



PROMOTING SUSTAINABILITY IN THE BUILDING AND CONSTRUCTION SECTOR IN THAILAND

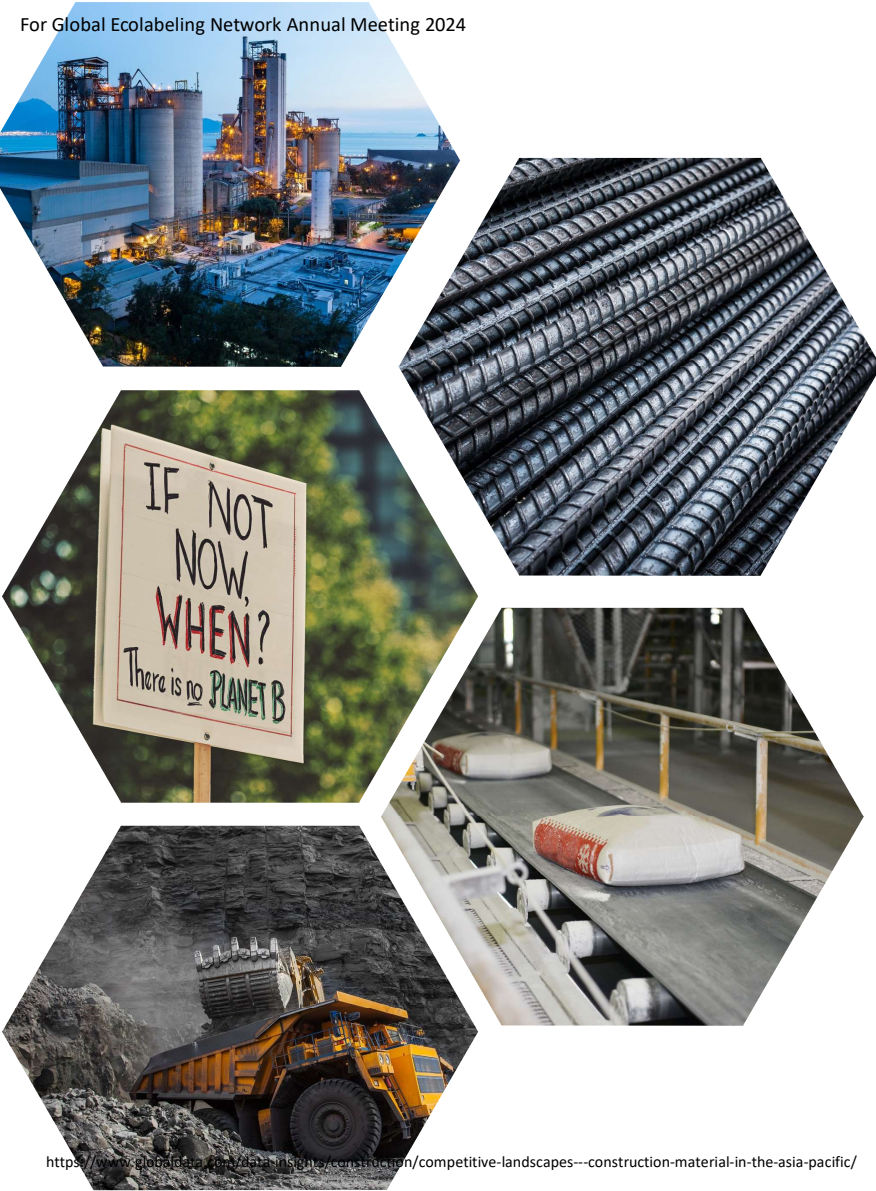
18 October 2024

For Global Ecolabeling Network Annual Meeting 2024

Introduction

- UNEP's Medium-Term Strategy (2022-2025) has identified unsustainable production and consumption as a primary cause of climate change, nature loss, and pollution.
- UNEP is partnering with organizations like the Thailand Environment Institute to promote sustainable practices in key sectors, including the building and construction industry.

