

Section 3: How to Use Thailand Taxonomy

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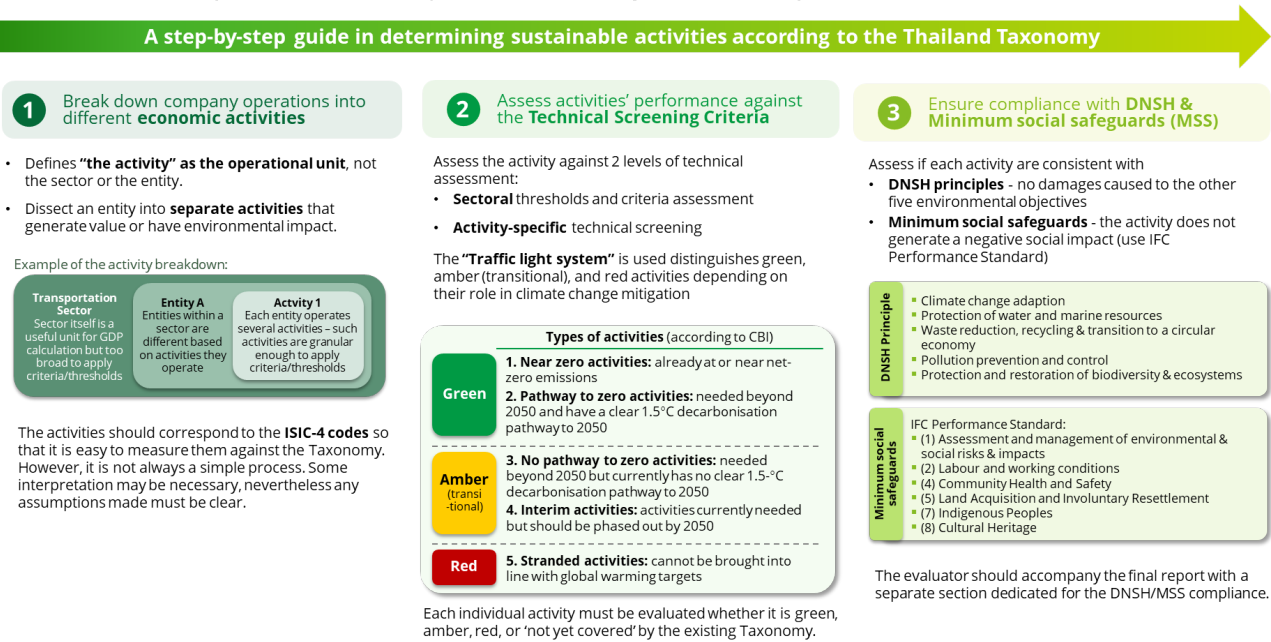
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Introduction

With the aim to provide a common framework for classifying economic activities and mobilizing green financing, the taxonomy provides a thorough analysis and backgrounds starting from the consideration and development framework. The draft listed out the economic sectors and the rationale for sector prioritization, the models used for activities assessment, the relevant thresholds and criteria to identify green, amber or red activities, and other essential requirements for the eligibility of activities.

The guide to using the taxonomy for economic activities assessment can be summarized into 3 key steps as follows:

Thailand Taxonomy: Criteria and Steps in determining sustainability of activities



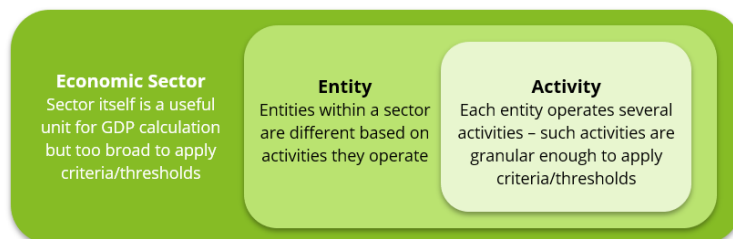
3 steps for identifying Thailand Taxonomy-aligned activities

Source: Compiled from Thailand Taxonomy Paper: Draft for public consultations (Climate Bonds Initiative, 2022)

Step 1: Break down operations in the eligible sectors into economic activities

How can you break down sectoral operations into smaller activities?

As one company or project operations may consist of multiple activities that pose a different level of contribution to the environmental objectives of the taxonomy; therefore, **“activities” are used as the operational unit in assessment**, instead of a sector or an entity itself.



