



## Thailand Taxonomy Phase II in a bird's eye view: Scope, Impacts, and What's Next

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## Section 1: Update on the Development of Thailand Taxonomy Phase II

### Section 2: Impacts and What's Next

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## Introduction: The Development of Thailand Taxonomy

In face of escalating climate changes and challenges, financial sector, as an allocator of capital, is undergoing a transformation through policies and tools to help businesses and households adapt to climate change in timely manner. Taxonomy is one of the critical tool to classify activities, assets, and income proportions that align with key sustainability objectives and conditions (Climate Bonds Initiative, 2023). It aims to ensure each sector has a common definition of environmentally-friendly activities, serving as a reference point for guiding policy formulation, strategy development, and risk assessment for businesses' future adaptation. Far from being a regulatory straitjacket, Thailand Taxonomy serves as a voluntary compass, guiding market participants towards a common understanding of environmentally significant activities. Taxonomy itself is not a regulation or requirement that investors must strictly adhere to, nor is it a guideline for determining whether activities are 'good' or 'bad' for environmental operations and products.

Thailand Taxonomy development is based on current climate science (Climate Bonds Initiative, 2022) that can be revised and amended as technology evolves. It clearly defines the list of activities, metrics, and thresholds for activities aligned with the local context and in line with international taxonomies. Thailand Taxonomy includes significant impact assessment (Do No Significant Harm) and minimum social safeguard. In June 2023, the Thailand Taxonomy Board, spearheaded by the Bank of Thailand (BOT), the Securities and Exchange Commission (SEC), and the Office of Natural Resources and Environmental Policy and Planning (ONEP), alongside relevant public and private sector entities, released the Thailand Taxonomy Phase I to support climate change mitigation – focusing on energy and transportation sectors. Thailand Taxonomy is a living document and can be used based on voluntary basis. (Read more: [Thailand Taxonomy: A Crucial Step Towards a Sustainable Financial Landscape](#)).

In February 2024, the Thailand Taxonomy Board commenced meetings to initiate the development of Thailand Taxonomy Phase II, which expands the coverage to additional key economic sectors, including manufacturing, agriculture, waste management, and construction. It continues to focus on objectives related to climate change mitigation as in Phase I.

## Section 1: Update on the Development of Thailand Taxonomy Phase II

The Thailand Taxonomy Board announced its progress in developing Thailand Taxonomy Phase II, aiming to address additional key sectors. The steering committee led by the Bank of Thailand, the Department of Climate Change and Environment, the Securities and Exchange Commission, and the Stock Exchange of Thailand, along with 26 other relevant public and private sector entities. Thailand Taxonomy Phase II is set to broaden its sector coverage by encompassing **four key economic sectors: manufacturing, agriculture, waste management, and construction and real estate**. This phase continues to focus on listing activities contributing to the environmental objective of climate change mitigation.

### Manufacturing

The manufacturing sector is recognized as **the hardest to abate sector – high levels of greenhouse gas emissions with substantial costs in adopting greenhouse gas reduction technologies in production processes**. The listing activity coverage in the taxonomy is expected to consider the country's policies, and international climate obligations and measures. The international measures include the European Union's Carbon Border Adjustment Mechanism (CBAM) which aims to impose a price on imports with high greenhouse gas emissions and require imports emissions reporting. Initially, the measure targets six product categories including steel, aluminum, cement, fertilizers, electricity, and hydrogen.

Looking ahead, considering activities within the manufacturing sector covered by existing green taxonomies, such as the EU Taxonomy, Singapore-Asia Taxonomy, and CBI Taxonomy, it becomes apparent that these taxonomies share similarities. They encompass heavy industries with significant greenhouse gas emissions and face challenges in emission reduction, as well as enabling activities that facilitate emission reduction. Listing activities and their metrics/thresholds are contingent upon taxonomy's approach and country's context.