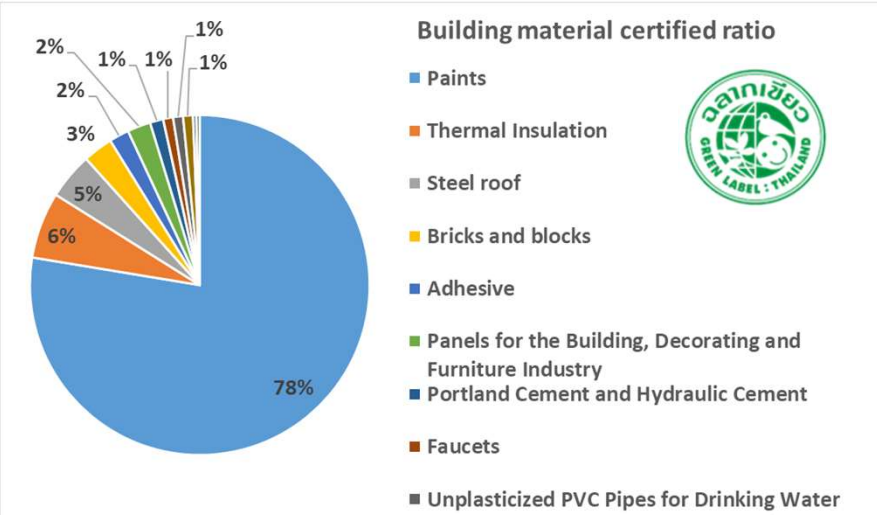




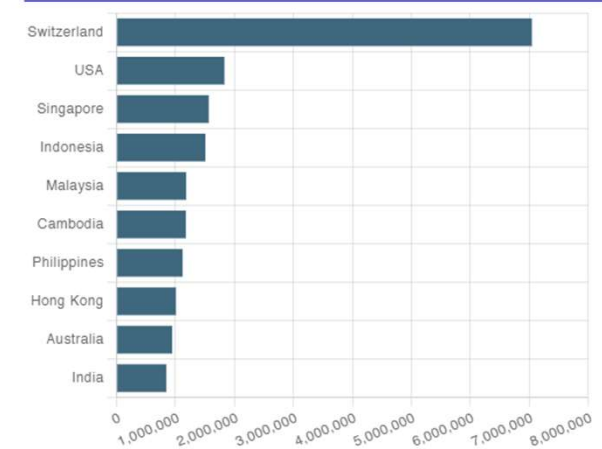
Introduction

- Thailand Green Label (**TGL**) is a **Type I Ecolabel under ISO 14024** and supports Thailand's Green Public Procurement (GPP)
- There are 29 TGL criteria related to building materials out of 125 total criteria. **Cement and construction steel are key materials, holding a significant market share** in Thailand's construction sector.
- In 2022, the **construction supplies market** was valued at around **1.36 trillion THB**, with strong export potential to ASEAN and beyond.
- The **Asia-Pacific construction materials market** had a market value of **\$862.8 billion**

<https://www.globalecolabel.com/data-insights/construction/competitive-landscapes---construction-material-in-the-asia-pacific/>



Thailand Export Potential Assessment For Construction Materials Market (Values in Thousand)



Source: 6Wresearch
 Note: Export potential is calculated by considering trade relations, duties, distance, tariffs, total import demand, GDP growth projection from IMF World Economic Outlook



The new environmental label ENVIRONMENTAL PRODUCT DECLARATION (EPD)



- Type III environmental label (ISO14025)
- Third-party verifier
- Quantitatively indicators of product's environmental impact



Climate Change



OZONE DEPLETION



HUMAN TOXICITY NON-CANCER



EUTROPHICATION MARINE



ECOTOXICITY FRESHWATER



Acidification



RESOURCE USE MINERALS AND METALS



HUMAN TOXICITY CANCER



EUTROPHICATION TERRESTRIAL



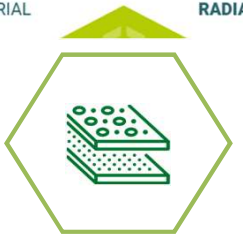
IONISING RADIATION

THE ISSUED PRODUCT CATEGORY RULES (PCR)

