



## Launch of the implementation of the 'Framework for Industry's Net-Zero Transition' in Thailand



**15<sup>th</sup> February 2024**  
**09:00 – 12:00 (ICT)**



**Office of the National Economic and Social Development  
Council (NESDC)**

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### *About the OECD Framework for Industry's Net-Zero Transition*

The OECD [Clean Energy Finance and Investment Mobilisation](#) (CEFIM) programme aims to strengthen enabling conditions to accelerate finance and investments in renewables, energy efficiency and industry decarbonisation in emerging and developing economies.

Under the [Sustainable Infrastructure Programme in Asia](#) (SIPA) and as part of the CEFIM programme, the OECD released the [Framework for Industry's net-zero transition](#) ('the Framework') in September 2022.

The Framework is a step-by-step approach to support emerging and developing economies in designing solutions for financing and to improve the enabling conditions that can accelerate industry's net-zero transition.

### *About the implementation of the Framework in Thailand*

Thailand aims to reach carbon neutrality by 2050, as well as net zero greenhouse gas (GHG) emissions by 2065. Based on its Nationally Determined Contribution (NDC), the country commits to reduce GHG emissions by between 30% and 40% compared to the projected business-as-usual level by 2030.

The National Economic and Social Development Council (NESDC) and the OECD are collaborating on implementing the Framework for Industry's net-zero Transition to support Thailand's decarbonization journey. Following stakeholder consultations and an initial assessment of Thailand's industry decarbonisation priorities, the petrochemical sector has been selected as the sector for implementation, including a plastic value chain perspective. Thailand is one of the first country where the Framework will be implemented, starting in February 2024 until Q3 2025.

Furthermore, the project can build on an established cooperation between Thailand's government and the OECD, such as the Thailand Country Programme Phase 2 (launched by the OECD Secretary General and Thailand's Deputy Prime Minister in March 2023), or the Clean Energy Finance and Investment (CEFI) Roadmap in collaboration with the Department of Alternative Energy Development and Efficiency (DEDE) of the Ministry of Energy.



## *Objectives of the Kick-Off Meeting*

The kick-off meeting marked the launch of the Framework's implementation phase (see Agenda in Annex 1). The main objectives were:

- to **introduce the Framework** and to present the project's objectives, content, governance structure and timeline,
- to **convene** stakeholders, both from government, industry and finance sectors,
- to discuss on **priorities, challenges and opportunities** for decarbonising the petrochemical industry and the plastic value chain in Thailand.

**Around 80 stakeholders** (70 in-person, 10 on-line) representing more than 30 different entities attended the event. These included representatives from Ministries and government agencies, industry, finance, international partners, academia, think tanks (list of entities in Annex 2).

## *Welcome and Opening Remarks*

**H.E Dr. Ernst Reichel**, Ambassador of Germany to Thailand, highlighted the support from Government of Germany to the Sustainable Infrastructure Project in Asia (SIPA). SIPA activities in Thailand were underlined, including the pilot assessment in sustainable infrastructure undertaken with the International Institute for Sustainable Development, as well as the development of guidelines for climate resistance for selected transports along with UNDP.

**Mr. Danucha Pichayanan**, Secretary General, Office of the National Economic and Social Development Council (NESDC) stressed that Thailand recently launched its [13<sup>th</sup> National Economic and Social Development Plan](#) to support the country's transformation in a progressive society and sustainable economy by 2027. He recalled the importance of investment in manufacturing sectors in emerging markets and developing economies (EMDEs), and that the OECD Framework will help Thailand achieve its net-zero targets.

**Ms. Mathilde Mesnard**, Deputy Director, OECD Environment Directorate, emphasised the key role of industry decarbonisation in reaching Thailand's emission reduction objectives, as well as the related challenges. The strong collaboration between Thailand and OECD was underscored, including Thailand Country Programme Phase 2 and the on-going Clean Energy Finance and Investment Roadmap developed in collaboration with the Ministry of Energy. She outlined that the Framework's contribution in supporting Thailand in its decarbonisation journey, by leveraging OECD whole-of-government approach and convening power, best practices sharing and evidence-based analysis.

## *Scene Setting – Introductory Remarks*

**Ms Siripen Kiatfuengfoo**, Deputy Director General of the Office of Industrial Economics (OIE), Ministry of Industry provided opening remarks for the 'Scene Setting' session. The importance of the BCG model for Thailand's sustainable industry growth was highlighted, as well as the vision for Thailand's bio industry to become a regional leader for bioplastics, biochemicals and biopharmaceutical products. The key role of the petrochemical and plastic industries in Thailand was underlined, as well as related sustainable driven national plans and actions such as Thailand's Roadmap on Plastic Waste Management, investments towards green industry, Board of Investments incentives for bioplastics and CCUS, and on-going initiatives for bioplastic certifications.