Example of the relationship between sectors, entities, and activities

Source: Thailand Taxonomy Paper: Draft for public consultations (Climate Bonds Initiative, 2022)

Companies then need to start by breaking down its operations into separate activities that generate value or have environmental impacts. If the granularity of data allows, the activities should correspond with the [ISIC Revision 4 Codification](#), which classify an entity's activity into 4 levels of section, division, group and class, for them to be easily mapped against the Thailand Taxonomy. However, it is not always the case, nor is it a simple process. Some interpretation may be necessary, but any assessment should be clear about the base assumptions made.

Step 2: Assess activity against Technical Screening Criteria

What is the traffic light system for the Thailand Taxonomy?

The Thailand Taxonomy categorizes activities as green (operating at or close to net-zero trajectory), amber (facilitating emissions reduction), and red (currently not compatible with net-zero trajectory). **Each activity must be evaluated whether it is green, amber, red, or not yet covered by the existing Taxonomy ("Not Listed").**

Activity	Description	Type of activities	Sunset Dates (After this date, the activities must be phased out)
Green activities	substantially contributing to climate change mitigation goal by operating at or close to the net-zero goal by 2050. Mostly align with green thresholds in either EU or CBI taxonomies	1. Near zero activities - at or near net-zero emissions *2. Pathway to zero activities - needed beyond 2050 and have clear 1.5-degree decarbonization pathway to 2050	No sunset dates. The emissions allowed after 2040 will be kept at near-0 level
Amber activities	facilitating emissions reduction in the short term with a prescribed sunset date. Only existing infrastructure that can be retrofitted are applicable.	*3. No pathway to zero activities - needed beyond 2050 but do not have a clear 1.5-degree decarbonization pathway to 2050 *4. Interim activities - currently needed but should be phased out by 2050	2040 After 2040, only green activities are applicable
Red Activities	Currently not compatible with net-zero trajectory and not going to become compatible anytime soon. Should be phased out completely.	*5. Stranded activities - cannot be brought into line with global warming targets and have an alternative, low emissions substitute)	

Note: *Transitional activities as identified in the Thailand Taxonomy. It was noted that the transitional activity under No.5 (Stranded activities) "may undergo only in the form of decommissioning." (Climate Bonds Initiative, 2022, p. 25)

Source: Compiled from Thailand Taxonomy Paper: Draft for public consultations (Climate Bonds Initiative, 2022)

Transitional Activities

Transitional activities have a more challenging path or may not contribute to net-zero in the long-run, due to relevant economic and technological barriers; however, they make substantial contributions to reducing global emission by half by 2030 and reaching net zero by 2050. Transitional activities are therefore crucial for transitioning to low-carbon economy in the short-term but are not a long-term solution for achieving net-zero economy.

According to Thailand Taxonomy, activity no. 2-5 in the table above may be called 'transitional.' For activities in "red", some activities are contributing to the transition only through decommissioning. The Sunset dates – the date after which transitional activities cease to be eligible – are set at 2040 for all transitional activities. It is expected that after 2040, all activities will be aiming to reach net-zero emissions, which consist of (1) near zero activities and (2) pathway to zero activities. (Climate Bonds Initiative, 2022)

Understanding the modelling behind activity thresholds

The modelling below further illustrates the conception of the activity thresholds in different pathways; the Net-zero pathway (comprising of climate-aligned green activities and net-zero technologies), the Transition pathway (amber activities that must transition to net-zero by 2050), and the non-compliant pathway (red activities).