Activities in Hard-to-abate Sectors	Activities in Enabling Sectors
Manufacture of cement	Manufacture of low carbon technologies
Manufacture of aluminum	Manufacture of renewable energy technologies and products
Manufacture of iron and steel	Manufacture of energy efficiency equipment for buildings
Manufacture of hydrogen	
Manufacture of basic chemicals	
Manufacture of fertilizers and nitrogen compounds	
Manufacture of plastics in primary form	
Manufacture of batteries	

**Table 1: Illustrative List of Activities in Manufacturing Sector in Existing Taxonomies**

Note: Singapore-Asia includes manufacture of facilities and products dedicated to Carbon Capture & Storage (CCS) in a separate chapter.

Source: EU Taxonomy (2018) and Singapore-Asia Taxonomy (2023)

Therefore, it is expected that the listing activities covered under the industry will closely align with existing international taxonomies, such as manufacture of cement, iron, and steel which is also included in the Thailand's Greenhouse Gas inventory with mitigation measures, and activities in enabling sectors which could help deducting indirect greenhouse gas emissions. The focus will be on **developing criteria and metrics to support the transition of Thai industries towards more environmentally friendly practices**. In the meantime, businesses can refer to internationally recognized Taxonomy as guidelines for internalizing taxonomy-aligned activities into usual practice.

**Agricultural Sector**

In the agricultural sector, Thailand faces significant vulnerability to climate change. Experts estimate that between 2011 and 2044, the damage could be anywhere from 0.61 to 2.85 trillion baht, averaging about 17,912 to 83,826 billion baht each year (Puey Ungphakorn Institute for Economic Research, 2021). And it's not just about the money – agriculture serves as a primary raw material for the food and beverage industry and related manufacturing sectors. When it comes to greenhouse gases, agriculture ranks second in Thailand, contributing to 15.23% of the nation's total emissions, mainly attributed to rice cultivation and fertilizer use.

Climate Bonds Initiative (CBI) highlights the complexity of the agricultural sector's impact on climate change. Agricultural practices contribute significantly to greenhouse gas emissions but also play a role in sequestering gases into the soil and the environment. (CBI, Agricultural Criteria, 2021) While current agricultural Taxonomies often categorize perennial crops, annual crops, and livestock without specifying plant or animal breeds, there's a growing trend among countries with substantial agricultural sectors to **define specific activities and criteria for key economic crops**. For instance, Malaysia's Taxonomy has outlined conditions for palm oil cultivation, a significant economic crop for the country.

As climate change looms over Thailand's agriculture, affecting both the physical aspects of plants and animals and the land use (Puey Ungphakorn Institute for Economic Research, 2021), the development of Thailand Taxonomy Phase II in the agricultural sector is expected to employ both horizontal and specific criteria, especially **rice, rubber, and sugarcane** as key economic crops. In addition, there's potential to extend the coverage to include significant aquaculture and other relevant environmental objective – climate change adaptation which could be prioritized to prevent future damage and loss.

**Waste Management Sector**

The waste management sector plays a significant role in mitigating greenhouse gas emissions and supporting the circular economy. The Enhancement and Conservation of National Environmental Quality Act B.E. 2535 defines the coverage of waste

to include garbage, wastewater including residues, sediments, or remainders of such matters. Zooming into the municipal waste, Thailand faces challenges in managing municipal waste with approximately 7.1 million tons (28% total municipal waste) improperly disposed of. Additionally, there are numerous unregulated waste disposal sites, including 94 incinerators without air pollution control system and 61 open burning sites nationwide (Department of Pollution Control, 2022).

Learning from the existing taxonomies, waste management sector's scope aligns with the definition set forth by the legislation. Drawing from the concept of **waste hierarchy**, the focus prioritizes preventing waste generation (see Figure 2). Should waste accumulate, the approach shifts to considering reuse, recycling, and repurposing to yield new benefits, unlocking value-added activity such as waste to energy. The final step involves proper disposal or treatment. Additionally, the existing taxonomies include activities related to waste collection, transportation, and infrastructure construction to support good waste management practices.



