

APINYA PUAPATTANAKUL

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PhD graduate specializing in sustainable energy systems, with a research focus on applying Positive Energy Districts (PEDs) in tropical developing country contexts. My work integrates human-body exergy balance and natural ventilation to advance a thermodynamic perspective on thermal comfort in buildings. By extending PED frameworks beyond Europe to Thailand, my research contributes to a deeper understanding of climate-responsive and socio-economically adaptive energy systems.

Currently a researcher at the Energy and Environmental Policy Laboratory (EEPL), Joint Graduate School of Energy and Environment (JGSEE), working on energy policy and planning with an emphasis on practical implementation. My work is supported by Thai government and international funding, aiming to deliver high-impact research with real-world applications.

EXPERIENCES

2013 – PRESENT

RESEARCHER, ENERGY AND ENVIRONMENTAL POLICY LABORATORY (EEPL), THE JOINT GRADUATE SCHOOL OF ENERGY AND ENVIRONMENT (JGSEE), KING MONGKUT'S UNIVERSITY OF TECHNOLOGY THONBURI (KMUTT), BANGKOK, THAILAND

2009

ENGINEERING INTERNSHIP, SCG-DOW GROUP, MAP TA PHUT, RAYONG, THAILAND

Process Engineer in Polystyrene plant

EDUCATIONS

2023–2026

PHD., TOKYO CITY UNIVERSITY (TCU), JAPAN

Major: Environmental and Information Studies

2010–2012

MASTER OF ENGINEERING (INTERNATIONAL PROGRAM), JGSEE

Major: Energy technology and Management

2006–2009

BACHELOR OF ENGINEERING, KMUTT

MAJOR: CHEMICAL ENGINEERING

ACTIVITIES

Research Project

2025–2026	Topic:	Estimation of the average unit cost of electricity in Thailand by using Linear programming
	Funded by:	Fundamental Fund 2569, Thailand Science Research and Innovation (TSRI)

2023–2024	Topic:	A study of returns to factors of power generation to support next generation power system
	Funded by:	Fundamental Fund 2567, Thailand Science Research and Innovation (TSRI)

2022–2023	Topic:	Mapping the Challenges and Opportunities in Achieving Sustainable Implementation of Renewable Energy in ASEAN
	Funded by:	Japan-ASEAN Science, Technology and Innovation Platform (JASTIP-Net 2022) between April 2022 – March 2023.
	Topic:	Applying Blockchain Technology to support electricity demand response in Thailand
	Funded by:	Fundamental Fund 2565, Thailand Science Research and Innovation (TSRI)
	Topic:	Consumer's Willingness to Pay (WTP) for electricity for sustainable development of power plants.
	Funded by:	King Mongkut's University of Technology Thonburi Research Fund (KMUTT Research Fund)
	Topic:	BCG Economic Model for SMEs Thailand A project to give consultation to SMEs in the central region of Thailand under the Bioeconomy, Circular economy and Green economy (BCG Model) concept
	Funded by:	Office of the Permanent Secretary, Ministry of Industry, Thailand SME Fund under Pracharat scheme.

2018–2021	Topic:	Research System for Future Energy System
	Funded by:	Thailand Science Research and Innovation (TSRI) and Office of the National Higher Education, Science, Research and Innovation Policy Council (NXPO)
	Topic:	Impacts of electricity from renewable energy on Loss of Load Expectation (LOLE) of the system
	Funded by:	EGAT-NSTDA Research and Development Co-funding Program, Cluster & Program Management Division (CPM)

Topic: Promotion of communities and public awareness in energy consumption through participation programs
Project Leader: The Population and Community Development Association (PDA)
Funded by: Energy Regulatory Commission (ERC 97(5))

2017-2018 Topic: ASEAN-German Energy Programme (AGEP): Continuation of Levelised Cost of Electricity (LCOE) Study
Funded by: ASEAN-German Energy Programme (AGEP), ASEAN Centre for Energy (ACE)