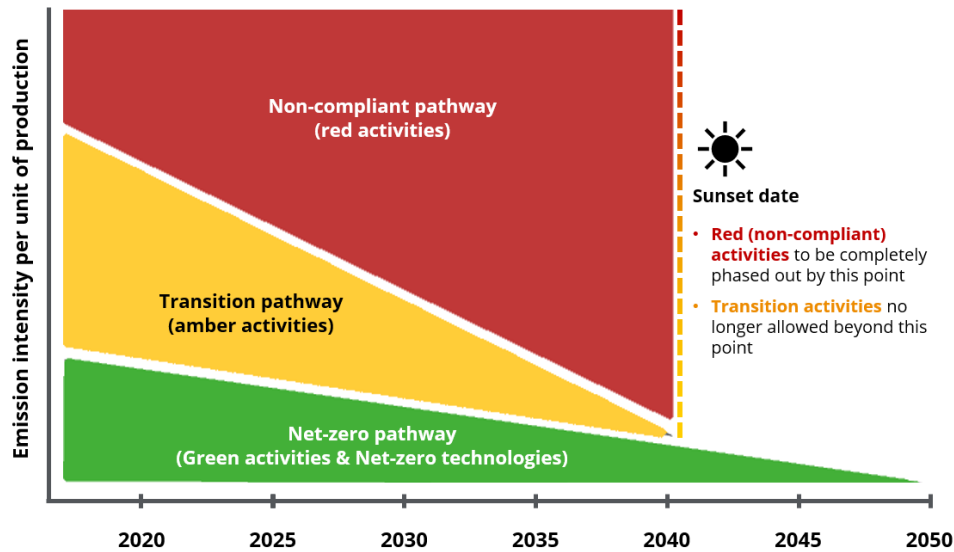


Illustration of the scheme of modelling for activities assessment

Source: Thailand Taxonomy Paper: Draft for public consultations (Climate Bonds Initiative, 2022),

As illustrated, the pathways modelling consider the emission reduction by intensity of emission by unit of production. Overtime, it is expected that the Green activities and the Amber activities will have less emission intensity by unit of production. By the Sunset Date in 2040, all non-green activities are not eligible for actions towards net-zero emission by 2050. The Red activities outside of the emission reduction pathways must also be phased out by 2040. However, activities can be considered more environmentally friendly and emit less carbon due to technology advancement in the future, which may result in the Amber or the Red activities shifting their status to less emissions. For this reason, Taxonomy should be reviewed periodically for the classification to reflect this changes.

It must also be noted that, the thresholds for green activities have been calculated based strictly on **the 1.5-degree scenario**. This indicates that all sectors must transition into net-zero by 2050.

Assessing the list of activities against the technical screening criteria

Each individual activity will be subject to 2 levels of technical assessment, which are:

1. sectoral thresholds and criteria assessment, and
2. activity-specific technical screening as specified in the draft Taxonomy

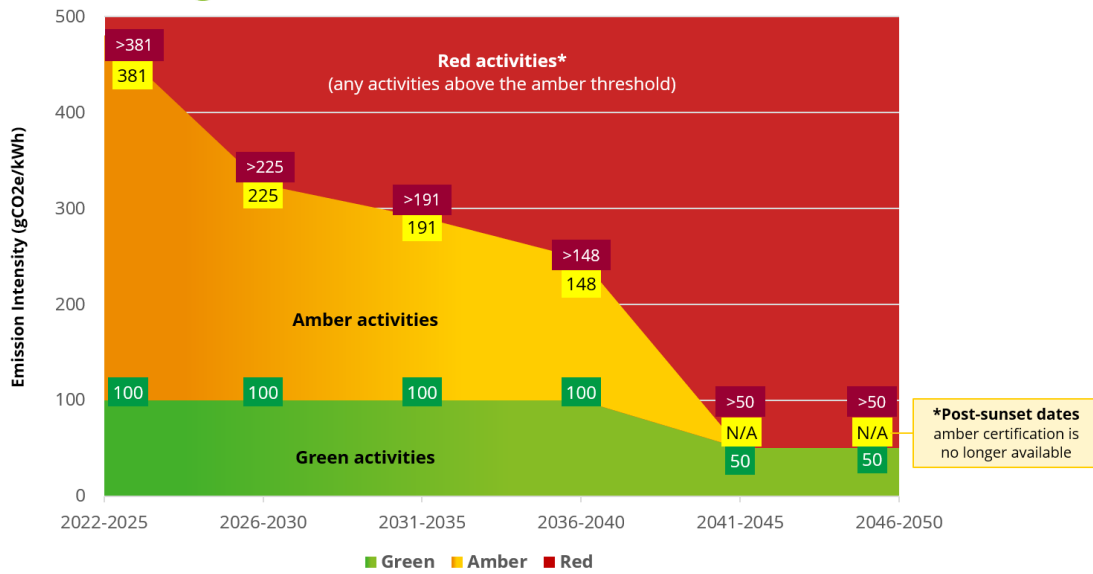
1 – Sectoral thresholds and criteria assessment

Firstly, activities will be assessed against **sectoral level thresholds and criteria** using the traffic light system. The document has outlined the criteria and considerations for the two sectors:

1.1 Thresholds for Energy sector (Climate Bonds Initiative, 2022)

- **Green activities:** the threshold in the Thailand Taxonomy will be established as 100 gCO₂e/kWh until 2040 with emission intensity of 50 gCO₂e/kWh afterwards.
- **Amber activities:** Emission intensity should decline overtime as shown in the illustration below. It is recommended to establish 2040 as a sunset date for the amber threshold. After this date only green thresholds and criteria are applicable for all activities.
- **Red activities:** can under no circumstances be considered contributing to climate change mitigation. In some cases, there are no such circumstances and therefore marked as N/A.

