

Curriculum Vitae

Name: Wongkot Wongsapai
Position: Assistant Professor
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Wongkot Wongsapai works as an Assistant Professor in Mechanical Engineering, Chiang Mai University where he graduated from and also earned Certificate of Advanced Study in Energy Economics and Planning from AIT. From his more than twenty years experiences, he involves more than 120 energy projects from various organizations, e.g. the World Bank, IEA, giz, JICA, ERIA, Thailand's Ministry of Energy, in four main types; i.e. (i) energy efficiency improvement in industrial, service, and household sector, including developing the database system for designated factories and buildings of the country (ii) renewable energy technologies in biogas and biomass, (iii) energy policy and planning and (iv) greenhouse gas management particularly in NAMA NDC and MRV and marginal abatement cost (MAC) of the country. He also serves as national working group in climate change in energy sector under Ministry of Energy since 2019.

He was also a project manager of the Thailand Small-scale Livestock Waste Management Program which was the first Clean Development Mechanism-Programme of Activities (CDM-PoA) in Thailand. This biogas from swine farms with support from the World Bank have the maximum of 360,000 t-CO₂ carbon credit per year. He also directed the World Bank's Partnership for Market Readiness (PMR) covering on developing the baseline and target setting for energy efficiency performance in Thailand major industrial and commercial sectors. His expertise also includes developing the capacity building program in energy and climate change issues and he is the project manager of national climate change technology needs assessment (TNA) in energy sector.

In academic point of view, he has many international papers including the ISI and Scopus indexed Energy Policy, Energy Reports, etc. He's a co-author with International Energy Agency (IEA)'s publications in Carbon pricing in Thai Power Sector, launched in March 2021.

Education :

- 1994 B.Eng (Mechanical Engineering, Chiang Mai University).
- 1997 M.Eng (Mechanical Engineering, Chiang Mai University).
- 2005 Certificate of Advanced Studies (Energy Economics and Planning),
Asian Institute of Technology (AIT)
- 2012 Registered Trainer: Greenhouse gas protocol (by WRI and WBCSD)

Working Experiences :

1996 - Present	Assistant Professor , Department of Mechanical Engineering Faculty of Engineering, Chiang Mai University.
2006 - 2007	Deputy director , Biogas Technology Center, Chiang Mai University
2007 - 2011	Assistant director , Energy Research and Development Institute-Nakornping, Chiang Mai University
2011 - Present	Head Climate Change Engineering and Management in Energy Sector Laboratory, Chiang Mai University
2021-Present	Head Energy Technology for Environment research Center, Chiang Mai University

Selected committees:

2007 – 2009	National Committee on Thailand Atomic Policy and Strategy Plan Development
2007 – 2009	National Committee on Thailand-IAEA collaboration project
2008 – 2009	National Committee and Working Group on Thailand Renewable Energy Planning Development: Bioenergy section
2010 – 2012	Committee on Thailand’s DOE promotion project (by DEDE)
2012 – 2019	Working Group in Thailand Verification Emission Reductions in Energy and Waste Sector (Thai-VERS) methodology (by TGO)
2012 – Present	- Working Group in Thailand Climate Change Coordinator under Ministry of Energy
2013 – 2014	- Team Leader on Biomass Power Plant (under the Power Plant Benchmarking and Guidelines Development Project from Energy Regulatory Commission)
2019 – Present	Expert, National working group in climate change in energy sector under Ministry of Energy

Project Experiences:

Working as Project Manager / Deputy Project manager in over **125 energy/climate change projects** from both domestic and international funds as follows;

Scope of working covering on

- Energy efficiency improvement projects (Industry and commercial sector),
- Renewable energy projects (Biogas and biomass energy),
- Energy policy projects (National energy plan and regulatory, national energy database, regional energy database and energy economics),
- Climate change policy (Co-researcher in Thailand’s NAMA and NDC in energy sector),
- Monitoring, Reporting and Verification.
- Training on Energy and Climate change,
- Clean Development Mechanism and CDM-Programme of Activities (PoA),
- Productivity improvement in manufacturing sector