Topic: Impact of distributed PV in Thailand
Funded by: International Energy Agency (IEA)

Topic: Investigation of Energy Conservation in Convenience Stores for the Support of the Energy Efficiency Resource Standard (EERS)
Funded by: EGAT-NSTDA Research and Development Co-funding Program, Cluster & Program Management Division (CPM)

2015-2017 Topic: A study of impact of electric generation from crude palm oil on demand, supply and prices of palm oil
Funded by: EGAT-NSTDA Research and Development Co-funding Program, Cluster & Program Management Division (CPM)

Topic: A Project to provide an energy efficiency action plan by using the Energy Efficiency Resource Standard (EERS) in Thailand
Funded by: Energy Conservation Promotion Fund (ENCON Fund), Energy Policy and Planning Office (EPPO), Ministry of Energy

2014-2015 Topic: The Analysis to Promote Thailand as Ethanol HUB of Southeast Asia and Operation of Thailand Biofuels Center of Excellence
Funded by: Department of Alternative Energy Development and Efficiency (DEDE), Ministry of Energy

Topic: The New Market Based Mechanisms Research Study: Thailand and Philippines funded by the Swedish Energy Agency (NMM Project)
Funded by: The Swedish Energy Agency

Topic: A Study Project to Prepare a Draft for Coal Organization Structures and Code of Practices for Sustainable Coal Utilization in Thailand
Funded by: Electricity Generating Authority of Thailand (EGAT) and The Thailand Research Fund (TRF)

2013–2014	Topic:	Thailand Technology Action Plan Report for Climate Change (TAP)
	Funded by:	National Science Technology and Innovation Policy Office (STI)
	Topic:	A study and preparation of clean coal technology roadmap and the potential of research and development in industrial sector of Thailand
	Funded by:	Electricity Generating Authority of Thailand (EGAT) and The Thailand Research Fund (TRF)
	Topic:	A study of Energy efficiency and conservation strategic plan of Thailand for ASEAN Economic Community (AEC)
	Funded by:	Energy Policy and Planning Office (EPPO), Ministry of Energy

Publications

A. Puapattanakul*, G. Kayo, M. Shukuya, and P. Chaiwiwatworakul, 2026, **Human–body Exergy Balance in Naturally Ventilated Buildings in Tropical climates: A New Thermodynamic Perspective on Thermal Comfort**, *Journal of Building Engineering*, Volume 117, <https://doi.org/10.1016/j.jobbe.2025.114911>. *(First author and Corresponding author)*

A. Puapattanakul*, G. Kayo, and M. Shukuya, 2025, **Exergetic Analysis for Enhancing Air Circulation in Commercial Buildings in Thailand**. In: Lu, L.V. (eds) *Proceedings of 2024 International Conference on Energy Engineering. ICEE 2024 2024. Lecture Notes in Electrical Engineering*, vol 1425. Springer, Singapore. https://doi.org/10.1007/978-981-96-6503-7_20. *(First author and Corresponding author)*

A. Bangviwat and A. Puapattanakul, 2025, **Community Solar PV System for Sustainable Development in Thailand**. *European Journal of Applied Sciences*, 13(05), 315–326, <https://doi.org/10.14738/aivp.1305.19464>

A. Bangviwat, O. Chaisinboon, and A. Puapattanakul, 2025, **Analysis of Revenue Allocation of Power Plants**. *European Journal of Applied Sciences*, 13(03), 578–588, <https://doi.org/10.14738/aivp.1303.18724>

A. Puapattanakul and A. Bangviwat. 2018. **Impact of crude palm oil co-firing on electricity generation cost in Krabi power plant**. *Journal of Clean Energy Technologies* Volume. 6, no. 5 (2018), pp. 381–384. ISSN: 1793-821X *(First author)*