Illustrative thresholds for energy sector activities



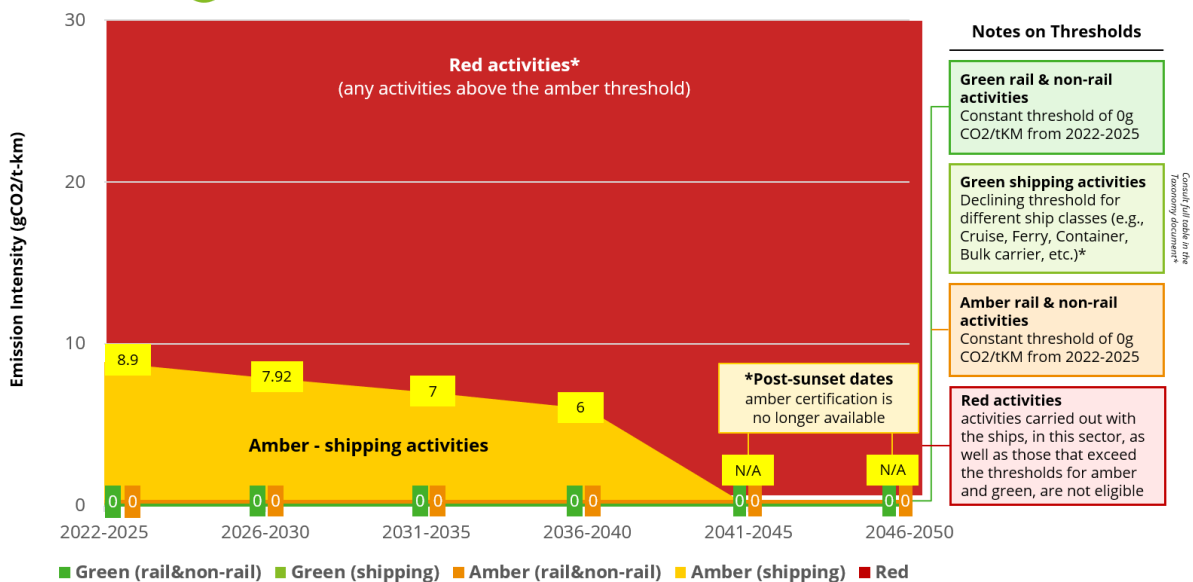
Illustrative thresholds for energy sector activities

Source: Thailand Taxonomy Paper: Draft for public consultations (Climate Bonds Initiative, 2022), Illustration: Deloitte (2023)

1.2 Thresholds for Transportation sector (Climate Bonds Initiative, 2022).

The complex and diverse nature of the transportation sector make it hardly possible to develop one comprehensive emission mitigation model for the sector, and the limited availability of current decarbonization technology makes it even more difficult to establish appropriate assessment criteria. However, the taxonomy outlined two main sub-sectoral thresholds to focus on, which are (1) the rail and non-rail activities, and (2) the shipping activities.

Illustrative thresholds for transportation sector activities



Illustrative thresholds for transportation sector activities

Source: Thailand Taxonomy Paper: Draft for public consultations (Climate Bonds Initiative, 2022), Illustration: Deloitte (2023)

Before moving to the activity-level assessment, note that although amber thresholds are necessary to facilitate the transition to a low carbon economy, amber certifications are **no longer available post-sunset dates in 2040**. When considering this timeline, activities in transportation sector focuses on emission reduction based on replacement of internal combustion

engines with other zero-emission solutions, which is easier to replace comparing to machines and systems in other industries whose reduction solutions rely on retrofitting and improving existing assets. For this reason, majority of activities in transportation sector do not have Amber category activity, as it is relatively more attractive and easier to shift to net-zero options (except for shipping, whose activities use separate thresholds as mentioned).

2 – Activity-specific technical screening criteria

Descending down to the activity level assessment, the draft Thailand Taxonomy sets **the specific thresholds and criteria** for 22 activities from energy and transportation sectors. Sector classification and activity is provided, along with details on metrics and thresholds for each activity, using the traffic light system.

