SUMMARY

Clean Energy Finance and Investment Mobilisation Programme Thailand

Official Launch and First Consultation Workshop

"Unlocking finance and investment for clean energy in Thailand"

28 April 2023, Time: 09:00 – 16:30 (ICT) at Pathumwan Princess Hotel

Session I: Launch of the Clean Energy Finance and Investment Mobilisation (CEFIM) Thailand country programme

Welcome Remarks by Ms. Mathilde Mesnard, Deputy Director, Environment Directorate, Organisation for Economic Co-operation and Development (OECD)

Ms. Mathilde Mesnard started her speech by expressing her appreciation to the Ministry of Energy in Thailand. Ms. Mesnard commended Thailand for its sustainable finance efforts, which the OECD and CEFIM program are focusing on through the development of clean energy finance and investment roadmap which is planned for launch early 2024. This roadmap will support Thailand's upcoming new National Energy Plan (NEP) and carbon neutrality objectives. The OECD has been working for the past 12 years in emerging and developing countries to mobilise investments towards achieving carbon neutrality, with a focus on clean energy investments. Ms. Mesnard also mentioned that the OECD will support efforts to accelerate domestic and international markets towards achieving carbon neutrality by promoting low-cost renewables and improved energy efficiency. Ms. Mesnard expressed her gratitude to stakeholders for their contributions to the preparation of the roadmap and concluded her speech by thanking the Department of Alternative Energy Development and Efficiency (DEDE).

Welcome Remarks by Ms. Ingrid Dahl-Madsen, Deputy Head of Mission, Embassy of Denmark in Thailand

Ms. Ingrid Dahl-Madsen emphasised the importance of mobilising private investment. Ms. Dahl-Madsen highlighted Denmark's contribution to the OECD's CEFIM programme and stressed the need for a holistic approach towards achieving renewable energy and energy efficiency goals. Ms. Dahl-Madsen noted that the programme will not only benefit Thailand by providing clean energy and improve energy security, but it will also provide the opportunities for green jobs. Ms. Dahl-Madsen also emphasised that green business can be very profitable.

Opening Remarks by Dr. Prasert Sinsukprasert, Director General, Department of Alternative Energy Development and Efficiency (DEDE), Ministry of Energy

Dr. Prasert Sinsukprasert expressed his gratitude towards the OECD and the government of Denmark. The Director General highlighted Thailand's goal to achieve carbon neutrality. The Director General mentioned that 70 percent of emissions come from energy sector. The Director General

emphasised the importance of creating carbon sinks and carbon forests to achieve this objective. Regarding small-scale energy finance, the Director General discussed the challenges of limited financing options. The Director General underscored the importance of addressing the challenges of clean energy and finance, and also emphasised the need to develop human capital for sustainable development. The Director General acknowledged the support of the Danish government in this project. The Director General concluded his speech by thanking all stakeholders for their support.

Session II: Stakeholder Consultation Workshop

Presentation: Overview of the Clean Energy Finance and Investment Mobilisation Programme Thailand

by Ms. Geraldine Ang, Team Lead, OECD CEFIM Programme, and
Dr. Deger Saygin, Thailand programme lead, OECD CEFIM Programme

Ms. Geraldine Ang opened the session by thanking everyone and introducing the CEFIM programme, which was established five years ago. The program aims to accelerate clean energy finance and investment by improving domestic enabling conditions and bridging the gap between finance and investment, particularly by promoting renewable power and energy efficiency. OECD is supporting 8 emerging and developing economies under the CEFIM programme, Colombia, Egypt, India, Indonesia, Philippines, South Africa, Thailand, and Vietnam.

Ms. Ang emphasised the importance of stakeholder engagement in collaborating with countries for preparation of country reviews and roadmaps as well as project implementation support activities such as investor dialogue and capacity building. Ms. Ang cited Indonesia and Vietnam as examples of countries where OECD has conducted similar reviews and expressed hope for implementation support activities in Thailand as well. Ms. Ang also mentioned OECD's activities related to green finance for sustainable taxonomies, noting Thailand's expertise in drafting such taxonomies. Ms. Ang emphasised the importance of large pooling and aggregation to attract larger investors to invest in community and small-scale renewable power projects. Lastly, Ms. Ang emphasised the need for human capital and a holistic approach that addresses both demand and supply for clean energy transition.

