

Capability Assessment and Business Models for Battery Energy Storage in Thailand's Future Power System

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Extended Abstract

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Abstract Summary

Thailand's electricity sector, characterized by an enhanced single buyer model, remains in the early stages of battery energy storage system (BESS) deployment, with progress largely limited to pilot and demonstration projects. As part of its energy transition, the country has set ambitious targets of achieving carbon neutrality and positioned BESS as a key enabler of greater renewable integration. Nevertheless, achieving grid-scale deployment, however, requires comprehensive and coordinated policy interventions. This study draws on international experiences—utility-led deployments in South Korea, Japan, and China, and market-led approaches in Germany, the United States, and Australia—to develop four scenarios for Thailand's possible futures: incremental utility-led, transformative utility-led, incremental market-led, and transformative market-led. These scenarios were constructed through international benchmarking, policy and technical review, pilot case analysis, and stakeholder validation. Also, a capabilities assessment matrix was introduced to evaluate readiness across utilities, developers, regulators, and universities. Findings highlight that technological innovation, regulatory adaptation, and business model reform are critical for enabling grid flexibility, accelerating renewable integration, and ensuring energy security. In addition, the framework provides a structured tool for defining competencies and fostering dialogue among stakeholders, offering an exploratory guidance for capability-building and strategic alignment in Thailand's energy transition.

Presenting Author Biography

Anittha Jutarosaga is a PhD student at the Joint Graduate School of Energy and Environment, King Mongkut's University of Technology Thonburi, Thailand. Her expertise

spans academia, research, and consultancy, with a focus on advancing innovation-driven development, energy transition, and policy frameworks aligned with sustainable growth and the UN Sustainable Development Goals (SDGs). She has also contributed to international collaborations, including projects with the Asian Development Bank and Thai-German cooperation programs.