- **Use independent, no reference to sectoral threshold needed** -- Specific thresholds and criteria for some individual activities (e.g. solar energy generation, etc.) can be used **independently** without referring to the table of sectoral thresholds and criteria
- **Use activity technical criteria and sector threshold** -- Screening tables for other activities may need to be used **in conjunction** with the table of sectoral thresholds and criteria. For these activities, the sector classification and activity table indicate references to sector threshold. (See an example below)

Overview of Energy sector activities & available thresholds			
#	Activity	Available thresholds / criteria*	Use with sectoral threshold
1	Solar energy generation	● ●	
2	Wind energy generation	● ●	
3	Hydropower generation	● ● ●	
4	Geothermal power generation	● ● ●	✓
5	Bioenergy generation and production	● ● ●	✓
6	Energy production from natural gas	● ● ●	✓
7	Ocean energy generation	●	✓
8	Electricity generation from renewable non-fossil gaseous and liquid fuels	● ● ●	
9	Production of heating and cooling using waste heat	●	
10	Installation and operation of electric heat pumps	●	
11	Heating and cooling distribution	●	
12	Transmission and distribution networks for renewable and low-carbon gases, including hydrogen	●	
13	Storage of electricity and thermal energy	●	
14	Transmission and distribution of electricity	● ●	

Overview of Energy sector activities & available thresholds

Source: Thailand Taxonomy Paper: Draft for public consultations (Climate Bonds Initiative, 2022)

Overview of Transportation sector activities & available thresholds			
#	Activity	Available thresholds / criteria*	Use with sectoral threshold
1	Transport via railways	● ● ●	
2	Other passenger land transport	● ●	
3	Urban and suburban passenger land transport	● ●	
4	Freight transport by road	● ● ●	
5	Enabling infrastructure for low-emission transport	● ●	
6	Sea and coastal water transport	● ● ●	✓
7	Inland water transport	● ● ●	✓
8	Retrofitting of sea and coastal freight and passenger water transport	● ● ●	✓

Overview of Transportation sector activities & available thresholds

Source: Thailand Taxonomy Paper: Draft for public consultations (Climate Bonds Initiative, 2022)

The two tables above provide an overview of the metrics and thresholds available for each individual activity within the Energy and Transportation sector. It must be reminded here that the activity criteria and threshold are considered based on the sectoral modeling of decarbonization pathway. For example, as illustrated below for activity 4.1.8 Electricity from renewable non-fossil gaseous and liquid fuels, the thresholds specify ISIC Code, description of the sectoral activity, scope and metrics and thresholds for an activity to qualify as either green, amber, or red. Where the activity threshold is used along with the sectoral threshold, the reference to the threshold at sectoral sector is available (the reference to Table 11 in the Amber threshold description).

Activity level threshold - Section 4 in Thailand Taxonomy
(Section 4 – Activities thresholds and criteria, page 42)

4.1.8. Electricity generation from renewable non-fossil gaseous and liquid fuels

Sector classification and activity							
Sector and activity	Electricity generation from renewable non-fossil gaseous and liquid fuels						
ISIC CODE	3510						
Description	Construction and operation of electricity generation facilities that produce electricity using gaseous and liquid fuels of renewable origin. This activity does not include electricity generation from the exclusive use of biogas and bioliquid fuels						
Scope	Construction and operation (electricity generation)						
The activity makes significant contribution to climate change mitigation							
Metrics and thresholds	<table border="1"> <tr> <td>Green</td> <td> <ul style="list-style-type: none"> Life-cycle GHG emissions from the generation of electricity using renewable gaseous and liquid fuels are lower than 100 g CO₂e/kWh. Life-cycle GHG emissions are calculated based on project-specific data, where available, using ISO 14067:2018 or ISO 14064-1:2018. Quantified life-cycle GHG emissions are verified by an independent third party. </td> </tr> <tr> <td>Amber</td> <td>Lifecycle emission intensity meets declining amber thresholds for the Energy Sector with a prescribed sunset date (Table 11)</td> </tr> <tr> <td>Red</td> <td>The activity does not meet green or amber criteria</td> </tr> </table>	Green	<ul style="list-style-type: none"> Life-cycle GHG emissions from the generation of electricity using renewable gaseous and liquid fuels are lower than 100 g CO₂e/kWh. Life-cycle GHG emissions are calculated based on project-specific data, where available, using ISO 14067:2018 or ISO 14064-1:2018. Quantified life-cycle GHG emissions are verified by an independent third party. 	Amber	Lifecycle emission intensity meets declining amber thresholds for the Energy Sector with a prescribed sunset date (Table 11)	Red	The activity does not meet green or amber criteria
Green	<ul style="list-style-type: none"> Life-cycle GHG emissions from the generation of electricity using renewable gaseous and liquid fuels are lower than 100 g CO₂e/kWh. Life-cycle GHG emissions are calculated based on project-specific data, where available, using ISO 14067:2018 or ISO 14064-1:2018. Quantified life-cycle GHG emissions are verified by an independent third party. 						
Amber	Lifecycle emission intensity meets declining amber thresholds for the Energy Sector with a prescribed sunset date (Table 11)						
Red	The activity does not meet green or amber criteria						