## *Scene Setting – Project Overview*

OECD presented the objectives, content, governance and timeline of the implementation of the Framework. The objective of the Framework is to focus on **financing solutions and enabling conditions** which can support and accelerate the decarbonisation of Thailand’s petrochemical industry and plastic value chain. The Framework is a **step-by-step approach** consisting of:

- 1) stakeholder engagement and selection of an industry sub-sector,
- 2) a deep dive on the selected industry sub-sector,
- 3) assessment of business cases for selected low-carbon options to decarbonise the sub-sector,
- 4) identifying financing solutions and enabling conditions to support the business cases,
- 5) a final country report synthesising the previous steps and outcomes, alongside outcomes’ dissemination activities.

These steps will be implemented from **February 2024** (kick-off meeting) until **Q3 2025** (approval of the final outcomes), while ensuring strategic alignment with Thailand’s **national plans and priorities**.

The project’s governance builds on the **NESDC** as the main government focal point of the project and the **OECD** as the Secretariat and working-level focal point. The project will be implemented in close collaboration with the **Ministry of Industry**, and the high-level findings of the report will be approved by the National Industrial Development Board (**NIDB**).

**Project meetings** will be held to support overall guidance for critical implementation steps. These project meetings will reflect key milestones, namely the kick-off meeting, the assessment of the business cases, assessment of market and financing solutions. The objective will be to share, review the intermediate outcomes of the Framework implementation.

The Project Meetings will provide the opportunity to convene the stakeholders forming the **‘Stakeholders Group’**. The ‘Stakeholder Group’ is comprised of around 30 entities representing Ministries, government agencies, industry, financing stakeholders, international partners, academia and think tanks.

**Synergies** with stakeholders’ on-going projects related to decarbonising petrochemicals & plastic in Thailand were identified. These include the Climate Action Programme for the Chemical Industry (CAPCI) project by GiZ, plastic recycling and related business models by IFC / World Bank, or the analysis on bioplastics by ADB. In practice, some of these project’s outcomes could inform or be used as input for the implementation of the Framework, depending on the respective projects’ timelines.

## *Scene Setting - Framing the stakes for decarbonising Thailand’s petrochemical industry and plastic value chain.*

OECD presented the stakes pertaining to the decarbonisation of Thailand’s petrochemical industry and plastic value chain. **Decarbonising industry** is key to reach Thailand’s ambitious emission reduction targets, as the sector accounts for more than one third of Thailand’s total GHG emissions. Decarbonising Thailand’s industry sector can build on **a wide range of existing national plans and strategies**, whether related to climate mitigation, energy, industry, or wider economic and development strategies.



Within the industry sector, the **petrochemical industry** is key for Thailand, ranking first in the Southeast Asian region. The **plastic industry** is equally important, accounting for 7.7% of Thailand's GDP. **Plastic products' end-of life management and plastic waste** remain at stake for Thailand, as shown by Thailand's Roadmap on Plastic Waste Management (2018-2030). According to the World Bank, 2.88 million tonnes/year of plastics are not recycled. While overall recycling rate is around 22%, it highly varies across plastic resins.

The **value chain is complex** and comprised of a variety of products and production routes. The main building blocks of the value chain include petroleum products, transformation to chemical feedstocks, production of upstream, intermediate and downstream petrochemicals, and final plastic products. Along the value chain, **upstream** petrochemicals accounted for 62% of GHG emissions of Thailand's petrochemical industry. Olefins are the main energy and emission intensive petrochemicals products, with ethylene forming the bulk of upstream petrochemical production in Thailand.

**A broad range of options** can be leveraged to decarbonise upstream petrochemicals and the plastic value chain, based on 3 main levers: switch in feedstock (e.g from fossil fuels to biomass), decarbonising production process (especially steam cracker) including energy efficiency, low-carbon heat and electricity, CCUS, and recycling and end-of life management of plastic products. The **selection of decarbonisation options** will depend on a combination of factors such as their emission reduction potential, technological maturity, relevance to Thailand's specificities...