Selected projects in climate change and energy

2021	Project Manager Thailand Energy Utilization Index Development for Thai government agencies Project [Project under Energy Policy and Planning Office, Thailand] Project Manager: Enabling Kigali Amendment Ratification and Implementation in
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- Refrigeration and Air-conditioning in Thailand (Energy Sector) [Project under the World Bank]
- 2020 **Project Manager** Marginal Abatement cost in Thailand's NDC plan phase 4 [Project under Thailand Greenhouse Gas Management Organization (Public Organization, Thailand)]
- Project Manager:** The Assessment of Greenhouse Gas Mitigation from Thai Government Operation Phase 6 (Energy Sector) [Project under Thailand Greenhouse Gas Management Organization (Public Organization, Thailand)]
- Project Manager:** The Assessment of Greenhouse Gas Mitigation from Thai Government Operation Phase 1 (IPPU Sector) [Project under Thailand Greenhouse Gas Management Organization (Public Organization, Thailand)]
- Project Manager:** Low Carbon Industry Development for GHG Mitigation in Thailand's Eastern Economics Corridor (EEC) phase 2 [Project under Thailand Greenhouse Gas Management Organization (Public Organization, Thailand)]
- 2019 **Project Manager:** Greening Industry Through Low Carbon Technology Applications for SMEs [Project under UNIDO]
- Project Manager:** The Assessment of Greenhouse Gas Mitigation from Thai Government Operation Phase 5 (Energy, waste, industrial processes and transportation Sector) [Project under Thailand Greenhouse Gas Management Organization (Public Organization, Thailand)]
- Project Manager:** Marginal Abatement cost in Thailand's NDC plan (Renewable energy for Heat generation) [Project under Thailand Greenhouse Gas Management Organization (Public Organization, Thailand)]
- Project Manager:** Low Carbon Industry Development for GHG Mitigation in Thailand's Eastern Economics Corridor (EEC) [Project under Thailand Greenhouse Gas Management Organization (Public Organization, Thailand)]
- Project Manager:** Partnership for Market Readiness (PMR) for Thailand project: CS-6 Project [Project under Thailand Greenhouse Gas Management Organization (Public Organization, Thailand, Thailand and the World Bank)]
- Leader in Energy sector:** Bangkok and Metropolitan Area Climate Change Plan Phase 2 [Project under Japan International Cooperation Agency (JICA)]
- 2018 **Project Manager:** The Assessment of Greenhouse Gas Mitigation from Thai Government Operation Phase 4 (Energy, industrial processes Transportation Sector) [Project under]
- Project Manager:** Marginal Abatement cost in Thailand's NAMA plan (Renewable energy for power) [Project under Thailand Greenhouse Gas Management Organization (Public Organization, Thailand, Thailand)]
- Project Manager:** Partnership for Market Readiness (PMR) for Thailand project: CS-8 and CS-9 Project [Project under Thailand Greenhouse Gas Management Organization (Public Organization, Thailand, Thailand and the World Bank)]
- 2017 **Project Manager:** The Assessment of Greenhouse Gas Mitigation from Thai Government Operation Phase 3 (Energy and Transportation Sector) [Project under Thailand Greenhouse Gas Management Organization (Public Organization, Thailand)]
- Project Manager:** The Analysis of Energy Conservation and Greenhouse Gas Emission Reduction in Industrial and Business Buildings Sector [Project under Department of Alternative Energy Development and Efficiency]
- Project Manager:** Need Assessment of Alternative Energy (Biogas and Compressed

- Bio-methane Gas) in Potential Factories and Enterprise [Project under Department of Alternative Energy Development and Efficiency, Ministry of Energy, Thailand]
- 2016 **Team Leader:** Partnership for Market Readiness: Energy data verification of selected designated factories and buildings [Project under Thailand Greenhouse Gas Management Organization (Public Organization, Thailand)]
- Head:** of Initial Study of Hierarchical Energy Efficiency Indicators in Thailand, [Project under The Thai Research Fund]
- Project Manager:** The Assessment of Greenhouse Gas Mitigation from Thai Government Operation Phase 2 (Energy and Transportation Sector) [Project under Thailand Greenhouse Gas Management Organization (Public Organization, Thailand)]
- Project Manager:** Training Curriculum Development Project in Renewable energy (Ethanol and Biogas) : Fiscal Year 2016 [Project under Department of Alternative Energy Development and Efficiency, Ministry of Energy, Thailand]
- 2015 **Project Manager:** The Study of Scenario Analysis Using for Renewable Energy Development and Energy Conservation Guidelines Improvement [Project under Department of Alternative Energy Development and Efficiency, Ministry of Energy, Thailand]
- Project Manager:** The Study of Energy Efficiency in Industrial and Commercial Sectors [Project under Department of Alternative Energy Development and Efficiency, Ministry of Energy, Thailand]
- Project Manager:** Curriculum Development Project in Mitigation Mechanism for Thailand [Project under Thailand Greenhouse Gas Management Organization (Public Organization)]
- Project Manager:** The Preparation of Evaluation Guidelines for GHG Mitigation Measurement and Policy from Thai Government [Project under Thailand Greenhouse Gas Management Organization (Public Organization)]
- 2014 **Project Manager:** Curriculum Development Project for Government Officer in Sectoral GHG Inventory [Project under Thailand Greenhouse Gas Management Organization (Public Organization)]
- Project Manager:** Curriculum Development Project in Renewable energy (Ethanol and Biogas) [Project under Department of Alternative Energy Development and Efficiency, Ministry of Energy, Thailand]
- Project Manager:** The Study of Feasibility and suitability of Increasing Efficiency in Old Biomass Power Plant [Project under Department of Alternative Energy Development and Efficiency, Ministry of Energy, Thailand]
- 2013 **Project Manager:** The Study of Market Mechanism Preparation on of GHG Mitigation in Thailand [Project under Thailand Greenhouse Gas Management Organization (Public Organization)]
- Project Manager:** The Study of the Impact of National Climate Change Policy in Energy Sector [Project under Department of Alternative Energy Development and Efficiency]
- Project Manager:** Curriculum Development Project for Capacity Building in GHG Mitigation and Low Carbon City [Project under Thailand Greenhouse Gas Management Organization (Public Organization)]
- Specialist:** The Study of Renewable Heat Incentive (RHI) for Promoting Renewable