A. Puapattanakul, S. Therdthianwong, A. Therdthianwong and N. Wongyao. 2013. **Improvement of Zinc-Air Fuel Cell Performance by Gelled KOH**. Published by Elsevier B.V. *Energy Procedia*, Volume 34 (2013), pp. 173–180. Available online at: www.sciencedirect.com. *(First author)*

International conference

A. Puapattanakul and K. Genku, **Exergy-Based Approach to Advancing Positive Energy Districts in Asia: The Case of Thailand**, 2026, Hyper Interdisciplinary Conference 2026 TOKYO, Bellesalle Shinjuku Grand Conference Center, Shinjuku-ku, Tokyo, March 6–7, 2026.

A. Puapattanakul and K. Genku, **Natural Ventilation and Exergy Analysis: Bridging Climate Action and Positive Energy District Design**, 2025, Hyper Interdisciplinary Conference 2025 TOKYO, Bellesalle Shinjuku Grand Conference Center, Shinjuku-ku, Tokyo, March 7–8, 2025.

A. Puapattanakul, K. Genku, and M. Shukuya, **Exergetic Analysis for Enhancing Air Circulation in Commercial Buildings in Thailand**, 2024, International Conference on Energy Engineering (ICEE2024), The Hong Kong Polytechnic University (PolyU), Hong Kong SAR, China, 29 November– 2 December 2024.

A. Puapattanakul and K. Genku, **Definition study of Positive Energy Districts (PEDs) under the context of Thailand**, The 9th edition of the International Conference on Sustainable Energy and Environment, “SEE 2024,” themed “Securing a Sustainable Net-Zero Future Now.”, the Millennium Hilton Hotel, Bangkok, Thailand, December 18–20, 2024.

A. Puapattanakul, **Study on Applying Positive Energy Districts (PEDs) concept in Thailand**, タイ街区開発を対象としたポジティブエナジーディストリクト（PEDs）コンセプト適用に関する検討, Hyper Interdisciplinary Conference 2024 TOKYO, Bellesalle Shinjuku Grand Conference Center, Shinjuku-ku, Tokyo, March 8–9, 2024.

A. Puapattanakul, A. Bilqis, et.al., **Mapping Enablers for Sustainable Renewable Energy Implementation in ASEAN**, 2022, 2nd ASEAN International Conference on Energy and Environment (AICEE) in collaboration with the 8th International Conference on Sustainable Future for Human Security (The 8th SUSTAIN), Hybrid Conference, Cambodia & Virtual, September 14-15, 2022.

A. Bangviwat and A. Puapattanakul, **Price Duration Curve and Cost of Renewable Energy for Electricity Generation for Power Development Plan of Thailand (PDP 2018)**, 2020, The 9th International Conference on Clean and Green Energy (ICCGE 2020), Barcelona, Spain, 10–12 February 2020

R. Salakij, W. Wongsuwan, A. Puapattanakul, A. Bangviwat, and P. Chaiwiwatworakul, 2019, **A Potential of Energy Conservation in Convenience Store: A Case Study of Thailand**. The 5th TNI Academic Conference Engineering Technology and Digital Transformation in Industry Business, and Culture (TNIAC 2019), 31 May 2019

A. Puapattanakul and A. Bangviwat, **Effect of forced outage rate (FOR) on loss of load expectation (LOLE) in the lower south of Thailand**, 2018, 7th International Conference on Sustainable Energy and Environment (SEE 2018) on the theme “Technology & Innovation for Global Energy Revolution”, Bangkok, Thailand, 28-30 November 2018

A. Puapattanakul, J. Chontanawat, K. Sripruetkiat, A. Bangviwat: **Sensitivity of changing amount and price of crude palm oil on electricity generation cost in Krabi power plant**, 2018, 7th International Conference on Sustainable Energy and Environment (SEE 2018) on the theme “Technology & Innovation for Global Energy Revolution”, Bangkok, Thailand, 28-30 November 2018