Beyond emission reductions, decarbonising petrochemicals & the plastic value chain can bring **further benefits** to Thailand, including enhancing circularity and waste management, being a leading country for bio-based products, fostering industrial symbiosis and industrial clusters, strengthening SMEs (plastic recycling & converters), supporting competitiveness of exports of emission intensive products.



## *Stakeholder session on priorities, challenges and opportunities for decarbonising the petrochemical industry and the plastic value chain.*

**Mr. Charoenchai Prathuangsuksri**, Chairman of the Federation of Thai Industries Petrochemical Industry Club (FTI PC) provided introductory remarks, highlighting that decarbonisation options for the petrochemical industry will depend on technology costs and readiness, and that switching to renewable energy is needed.

**Ms. Rachanee Chanawatr**, Principal Investment Officer, Asia Pacific, Manufacturing, Agribusiness, and Services, International Finance Corporation (IFC) underlined the key aspect of transitioning to plastic circularity, as well as IFC upcoming project on plastic circularity opportunities and barriers. The aim is to identify where the dysconnectivity in the value chain lies, how inefficiencies can be addressed and how to achieve more sustainability.

**Dr. Piya Kerdlap**, Managing Director PXP Sustainability, Consultant for Asian Development Bank (ADB) recalled key findings on ADB cost-benefit analysis of bioplastics in Thailand released in 2023, including that bioplastics may have lower GHG emissions, but increase PM emissions and agricultural land use. Likewise, end-of-life management of bioplastics is key, as GHG emissions can be released if bioplastics are not properly composted. Cost-competitiveness of bioplastics is dependent on the oil market, and agricultural feedstocks need to be regarded to ensure life-cycle management of bioplastics.

**The stakeholder's discussion** highlighted the **wide range of options** to decarbonise the petrochemical industry and plastic value chain, including biomass as a feedstock for petrochemicals, energy efficiency and low-carbon energy, CCUS, and combined with a plastics recycling and circularity approach.

The **petrochemical industry** underlined the challenges of implementing deep decarbonisation options (breakthrough technologies such as CCUS), with respect to high cost, competitiveness issues, as well as infrastructure needs. Industry stakeholders expressed concerned by CBAM-type measures. The decarbonisation options in the short-term would focus on the low-hanging fruits, namely energy efficiency and low-carbon energy (heat and electricity). CCS could be envisioned after 2030, building on on-going feasibility studies in Map Ta Phut, and would require cooperation with other stakeholders for building the whole ecosystem. In addition, Thailand's government focus on biomass and CCUS was stressed by different Ministries' representatives.

**Plastics recycling** has been widely mentioned as part of the solution for decarbonisation, with companies highly engaged in new projects. Challenges lie in developing a robust value chain from waste collectors to recycling, shorten the value chain to have better clarity on waste quantities and quality, improving the offtake price. In terms of regulatory environment, there is a need for both EPR, minimum recycling content requirements, product labelling rules.

**Bioplastics** have been widely discussed as part of the decarbonisation portfolio, due to its relevance to Thailand's specificities (biomass availability, existing government tax exemptions for bioplastics production, promotion of the Bio-Circular-Green Economic Model). Bioplastics account for less than 2% of Thailand's plastic total production today and less than 1% of biomass resources are used for bioplastic production. There is thus room for increasing bioplastic share in total plastic production. Challenges for upscaling bioplastics production include competitiveness, end-of life management issues for composting, competing biomass usage for food versus plastics. The Thai Bioplastic Association (TBIA) highlighted their current discussions with the Thai Industrial Standard Institute (TISI) to develop a standard for bioplastic products. TBIA raised the need to introduce bio-content standards



in plastics, to develop infrastructure for composting, to develop policies for food waste for facilitating the sorting.

On **biomass feedstock-based routes**, it was also highlighted that industrial projects under consideration included the use of ethanol for producing bio-polyethylene (JV between SCG Chemicals and Braskem). Regarding the bio-naphtha option, while there are no producer of bio-naphtha in Thailand, refineries could use bio-naphtha to produce bio-polyethylene.

**Finance actors** underlined the need to define a taxonomy for industrial activities, and this will be part of Thailand's taxonomy phase 2. It was also highlighted that the technologies and policy needed to be developed first, to ensure investment alignment. While current project financing focus on renewable energy, biomass and energy efficiency, future focus will be on plastic circularity and recycling.

### *Conclusion & Next Steps*

Leveraging the broad range of options (e.g energy efficiency, renewable energy including biomass, CCUS ...) is crucial to fully achieve the decarbonisation of the petrochemicals industry. A value-chain approach is key to cover end-of-life product management and promote circularity, as well as taking into account the infrastructure needs. The OECD Framework will focus on the financial solutions needed to support decarbonisation options, but also on identifying the types of regulation required to create the enabling conditions.