- Energy Consumption [Project under Department of Alternative Energy Development and Efficiency]
- 2012 **Project Manager:** The Development of MRV for NAMAs in Energy Sector in Thailand [Project under Thailand Greenhouse Gas Management Organization (Public Organization)]
- 2011 **Project Manager:** Questionnaire on Measurement and Performance Tracking in Developing Countries (MAPT) [Project under Thailand Greenhouse Gas Management Organization (Public Organization)]
Project Manager: Climate Change Technology Needs Assessments for Thailand [Project under National Science Technology and Innovation Policy Office]
- 2010 **Project Manager:** Thailand Small Scale Livestock Waste Management Program [Project under World Bank]

Recent Publications (only Scopus and ISI indexed journal/publications):

- Wongkot Wongsapai and Sopit Daroon, Estimation of Greenhouse Gas Mitigation Potential from Carbon Intensity and Energy Data Analysis from Thai Industrial Sector, *Energy Reports*, accepted paper for publication (Aug 2021).
- Phitsinee Muangjai, Wongkot Wongsapai, Rongphet Bunchuaidee, Neeracha Tridech, Chaichan Ritkrerkkrai and Det Damrongsak, Assessment of Carbon Reduction Costs in Renewable Energy Technologies for Heat Generation in Thailand, *Energy Reports*, accepted paper for publication (Aug 2021).
- Nassanun Srikaummun, Wongkot Wongsapai, Waranya Thepsaskul, Chaichan Ritkrerkkrai, Rongphet Bunchuaidee, Neeracha Tridech and Pattaraporn Juprasert, Greenhouse Gas Mitigation and Electricity Saving Potential From Replacing Refrigerants in Thai Refrigerator, *Energy Reports*, accepted paper for publication (Aug 2021).
- Nattawut Jaiboon, Wongkot Wongsapai, Sopit Daroon, Rongphet Bunchuaidee, Chaichan Ritkrerkkrai and Det Damrongsak, Greenhouse Gas Mitigation Potential from Waste Heat Recovery for Power Generation in Cement Industry: The Case of Thailand, *Energy Reports*, accepted paper for publication (Aug 2021).
- Ciocolanti L, et al, Analysis of labour market needs for engineers with enhanced knowledge in sustainable renewable energy solutions in the built environment in some Asian countries, E3S Web of Conferences, Volume 238, 16 February 2021.
- Wongkot Wongsapai, Yaowateera Achawangkul, Waranya Thepsaskul, Sopit Daroon, Thongchai Fongsamootr, Biomass supply chain for power generation in southern part of Thailand, *Energy Reports*, Volume 6, Supplement 2, February 2020, Pages 221-227.
- Phitsinee Muangjai, Wongkot Wongsapai, Rongphet Bunchuaidee, Neeracha Tridech, Det Damrongsak, Chaichan Ritkrerkkrai, Marginal abatement cost of electricity generation from renewable energy in Thailand, *Energy Reports*, Volume 6, Supplement 2, February 2020, Pages 767-773.
- Kittikun Poolsawat, Watcharapong Tachajapong, Sukon Prasitwattanaseree, Wongkot Wongsapai, Electricity consumption characteristics in Thailand residential sector and its saving potential, *Energy Reports*, Volume 6, Supplement 2, February 2020, Pages 337-343.
- Damrongsak, D., Wongsapai, W., Baibokboon, L, Greenhouse gas mitigation analysis from high energy efficiency equipment replacement in large facilities, *International Journal of Environmental Science and Development*, Vol.11(2): 74-78

