Opportunity for Green Hydrogen E-Methanol and E-Methane in Southern Thailand

The Challenge

Thailand still relies heavily on fossil fuels, particularly natural gas and LPG, which are the main sources of energy for electricity generation and industry. However, domestic gas production is declining, increasing the country's dependence on imports and raising concerns about future energy security.

Green hydrogen (GH2) can serve as a viable clean energy carrier across different sectors. The key challenge for Thailand's GH2 value chain development lies in establishing an infrastructure model to support its scalable use.

Among the key players to advance GH2 value chain development in Thailand is PTT Group – a major Thai state-owned fuel and energy provider. To support long-term industrial scale-up and transition from grey to green hydrogen, PTT requires clear government and policy guardrails on hydrogen use.

The Solution

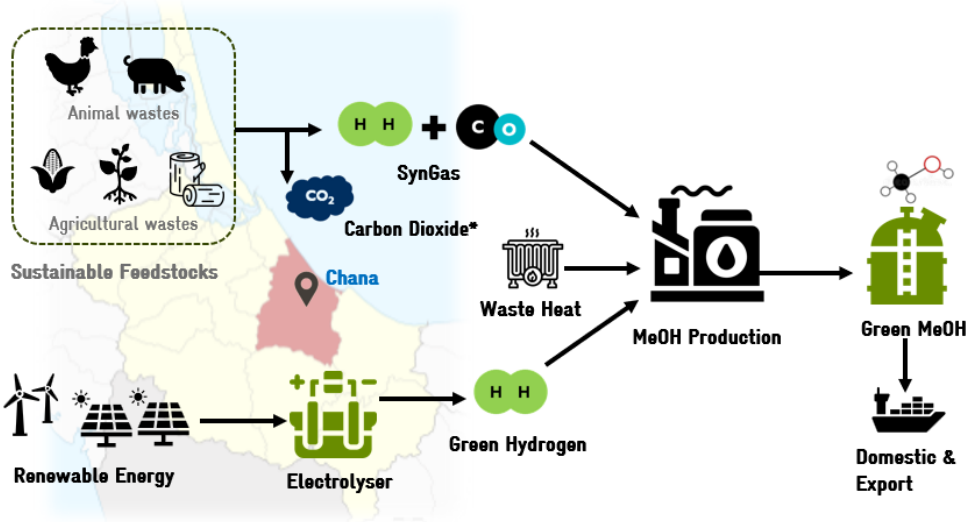
To address this challenge, a public-private partnership (PPP) between GIZ, PTT, and thyssenkrupp Uhde, a German leading technology provider for the energy transition, has been incorporated to explore and develop Power-to-X (PtX) solutions. Thailand has strong renewable energy potential especially in the South, where solar, wind, and biomass resources are abundant.

The PPP will examine how existing infrastructure, such as PTT's natural gas separation plant in Songkhla, can be converted to produce green hydrogen-based fuels like e-methanol and e-methane instead of fossil fuels.

The results of this PPP are expected to reduce dependence on fossil fuels in Thailand and demonstrate a scalable model for green hydrogen and PtX production in the Southeast Asia region.

Our Services

The PPP will focus on developing a comprehensive blueprint for the production and commercialization of green hydrogen and carbon-based products such as e-methane and e-methanol in Southern Thailand. The working packages of the blueprint are as follows:



The diagram illustrates the concept of green methanol production using sustainable feedstock and renewable energy (Source: GIZ)

ptt

thyssenkrupp

Federal Ministry for Economic Affairs and Energy

- **Resource & Infrastructure Assessment:** Identify and evaluate solar, wind, and biomass potential in Southern Thailand, together with existing pipelines, ports, and grid assets.
- **Market Analysis:** Assess current and future demand for e-methane, e-methanol, and green hydrogen, and recommend pathways for a sustainable business value chains.
- **Conceptual Pre-feasibility Study:** Evaluate production potential, costs, and competitiveness through a PTT case study.
- **Strategic Blueprint & Dissemination:** Compile findings into a roadmap and share knowledge with stakeholders across the sector.

This blueprint will serve as a strategic guide for developing a robust system for green products in other regions.

Expected impact

The project will strengthen energy security by reducing fossil fuel imports and promoting renewable energy for green hydrogen production. It supports sustainable development, lowers environmental impacts, and creates local jobs in construction, operations, and maintenance. Proximity to port facilities enables both domestic supply and export opportunities, positioning Thailand as a key player in the regional and global green energy market.

Additionally, the project links with the EU Gateway Initiative in Malaysia, providing insights for green shipping hubs, while also attracting investment and research into innovative green technologies. The project also holds significant potential for replication in Southeast Asia.

Project at a glance	
Duration	Aug 2025 – Oct 2026
Country	Thailand
Objective	The project aims to explore a conceptual study on the production of green hydrogen and PtX products, including e-methane and e-methanol, by assessing resources, market potential, and feasibility. It will develop a blueprint for production and commercialization based on market analysis.
Partners	PTT Public Company Limited thyssenkrupp Uhde (Thailand) Ltd.
Expected results	A comprehensive blueprint, including guidelines for replicating the project in similar regions.

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