Following the kick-off meeting, OECD will organise and prepare **technical workshops** (April 2024) to select the low-carbon routes to be considered for the assessment of the business cases (namely for the step 3 of the Framework). The **Project meeting n°2** related to the presentation of the business cases will be organised in Bangkok before end of 2024 (October, tentative).



## Annex 1 – Agenda

Time (ICT)	Agenda
09:00 – 09:30	Registration
09:30 – 09:45	<p><b>Welcome and Opening remarks</b></p> <ul style="list-style-type: none"> <li>• H.E Dr Ernst Reichel, Ambassador of Germany to Thailand</li> <li>• Mr Danucha Pichayanan, Secretary General of the Office of the National Economic and Social Development Council (NESDC)</li> <li>• Ms Mathilde Mesnard, Deputy Director of the Environment Directorate, OECD</li> </ul>
09:45 – 09:50	Photo Session
09:50 – 10:20	<p><b>Scene Setting: Framework for Industry’s net-zero Transition – Implementation to the petrochemical industry and plastic value chain in Thailand</b></p> <ul style="list-style-type: none"> <li>• Opening remarks (<i>Ms Siripen Kiatfuengfoo, Deputy Director General, Office of Industrial Economics, Ministry of Industry</i>)</li> <li>• Overview of the project (<i>OECD</i>)</li> <li>• Decarbonising the petrochemical industry and plastic value chain: framing the stakes (<i>OECD</i>)</li> <li>• Q&amp;A with audience</li> </ul>
10:20 – 10:35	Tea/coffee break
10:35 – 11:55	<p><b>Priorities, challenges and opportunities for decarbonising Thailand’s petrochemical industry and the plastic value chain</b></p> <p><i>Introductory remarks:</i></p> <ul style="list-style-type: none"> <li>• <i>Mr. Charoenchai Prathuangsuksri, Chairman of the Federation of Thai Industries Petrochemical Industry Club (FTI PC),</i></li> <li>• <i>Ms Rachanee Chanawatr, Principal Investment Officer, International Finance Corporation (IFC)</i></li> <li>• <i>Dr Piya Kerdlap, Managing Director, PXP Sustainability and Consultant for Asian Development Bank (ADB)</i></li> </ul> <p><i>Questions for discussion with the audience, Moderation by OECD</i></p> <ul style="list-style-type: none"> <li>• What are the stakes and priorities for the petrochemical and plastic sectors in Thailand?</li> <li>• What are the current strategies, technology routes, industry projects for decarbonising the petrochemical sector and for increasing plastic circularity and end-of life plastic management in Thailand?</li> <li>• What are the main opportunities and challenges for the bio-based plastics production?</li> <li>• What are the main barriers and challenges related to policies, financing, technology for decarbonising petrochemicals and the plastic value chain in Thailand?</li> <li>• What type of financing instruments, what type of enabling investment conditions are available and what is further needed?</li> </ul>
11:55 – 12:00*	<b>Wrap-up and next steps (OECD)</b>



## Annex 2 – List of represented entities

National Economic and Social Development Council (NESDC)	Thai Bankers Association (TBA) Bangkok Bank Kasikorn Bank
Ministry of Industry – Office of Industrial Economics (OIE)	Indorama Ventures PCL.
Ministry of Industry – Department of Industrial Works (DIW)	International Finance Corporation (IFC)
Ministry of Environment and Natural Resources – Department of Climate Change and Environment (DCCE)	World Bank
Ministry of Energy – Energy Planning and Policy Office (EPPO)	Asian Development Bank
Ministry of Energy - Department of Alternative Energy Development and Efficiency (DEDE)	UN ESCAP
Ministry of Finance - Fiscal Policy Office (FPO)	UNIDO
Ministry of Agriculture and Cooperatives	GiZ
National Science and Technology Development Agency (NSTDA)	Agora Energiewende
Securities and Exchange Commission	PXP Sustainability
Thailand Greenhouse Gas Management Organisation (TGO)	KMUTT
The Office of SMEs Promotion (OSMEP)	Energy Research Institute
Eastern Economic Corridor Office	Asia Clean Energy Partners
The Federation of Thai Industries (FTI) – Petrochemical Industry Club	Government of Germany
Thai Bioplastic Industry Association (TBIA)	OECD