Mr. Deger Saygin during his speech expressed gratitude to those who attended the discussion on the issue of energy transition towards carbon neutrality. Mr. Saygin highlighted two key priorities for the project: focusing on small-scale renewables for renewable energy, and prioritising energy efficiency for large-scale commercial and public buildings. Mr. Saygin emphasised the need for attendees to provide their thoughts on the gaps, needs, and actions required to finance renewable energy. Mr. Saygin further elaborated that the workshop's purpose is to address broader energy transition needs in Thailand and how they can contribute to the social and economic benefits of small-scale enterprises and value chains across the energy transition. Mr. Saygin noted that a subsequent workshop at the end of summer will focus on discussing actions and recommendations, but today's workshop will primarily focus on identifying and discussing challenges. The project's modelling activity is primarily concentrated on three areas: investment needs, financing needs, and socio-economic development.

Presentation and discussion: Financing Thailand’s clean energy transition – Translation of EEP & AEDP

by Mr. Boonrod Yaowapruek, Director, The Creagy, and Ms. Kannikar Srithunyalucksana, Senior Manager, The Creagy

The scope, objective and the methodology of the Clean Energy Finance and Investment Roadmap for Thailand and preliminary findings were presented to stakeholders, which key points are summarised as follows:

- As Thailand is developing its Nation Energy Plan (NEP) to support its Carbon Neutrality target. A number of measures will be elaborated, and various financial instruments will be required to promote these energy measures. The sources of finance are needed for filling the gaps between the demand and supply side of investment.
- The study of the Roadmap is divided into 3 parts which are 1) Investment Magnitude & Public Financing, 2) Supply Chain Analysis, and 3) Economic Impact Assessment. The Roadmap will take into the consideration of input from the revised EEP and AEDP that is planned to release this year.

- Regard to literature review of the EEP/AEDP, it will cover detail of what should be appropriate amount of investment that are capable to feasible to launch the projects. What should be appropriate players in order to finance the funding, either public or private players.
- The consultant has already structured the model (mock-up version) which will be filled up by the available data and assumption (with explanation). In the initial phase, the model will be focused on the logical aspect of the model. After that, when the numbers and plans are updated, the number using in the model can be updated accordingly.

Results of Mentimeter:

Most of the participants were in agreement to formulate and implement a practical strategy to expand financing and investment in clean energy. This would involve establishing specific actions and setting time-bound milestones for all stakeholders, proposing new financing mechanisms and innovative business models, and identifying short-term investment opportunities that align with the objectives outlined in the roadmap. As for the scope of the roadmap, the majority of participants agreed that it should encompass the translation of EEP and AEDP, energy efficiency initiatives in large-scale commercial and public buildings, and financing and business models for small-scale renewable power projects. Additionally, there was broad consensus among participants on the need to analyse investment trajectories, including economic impact modelling, supply chain analysis, and assessing investment levels.

Feedback from participants:

- To achieve carbon neutrality according to Thailand’s National Energy Plan, technology abatement costs should be assessed to ensure that which technology should be deployed in which stage, also the cost and return from deployment of technology should be assessed.
- If Thailand wants to establish emission trading, benchmarking regard to context of Thailand is necessary. There should be benchmark by categorised by business and size.
- BOI is currently support through tax incentive i.e., import duty and support to SME.
- The scope of each UGT should be defined because there are needs from developers, but barriers still exist such as boundary.
- The financial sector, particularly in the development of Thailand's Taxonomy, faces a knowledge and comprehension constraint regarding technical terminology in the renewable energy (RE) and energy efficiency (EE) sectors. This limitation presents difficulties when determining which technology should be prioritized during specific timeframes.
- Most of the projects in Thailand are regulated, so Sandbox may be possible for project experiment.
- Domestic technology development should be taken into account as most of the technology are imported.
- Building and industry energy codes can potentially drive RE and EE for new development projects.