A. Puapattanakul and A. Bangviwat: **Impact of crude palm oil co-firing on electricity generation cost in Krabi power plant**, 2018 3rd International Conference on Green Energy Technology (ICGET 2018), Inntel Hotels Amsterdam Zaandam Amsterdam, Netherlands, July 10-12. 2018

A. Puapattanakul and A. Bangviwat: **Electricity Affordability of Residents in Bangkok Metropolitan**, 6th International Conference on Sustainable Energy and Environment (SEE 2016), Dusit Thani Bangkok, Thailand, November 28-30. 2016

A. Puapattanakul, S. Therdthianwong, A. Therdthianwong and N. Wongyao: **Improvement of Zinc-Air fuel cell performance by gelled KOH**, 10th Eco-Energy and Materials Science and Engineering Symposium, Ubonratchathani, Thailand, December 5-8. 2012

Reports

International Energy Agency (IEA), **Distributed energy resources – Technical potential, cost benefit analysis and rate impacts**, Thailand Renewable Grid Integration Assessment report, Country report — October 2018, IEA Publications, Available online at: <https://www.iea.org/reports/partner-country-series-thailand-renewable-grid-integration-assessment>

White Paper on Thailand's Future Energy System – Research and Innovation Support Strategies, 2021, Thailand Science Research and Innovation (TSRI) and Office of the National Higher Education, Science, Research and Innovation Policy Council (NXPO)

Other experiences

- 16 February 2024 Complete the course **Fundamentals and Practical Approaches to Smart Cities**, which is aimed at providing fundamental knowledge to become digital citizens in smart cities, organised by Smart City Thailand, Digital Economy Promotion Agency (DEPA), Ministry of Digital Economy and Society
- 7 July 2022 Attendance at the Asia EDGE Power Sector Learning Series webinar: **Leading Practices for Competitive Procurement in Southeast Asian Energy Sectors**
- 25 March 2020 Attendance at the USAID Clean Power Asia's webinar on **Distributed Photovoltaics: Tools for Economic Impact Analysis**
- 17 – 21 June 2019 I was selected for sponsorship by The United States Agency for International Development (USAID) to attend the **Asia Clean Energy Forum (ACEF) 2019**, which was held at the Headquarters of the Asian Development Bank (ADB) in Manila, the Philippines.
- 7 - 11 October 2018: Participate in **FIFTH REGIONAL NETWORKING FORUM: Community-Based Integrated Energy Initiatives and Climate Change Initiatives – The Way Forward for Thailand and Neighbors-Northeast Thailand** Co-organized by: Population and Community Development Association (PDA), The Joint Graduate School of Energy and Environment (JGSEE), Khon Kaen University (KKU), and Konrad-Adenauer-Stiftung (KAS)
- 28th May - 01st June 2018 : Nominated for the scholarship to participate in the CapREG seminar **"P9 - Energy System Transformation" in Berlin, Germany**. The seminar was organized by the Renewables Academy (RENAC) AG and was part of the project "CapREG", which was financed by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) within the German International Climate Initiative (IKI).
- 29th Oct. – 2nd Nov. 2017: Oral presentation in the title of "Energy efficiency resource standards" in the **REGIONAL NETWORKING FORUM 2017 on Community-Based Integrated Energy Initiatives – The Way Forward for Thailand and its Neighbors**, Co-organized by Population and Community Development Association (PDA) and Konrad-Adenauer-Stiftung (KAS)

- 2018: Data science Bootcamp & Hackathon On January 10-13, 2019
Topic : - Python and Machine learning bootcamp.
- Data Science Lifecycle including feature extraction and visualization.
- Machine Learning Applications in Sustainable Development Goals.
- Data Science Case Study with data from Kaggle.
- 2017: Attend the training on GAMS program-supported by BESA-STIPI project
- 2016: Attend the training on Building Energy Simulation Model (BESM)-organized
by Promoting Energy Efficiency in Commercial Building Project (PEECB)
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