TGC EMC

THAI-GERMAN COOPERATION ON ENERGY, MOBILITY AND CLIMATE

BIOMASS COMPONENT

CONTEXT

According to Thailand's second updated nationally determined contribution (NDC), submitted to the UNFCCC in November 2022, an ambitious pledge was made to unconditionally reduce greenhouse gas (GHG) emissions by 30% from the business-as-usual (BAU) scenario by 2030. Renewable energy promotion is one of the proposed mitigation actions in the NDC. In discussions around the future of Thailand's energy system, decentralized renewable energy generation from biomass deserves particular attention due to its potential, strategic importance for the country, and anticipated role in the energy system.

To address these challenges and fulfill the NDC commitments, the TGC EMC programme has been developed. Its primary objective is to facilitate Thailand's transition to a sustainable energy model, promoting economic growth while aligning with ambitious climate goals. The programme encompasses five main components: i) Renewable Energy, ii) Transport, iii) Decarbonisation in Industry, iv) Biomass to Energy, and v) Climate Finance.

A significant portion of Thailand's electricity is currently generated from fossil fuels, and the share of variable renewable energy (vRE)-based generation remains below its potential. Simultaneously, there is a significant amount of unutilized agricultural residues that could serve as biomass feedstock for energy generation. Currently, it is a prevalent practice among farmers in Thailand to engage in open burning—burning of agricultural residues to prepare fields for the next crop and accelerate the harvesting process. This practice not only damages soil fertility, but also worsens air pollution affecting public health at large.

The TGC EMC Biomass Component focuses on assessing the potential use of agricultural residues as an alternative biomass feedstock, serving as a renewable and sustainable source of energy. This initiative aligns with national policies, addressing the issue of open burning and supporting farmers in generating additional income sources.

OBJECTIVE

By facilitating energy from agricultural residues, i.e., rice straw and sugarcane leaves, TGC EMC Biomass Component supports Thailand's goals in increasing its share of renewable energy, reducing emissions from agricultural burning, and diversifying farmers' incomes.

APPROACHES

To achieve its objectives, the component's outputs are designed and structured as follows:

TECHNOLOGY OPTIONS

Output 1.1: Analysis of demand and supply of biomass energy

- Distribution of unused agricultural waste in Thailand (quantity)
- Overview of biomass property (quality)
- Survey of existing and potential demand

Output 1.2: Technical knowledge on biomass energy transition is improved

- More efficient collection of agricultural residues
- Pre-treatment of biomass residues
- Storage management of biomass residues
- Energy conversion technology
- Calculation of de-carbonizing potential of stopping the burning of agricultural residues

POLICY RECOMMENDATIONS

Output 2.1: Cooperation among related departments is enhanced

- Contributions of agriculture to NDC achievement
- Contribution to RE policies and plans
- Inclusion of no-burn in GAP standard
- Study of the potential carbon credits

PILOT SOLUTIONS

Output 3.1: Community-based collection network is established

- Link farmers with biomass users
- Potential virtual marketspace
- Collection of agricultural waste is managed locally

Output 3.2: Appropriate incentives for farmers not to burn agricultural residues

- Train extensionists and farmers on post-harvest management
- Link farmers with financing options for machinery for collection of biomass to farmer groups
- Cooperative structure of farmer groups in sharing resources is strengthened

EXPECTED RESULTS

The TGC EMC Biomass aims to contribute towards

A sustainable energy transition in Thailand

Development of biomass-to-energy business models and markets

Reduced air pollution from agricultural burning

Diversification and improved incomes of small-scale farmers

Strengthened biomass-to-energy friendly policies and strategies

OUR PARTNERS

On behalf of:

Federal Ministry
for the Environment, Climate Action,
Nature Conservation and Nuclear Safety

of the Federal Republic of Germany

IKI INTERNATIONAL CLIMATE INITIATIVE

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KMUTT King Mongkut's University of Technology Thonburi

PROJECT DURATION

01/2023 – 12/2027

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The International Climate Initiative (IKI) under the Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety (BMUKN)

COUNTRY

THAILAND

MORE INFORMATION

www.thai-german-cooperation.info

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