- For RE, there are many mechanisms in place. However, for EE, there is no mechanism such as risk guarantee mechanism. This mechanism is only for insurance coverage despite no mechanism for performance insurance or project performance guarantee.
- Those who develop EE project should share a common pool that share the risk leveraging tools and risk mitigation tools, which are able to build financial institution's confidence and promote risk reduction, encouraging financial mechanism from financial institutions and lessen dependence on grant.
- For digitalisation, the most important point is the reliability and credibility of data. Currently, there is a platform that use tokenization and blockchain to manage the data. Currently, the Thai Bankers Association and DEPA already have the platform, so we do not need to reinvent or reinvest, and the platform is ready for utilisation.
- To encourage investment in RE and EE, factors such as guarantee mechanism and data digitalisation should also be included.
- 2 important issues that are lacking in Thailand:
    - Measurement and verification (IPMVP protocol) for EE projects is currently developed into a Thai version to be used with the projects in Thailand;
    - Laboratory for testing machines that consume a large amount of energy. Currently, there is no testing for equipment that consumes a large amount of energy, e.g. cooling equipment for data centre in buildings. Hence, there should be a gateway to screen equipment that consume a large amount of energy and potentially generate a large amount of GHG emission.
- KPI that reflects energy transition in each business/sector/sub-sector should be established. This also links to data digitalisation to the central entity to promote categorisation of policy, target and strategy directly to each sector and/or sub-sector.
- Currently, there are a lot of sources of finance to support technology development and transition in Thailand, though they are not grouped or linked to each other. There is just one entity focusing on technology transition by focusing on steps such as financing on R&D, laboratory for screening and testing technology to be used in Thailand and technology transition.
- There should be a justification and detailed discussion on why the selected scopes of work are on large buildings and small-scale RE.
- EE codes should be adjusted according to period, time and situation in Thailand.
- There should be support (similar to adder) to reflect the true cost of electricity. The subsidy should be able to support the premium of each technology (i.e. solar, green hydrogen).
- Green hydrogen can be potential solution, so there should be financial mechanisms to support the technology. Appropriate targets, regulation and market condition should be considered.
- Thai building energy code should be stricter.

- Green taxonomy covers two sectors: energy and transportation sector. Though the taxonomy can be used as a guideline to categorise other sectors' activities (green, amber or red).
- Banks and financial institutions often have limited technical knowledge about the most recent technological energy innovations. For technologies that are not already commercialised, it is difficult to make decision regarding which technology to be supported with what types of financial mechanisms.
- Cooling efficiency should be paid attention due to its growing demand. Approximately 35% - 40% of Thai households have air conditions comparing to 80% in Malaysia and Singapore.
- For commercial building, cooling as a service is another business model. Waste is one method to optimise EE for existing and new plants, and this will be very efficient in urban environment where there is a high energy density.
- To integrate RE i.e., solar requires incentive to producers and operators to open up the grid for solar projects.
- For carbon capture, coal and power generation plan will require carbon capture technologies.
- For small scale RE, there are many purposes of utilisation, i.e. either personal consumption or selling, so the mechanisms to support RE should align with the purposes.
- There should be a deep study on why small scale RE is not viable in general. There are several issues that we should pay attention i.e. cost-return, appropriate business model (peer-to-peer, sharing of energy between building: micro grid).
- Flexibility management in electricity, regard to NEP, is key. To promote RE, covering issues such as smart grid and grid modernisation is necessary.

Session III: Presentation and feedback collection on status and future gaps

<u>Discussion: Renewable Energy (with a focus on small-scale renewable power)</u>

- To promote contribution from households, solar rooftops would be an interesting choice. However, grid system, regulation, market for buy-sell electricity should also be considered.
- The Ministry of Energy promotes small hydro power projects in communities in remote areas, the projects are 100% funded by the government. The projects also promote contribution from people i.e., consultation with the local people, select representatives to become the project committee etc. It would be interesting to promote the role of private sector to help modernise the projects by introducing smart technology or promote new business model i.e., pay-as-you-go in Bulon Islands, Satun Province.
- There should be a guaranteed mechanism to small-scale developers (for example, with support from the Thai Credit Guarantee Corporation: TCG), or other types of support targeting to small-

scale developers. For example, small platform with large corporates contribution and support to pilot the project. In this case, the risks exposed by banks may decrease.

- A concern related to how it is possible to integrate a lot of new invested RE projects with the existing infrastructure.
- Regulations regarding permission for solar projects in local or provincial areas should be considered.
- Cost of RE is relatively high, so if there are other support to reduce cost or increase return on investment , e.g. selling excessively generated electricity.
- There should be more reliable grid and grid connection code to promote connection with small scale projects.
- Costs related to distribution system should not be neglected.
- Grid stability and energy storage are important issues.
- Battery produced from domestic materials can reduce the price of battery, comparing to the case of importing lithium battery.
- Electricity flowing back to grid is currently prohibited, so this would be barrier to promote small-scale projects at community level.
- Regulations and barriers related to grid connection and to the selling price back to grid do not encourage small scale projects.
- Support R&D in battery system is necessary as it is not yet economical.
- Most of the support funding benefits large corporations. SMEs are not the main recipients for sustainable financing products due to their relatively high risk level.
- There should be shared energy storage within communities.
- Administration processes to sell electricity back to grid are complicated.
- An increase in electricity price and EV potentially drives the demand in solar at household's level.
- Multilateral development banks can support SMEs by providing credit lines to local banks to lend to small scale businesses.