- ISO 14025:2006,
- ISO 14040:2006,
- ISO 14044:2006,
- EN 5804:2012+A2:2019



**Gypsum
 Plasterboard
 materials**



**Insulation
 materials**

Global Trend of Building Materials



Asia Pacific Market Accounted largest share in the Green Building Materials Market



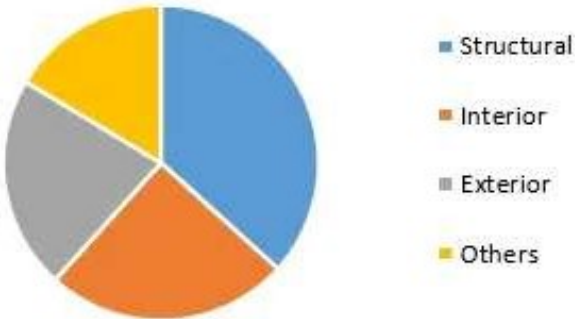
9.2% CAGR
Global Market to grow at a CAGR of 9.2% during 2024-2030

Green Building Materials Market

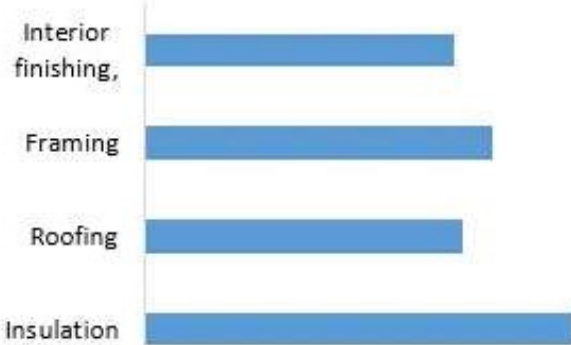
Green Building Materials Market Share, by Region in 2023 (%)



Green Building Materials Market, by Type In 2023 (%)



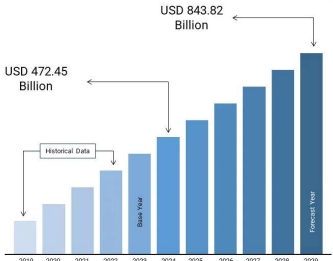
Green Building Materials Market, by Application in 2023 (Bn)