**Figure 2: Waste Hierarchy**

*Source: European Commission (2023)*

In the development of Thailand Taxonomy Phase II, the focus is on aligning activities with the definition of waste defined in Enhancement and Conservation of National Environmental Quality Act B.E. 2535 and in line with international standards. This includes **non-hazardous waste collection and transportation, biowaste treatment: composting and anaerobic digestion, and waste-to-energy from non-recyclable waste, and material recovery facilities**. Additionally, activities like **wastewater treatment plants and desalination systems** are crucial components in this comprehensive framework.

### **Construction and Real Estate Sector**

The variation in environmentally friendly building standards across the globe poses a significant challenge in developing criteria in the construction and real estate sector in the taxonomies. The different metrics employed in each standard lead to potential discrepancies in their prioritization. For instance, while some standards may emphasize metrics unrelated to direct climate change mitigation, such as water usage, recycling, and building materials, others may prioritize energy efficiency. Moreover, several countries have introduced their own green building standards, such as Thailand's TREES (Thai's Rating of Energy and Environmental Sustainability) and the SOOK Standard. The heterogeneity of standards presents a formidable challenge in achieving a balanced development of criteria and metrics within the taxonomy for construction and real estate.

In recent years, taxonomies have been developed to address the challenge of standard comparison by delineating **a list of referenceable standards**. For example, the Singapore-Asia Taxonomy specifies reference to standards certified by the Climate Bonds Initiative, covering various activities such as **construction of new buildings, renovation and retrofitting of existing buildings, acquisition or ownership of buildings, and the installation, maintenance, and repair of energy-efficient equipment and renewable energy systems**. Consequently, the Thailand Taxonomy Phase 2 can consider adopting similar methodologies to develop a list of activities, criteria, and metrics aimed at reducing discrepancies among standards.

## Section 2: Impacts and What's Next

### Impacts & Challenges

To recap, the scope of development of Thailand Taxonomy Phase II will cover four significant economic sectors: manufacturing, agriculture, waste management, and construction and real estate. It is expected that the criteria aim to support climate change mitigation - mainly reducing greenhouse gas emissions. Therefore, businesses in these sectors may face challenges and should prepare to cope with associated risk.

- **Developing Transition is key - prioritize criteria for industry transition:** As the Thailand Taxonomy Phase II covers manufacturing and agriculture, sectors that are significant sources of greenhouse gas emissions. Businesses will need substantial amount of investment and funding for emissions reduction, like carbon capture for cement's decarbonization process and or alternative renewable energy for manufacture of iron and steel. Therefore, developing activities coverage and criteria should consider business transition to foster 'less-brown' operations in the future. In the meantime, businesses should closely monitor the development through relevant agencies or preliminarily study elements and criteria listed in the global Taxonomy standards.
- **Keeping an eye on the Climate Change Act - good rules for operationalization is yet to come:** The Department of Climate Change and Environmental Affairs is currently soliciting feedback of the draft Climate Change Act B.E. The development of Taxonomy has been included under Category 13 of the draft, specifying Taxonomy as a reference for policy development, plans, and greenhouse gas reduction measures, adaptation, or promotion of nationwide climate change-related activities, including reporting corporate greenhouse gas activities. It is expected that once the Act is enforced, relevant regulatory oversight agencies will issue guidelines to operationalize the classification.
- **Assess and unlock the data constraints:** Data is new oil; therefore, data management in business is essential. The Taxonomy classifies activities and requires data in granular level. When it comes to application, applying the criteria will require businesses to collect more detailed data, which poses a challenge for companies with limitations in data collection, analysis, reporting, and disclosure. Therefore, the relevant industries should prepare and assess readiness in data collection, aiming at accessing finance or preparing for potential mandatory reports.

### What's Next

The Thailand Taxonomy Board expects to schedule a public consultation to solicit feedback on the draft of Thailand Taxonomy Phase II from various stakeholders, including governmental bodies, private enterprises, civil society groups, and international organizations, during the fourth quarter of 2024, with a targeted release in the subsequent year.

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