- Wongsapai, W., Malakrong, P., Kanjananirin, T., Factors impact of energy consumption in Thailand's frozen seafood industry, *International Journal of Smart Grid and Clean Energy*, 8(3), pp. 271-275, 2019.
- Sandu, S., Yang, M, Mahlia, T.M.I., Wongsapai, W., Ong, H., Putra, N., Ashrafur Rahman, S.M., Energy-related CO2 emissions growth in ASEAN countries: Trends, drivers and policy implications, *Energies*, Volume 12, Issue 24, 7 December 2019.
- Damrongsak, D., Wongsapai, W., Thinate, N., Investigation on the energy consumption of department store in Thailand, *Energy Procedia*, 156, pp. 217-221, 2019.
- Poolsawat, K., Wongsapai, W., Effects of household-related factors on residential direct CO2 emissions in Thailand from 1993 to 2015: A decomposition analysis, *Chemical Engineering Transactions*, 63, pp. 331-336, 2018.
- Thepsaskul, W., Wongsapai, W., Koonnaphapdeelert, S., Chaichana, C., Daroon, S., Business model for the commercialisation of compressed bio-methane gas by substituting conventional fossil fuels in the Thai Industrial Sector, *Chemical Engineering Transactions*, 63, pp. 337-342, 2018.
- Wongsapai, W., Damrongsak, D., Malakrong, P., Factor impacts and target setting of energy consumption in Thailand sanitary ceramics industry, *Chemical Engineering Transactions*, 70, pp. 1543-1548, 2018.
- Damrongsak, D., Wongsapai, W., Thinate, N., Factor impacts and target setting of energy consumption in Thailand's hospital building, *Chemical Engineering Transactions*, 70, pp. 1585-1590, 2018.
- Supasa, T., Hsiau, S.-S., Lin, S.-M., Wongsapai, W., Wu, J.-C., Household energy consumption behaviour for different demographic regions in Thailand from 2000 to 2010, *Sustainability*, 9(12),2328, 2017.
- Supasa, T., Hsiau, S.-S., Lin, S.-M., Wongsapai, W., Wu, J.-C., Sustainable energy and CO2 reduction policy in Thailand: An input–output approach from production- and consumption-based perspectives, *Energy for Sustainable Development*, 41, pp. 36-48, 2017.
- Wongkot Wongsapai, Analysis of energy reporting and verification system under Thailand energy management system, *Energy Procedia*, Vol. 110, 38-44, 2017.
- Det Damrongsak and Wongkot Wongsapai, Personnel Responsible for Energy Capacity Building Programs for Sustainable Energy Efficiency in Thailand, *Energy Procedia*, Vol. 110, 59-64, 2017.
- Parida Malakrong, Wongkot Wongsapai, and Det Damrongsak, Analysis of Energy Utilization Index in Thailand Sanitary Ceramics Sector, *Energy Procedia*, Vol. 141, 170-174, 2017.
- Wongkot Wongsapai, Thongchai Fongsamootr, Chatchawan Chaichana, Evaluation of energy saving potential for small and medium enterprises (SMEs) in Thailand, *Energy Procedia*, Vol. 141, 228-232, 2017.
- Chaichana, C., Wongsapai, W., Damrongsak, D., Ishihara, K.N., Luangchosiri, N., Promoting Community Renewable Energy as a tool for Sustainable Development in Rural Areas of Thailand, *Energy Procedia*, Vol. 141, 114-118, 2017.
- Nattanee Thinate, Wongkot Wongsapai, and Det Damrongsak, Energy Performance Study in Thailand Hospital Building, *Energy Procedia*, Vol. 141, 255-259, 2017.
- Damrongsak, D., Chaichana, C., Wongsapai, W., Small-Scale Biogas Plant from Swine Farm in Northern Thailand, *Energy Procedia*, Vol. 141, 165-169, 2017.
- Muangjai, P., Wongsapai, W., Damrongsak, D., Impact of Petroleum Products Subsidization to Energy Demand in Thailand, *Energy Procedia*, Vol.138, 165-169, 2017.

