Virtual Conference] in The 6th

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- Sriphirom, P., Towprayoon, S., and Chidthaisong, A. (2019) Evaluating the impact of single application and co-applications of mangrove biochar on CH₄ and N₂O emissions, soil properties and yield on farmer's traditional rice cultivation. in The 2019 5th International Conference on Sustainable Agriculture Technologies (ICSAT 2019). 1-3 November 2019. Kaohsiung, Taiwan
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- Wungsumpow, C., Towprayoon, S., Chiemchaisri, C., Suanburi, D., and Wangyao, K. (2018) Application of Resistivity Measurement for Assessing the Plastic Material in Landfill. in APLAS TOKYO 2018 The 10th Asia-Pacific Landfill Symposium. 24 - 26 November 2018. Tokyo, Japan
- Wiseth-aksorn, U., Towprayoon, S., Chidthaisong, A., Jiaphasuanan, T., and Buddhaboon, C. (2018) Effects of biochar and its co-application on water use and N-leaching in organic rice cultivation. in 7th International Conference on Sustainable Energy and Environment (SEE2018). 28-30 November 2018. Bangkok, Thailand
- Win, S., Chidthaisong, A., and Towprayoon, S. (2018) Estimate of aboveground carbon stock in the mangrove hardwood trees species of Ayeyarwaddy delta, Myanmar. in 7th International Conference on Sustainable Energy and Environment (SEE2018). 28-30 November 2018. Bangkok, Thailand
- Chiemchaisri, C., Chiemchaisri, W., Sutthiprapa, S., Perera, R., Wangyao, K., Towprayoon, S., and Lee, D.H. (2018) Effects of Aeration and Waste Composition on Bio-drying of

Municipal Solid Wastes. in APLAS TOKYO 2018 The 10th Asia-Pacific Landfill Symposium. 24 - 26 November 2018. Tokyo, Japan.

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- Phongphiphat, A., Cheewaphongphan, P., and Towprayoon, S. (2015) Municipal Solid Waste Management Planning for Sustainable Waste-to-Energy Processes and GHG Mitigation: A case study of Chumphon Province. in The 2nd Symposium of International Waste Working Group Asian Regional Branch (IWWG-ARB) 12-15 April 2015. Shanghai, China
- Boonrod, K., Towprayoon, S., Bonnet, S., and Tripetchkul, S. (2015) Public Perspective toward Waste-to-energy Applications in Thailand: An Opportunity on Biogas Production from Organic Waste. in The 4th International Conference on Informatics, Environment, Energy and Applications (IEEA 2015). March 28-29, 2015. Pattaya, Thailand
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International Conference on Engineering and Applied Science (ICEAS2013). March 15-17, 2013. Tokyo, Japan

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