Sector level threshold - Section 3 in Thailand Taxonomy
(Section 3 - Models for activities assessment, page 30)

Table 11. Thresholds for certain energy sector activities**

	2022-2025	2026-2030	2031-2035	2036-2040	2041-2045*	2046-2050*
Green Activities	100	100	100	100	50	
Amber Activities	381	225	191	148	N/A	N/A
Red Activities	>381g	>225g	>191g	>148g	>50g	>50g

NB: all thresholds are subject to review every five years in accordance with new data and technological development

* Post-sunset dates, amber certification is no longer available

** Energy efficiency measures are covered under these energy sector criteria by the very means of establishing thresholds using emission intensity (gCO₂ per unit of production). In order to achieve a certain threshold, the activity must reduce its emission intensity, including by implementing measures to improve efficiency as an option.

To consider the classification of Amber activity, the threshold at the activity level refers to table 11 which shows the threshold at the sector level. These thresholds (in green boxes) are to be considered together to label the activity as amber activity

Example of assessing an activity against the activity level threshold (section 4 level, table on the left) and the sector level threshold (section 3 level, table on the right) where prescribed in the activity level threshold.

Source: Thailand Taxonomy Paper: Draft for public consultations (Climate Bonds Initiative, 2022)

It is important that activities not specified in the taxonomy will be included into the **“Not Listed”** category, and the assessment of these activities will not be possible. **Activities that are yet to be covered in the first draft of Thailand taxonomy does not automatically fall into red activities category but not listed.**

Step 3: Ensure compliance with “Do No Significant Harm” (DNSH) & meet “Minimum Social Safeguards” (MSS) criteria and prepare final report

Ensuring compliance with DNSH/Social safeguards

As a final step, each activity must be assessed whether the consistency with the DNSH principles and MSS.

1. **DNSH (“Do No Significant Harm”)** – Ensuring that the eligible activities (with climate change mitigation objective, in line with the scope of the draft Taxonomy) does not cause damage or ‘do significant harms’ to the other 5 environmental objectives, and to ensure compliance with international principles and relevant Thailand laws. On later phases of the Taxonomy development, activity specific DNSH may also be added.
2. **MSS (“Minimum Social Safeguards”)** – Ensuring that the eligible activities must not generate a negative social impact and therefore MSS must be in line with the local regulations and selected IFC Standards. including Assessment and management of environmental and social risks and impacts; Labour and working conditions; Community Health and Safety; Land Acquisition and Involuntary Resettlement; Indigenous Peoples and; Cultural Heritage.

If the activity, project, or an operation within the company that does not comply or meet the DNSH or MSS criteria, but passes the relevant technical screening criteria, it **may be considered eligible** for the corresponding green or amber category only when the operating company **submits an additional plan indicating how it will correct the deficiencies.**

Preparing a final report

The objective of the report is to communicate the assessment of the activities in line with the criteria and thresholds stipulated by the Thailand Taxonomy (Climate Bonds Initiative, 2022). Key elements of the report should include:

- **Final decision on the type of activity (green or amber):** The statement indicating whether the activity or project falls in Green or Amber criteria
- **Assumptions, data on the project activity and relevant information:** All information that should inform the verification process by third party.
- **Report on compliance with the DNSH and MSS principles:** Assessments against DNSH and MSS criteria should be reported attached to the report. The project or activity fails to meet criteria must provide plan and remedial measures for consideration; otherwise the report is deemed incomplete.
- **Plan for transition to net-zero pathway for amber activities or projects:** For amber-labeled activity or project, the plan on the transition towards net-zero after sunset date of 2040. This is also a requirement even the activity or project is partially amber.

Reference

- Climate Bonds Initiative, [“Thailand Taxonomy Paper: Draft for public consultations,”](#) 2022.

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