- Kittikun Poolsawat , Wongkot Wongsapai, Watcharapong Tachajapong, Modelling of End-use Energy Consumption and Saving Potential in Residential sector in Northern Thailand, *Chemical Engineering Transactions*, 61, pp. 1117-1122, 2017.
- Wongkot Wongsapai, Rongphet Bunchuaidee, Natarika Wayuparb and Chaichan Ritkrekkrakrai, Policy-based Greenhouse Gas Mitigation Tracking and Institutional Framework Development under Thailand's NAMAs in Energy Sector, *Chemical Engineering Transactions*, Vol. 56, 295-300, 2017.
- Wongkot Wongsapai, Ariyah Mekhakul, Manaswee Arayasiri, Kazuhito Yamada, Mariko Fujimori and Hisaaki Kato, Developing the City-Level Climate Change Master Plan: The Case of Energy Sector in Bangkok, *MATEC web of conferences*, Vol.70, 11001, 2016.
- Det Damrongsak and Wongkot Wongsapai, Biogas Initiative from Swine Farm in Southern Thailand, *MATEC web of conferences*, Vol.70, 12001, 2016
- Wongkot Wongsapai, Atchariya Phuanyod and Det Damrongsak, Energy Efficiency Tracking in Thai Manufacturing Sector by Decomposition Technique, *MATEC web of conferences*, Vol.70, 05004, 2016.
- Wongkot Wongsapai, Performance tracking of Thailand's energy management system under Energy Conservation Promotion Act, *Energy Procedia*, Vol. 100, 448-451, 2016.
- Wongkot Wongsapai, Chaichan Ritkrekkrakrai and Jakapong Pongthanaisawan, Integrated model for energy and CO2 emissions analysis from Thailand's long-term low carbon energy efficiency and renewable energy plan, *Energy Procedia*, Vol. 100, 448-451, 2016.
- Tharinya Supasa, Shu-San Hsiau, Shih-Mo Lin, Wongkot Wongsapai and Jiunn-Chi Wu, Has energy conservation been an effective policy for Thailand ? An input-output structural decomposition analysis from 1995 to 2010, *Energy Policy*, Vol. 98, 210-220, 2016.
- Teeramaethin Limwittayakorn and Wongkot Wongsapai, The Study of Renewable Heat Incentive in Thailand, *Advanced Materials Research*, Vol 931-932 (2014) pp 1073-1077.
- Wongkot Wongsapai, Technology Needs Assessment for Climate Change in Energy Management Sector: The Case of Thailand, *Journal of Clean Energy Technologies*, Vol. 1, No. 2, March 2013.
- Wongsapai, W., Thienburanathum, P., Rerkkriengkrai, P., Biogas situation and development in thai swine farms, *Renewable Energy and Power Quality Journal*, 1(6), pp. 222-226, 2008.
- Jaruyanon, P., Wongsapai, W., Biodiesel technology and management from used cooking oil in Thailand rural areas, *Renewable Energy and Power Quality Journal*, 1(6), pp. 227-231, 2008.



Wongkot Wongsapai
(Assistant Professor in Mechanical Engineering, Chiang Mai University)

Wongkot Wongsapai works as an Assistant Professor in Mechanical Engineering, Chiang Mai University, where he headed the Energy Technology for Environment Research Center (ETE). From his more than twenty five years of experience, he involves in more than 120 energy projects from various organizations, e.g. IEA, the World Bank, Giz, JICA, ERIA, Thailand's Ministry of Energy, in four main types; i.e. (i) energy efficiency improvement in industrial, service, and household sector, including developing the database system for designated factories and buildings of the country (ii) renewable energy technologies in biogas and biomass, (iii) energy policy and planning and (iv) greenhouse gas management particularly in NAMA NDC and MRV and marginal abatement cost (MAC) of the country.

He also serves as the expert position in climate change working group under Minister of Energy for Thailand since 2018. He also was a national committee in the renewable energy development plan (in bioenergy) and the national working group committee in Thailand Verification Emission Reductions in energy and waste Sector (Thai-VERs) methodology.

He was also a project manager of the Thailand Small-scale Livestock Waste Management Program, the first Clean Development Mechanism-Programme of Activities (CDM-PoA) in Thailand. He was also project director under the World Bank's Partnership for Market (PMR) Thailand, covering developing the baseline and target setting for energy efficiency performance in Thailand 11 major industrial and commercial sectors; e.g. thermal power plant, oil refinery, cement, iron, and steel, etc. He was the project manager of the national climate change technology needs assessment (TNA) in the energy sector. His expertise also includes developing the capacity building program in energy and climate change issues.

For the Engineering Institute of Thailand under H.M. the King's Patronage (EIT), he acts as Member: Foreign Affairs Committee Member. He also serves AFEO as AEI Boiler Committee and Member of AFEO Energy Working Group since 2017.

From an academic perspective, Mr. Wongsapai has many international papers, including the ISI and Scopus indexed Energy Reports, Energy Policy, Energy for Sustainable Development, Energies, Sustainability, Chemical Engineering Transactions, etc.