<u>Discussion: Energy Efficiency (with a focus on cooling applications for buildings)</u>

- Most of the investment go to RE project rather than EE projects.
- For revolving fund, as we developed 6 phases of fund (1,000 million THB per phase), we supported banks to funding to energy conservation and alternative energy projects.
- Currently, there is support from Bank of Thailand which is 0.01% financing to support banks. DEDE also collaborates with BOT to screen projects. Most of the projects are RE and solar projects. The support extends to 1 more year.

- DEDE also collaborate with other parties to provide support i.e.. BOI, ESCO-BOI (8 years tax incentive without limitation, waive import duty).
- Understanding toward EE business and ESCO (risks perceived by ESCO) from banks is an important factor.
- Small scale EE projects (around 20 MB) is challenging as the projects are relatively small to meet funding criteria.
- Equipment installed in buildings is relatively new and innovative, there is difficulty in asset securitisation. Appropriate verification process would lessen difficulty.
- Financing that may promote EE building is a sustainability-linked loan with subsidised interest rate as long as there are EE-linked KPI to ensure that the building is actually energy efficient. This can incentivise the project developers to promote energy efficiency buildings.
- District cooling projects play a key role in advancing energy efficiency.
- Many international investors and developers are looking for investment in energy efficiency buildings in Thailand, so policy to help the development is required.
- Unlike to other projects, small scale EE (i.e.. chiller for building) is relatively expensive (around 20 MB). The government support through EERF or ESCO fund in the form of 0% cost of fund would be more attractive to the private banks to leverage investment to the projects, and able to design attractive financial products to project developers.
- Gathering many projects into 1 large project would be cost effective and more attractive to local private banks.

Session IV: Wrap-up and next steps

At the conclusion of the session, Mr. Deger Saygin expressed his appreciation to DEDE for co-organising this event with the OECD and the opportunity for this collaboration, as well as all participations for the productive discussion regarding the roadmap for energy efficiency and renewable energy. Mr. Saygin emphasised the need for linking the clean energy transition with reducing emissions. Mr. Saygin noted that the roadmap would attract banks for sustainable finance and pointed out that although solar PV had been emphasised, more work needs to be done on biomass. Mr. Saygin suggested that subsidised interest rate loans could be used as a tool for new energy efficiency technologies. He further stressed that building capacity from both investors and banks is very much important, and aggregation was identified as a key component of the roadmap. The next step is to share the background notes and meeting minutes to participants for reviewing and providing any feedback.

Annex 1: List of participants

90 participants from the following organisations participated in the workshop.

Government agency/State-own enterprise/Public enterprise

- Department of Alternative Energy Development and Efficiency (DEDE), Ministry of Energy
- Office of the Permanent Secretary, Ministry of Energy
- Office of the National Economic and Social Development Council (NESDC)
- Fiscal Policy Office (FPO), Ministry of Finance
- Office of National Resources and Environmental Policy and Planning (ONEP), Ministry of Natural Resources and Environment
- Thailand Board of Investment (BOI)
- Securities and Exchange Commission (SEC)
- Metropolitan Electricity Authority (MEA)
- Provincial Electricity Authority (PEA)
- National Science and Technology Development Agency (NSTDA)
- National Energy Technology Center (ENTEC)

Academic/Research institution

- The Joint Graduate School of Energy and Environment (JGSEE), King Mongkut's University of Technology Thonburi
- Energy Research Institute (ERI), Chulalongkorn University

Private Sector/Association

- B.Grimm Power Public Company Limited
- SCG Power Public Company Limited
- Sena Solar Energy Company Limited
- EGS-plan (Bangkok) Company Limited
- Enapter
- Siam Commercial Bank Public Company Limited
- Thai ESCO Association

International Organisation / Development Agency

- Embassy of Denmark in Thailand
- Agora Energiewende
- Asian Development Bank (ADB)

- Asia Pacific Urban Energy Association (APUEA)
- Deloitte Consulting LLP
- GIZ (CASE Programme)
- GIZ (TGC-EMC Industry (energy efficiency) component)
- USAID (Southeast Asia Smart Power Program)
- United Nations Development Programme (UNDP)

Annex 2: Pictures


OECD


Energy Transition in Thailand


CEFIM
CLEAN ENERGY FINANCE AND
INVESTMENT ROADMAP
THAILAND