Global Green Building Materials Market Market Size Overview

12.3%

Global market CAGR, 2024 - 2029



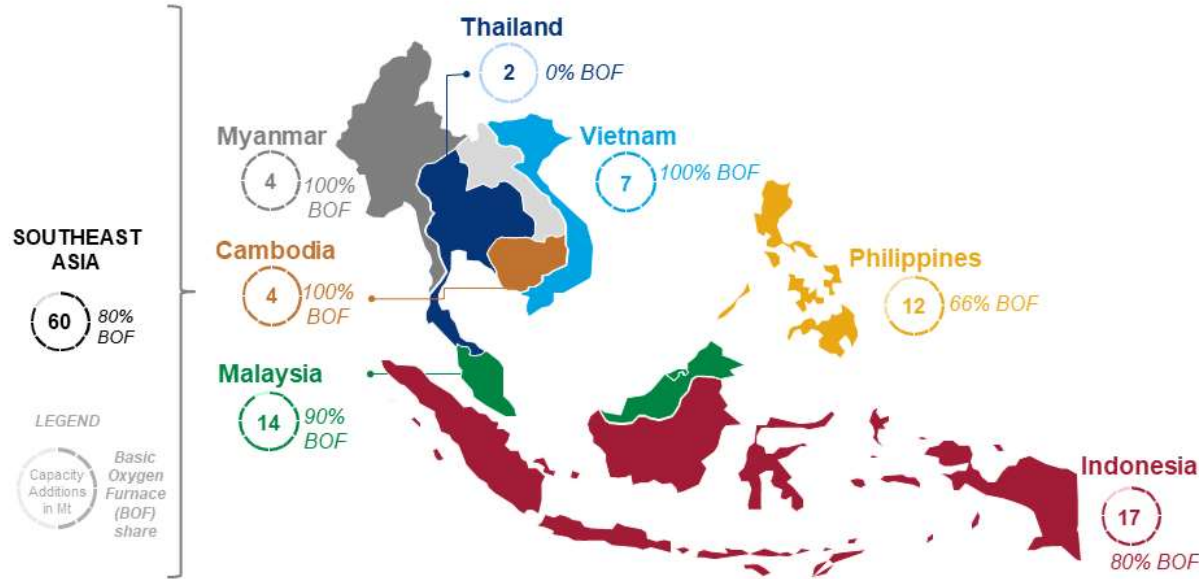
www.marketsandforecast.com

Source: Market Data Forecast Analysis

The common building materials imported from Asia

- Steel
- Cement
- Ceramic tiles
- Glass
- Timber

Planned steel capacity expansions in Southeast Asia, by country and technology



Source: SEAISI, OCED, Wood Mackenzie

Steel capacity additions throughout Southeast Asia have continued to rise. In 2020, 5 Mt was added; 60 Mt more is planned by 2030.

This extra capacity is led by Chinese investment, largely through the blast furnace route. We predict blast furnace production in the region will surge and elevate demand for iron ore and metallurgical coal.

- Growing innovations in steel manufacturing and processing technologies

Steel Rebar Market



- Significant growth in infrastructure development and urbanization projects across the globe
- Growing demand for steel rebar from non-residential construction
- Increasing availability of low-cost steel rebar alternatives and decreasing global steel production

Global Cement Market

Market Drivers

- Rise in Building & Construction Activities
- Expansion of Healthcare Infrastructure

By Type

- Portland
- Blended
- Others

US\$ 474.8 Bn

In 2022 (A)

Market Revenue

CAGR (2023-2031)

7.2%

Key Players

- CNBM
- Dangote
- Mitsubishi Materials
- CEMEX
- Siam
- Jaypee Cement
- China National Materials Co.
- Lafarge SA
- Titan

By Application

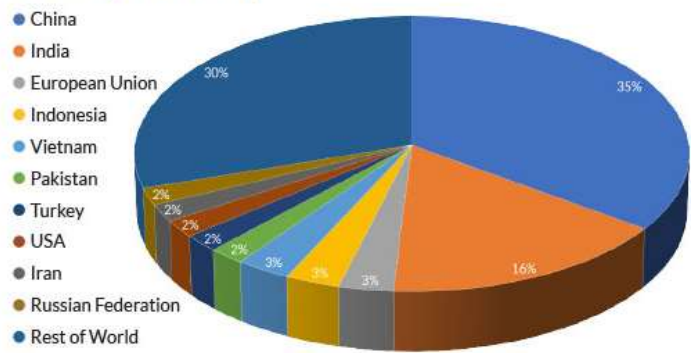
- Residential
- Commercial
- Infrastructure

By Region

- Asia Pacific
- Largest market share in 2022

<https://www.transparencymarketresearch.com/cement-market.html>

2030 (Forecast)

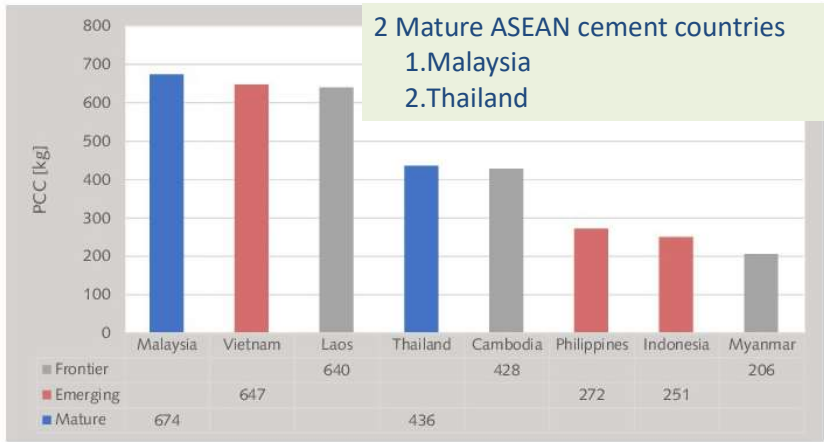


<https://www.worldcementassociation.org/about-cement>

Eight of the ten ASEAN countries have their own cement industry with significant clinker production.



https://www.zkg.de/en/artikel/zkg_Outlook_on_ASEAN_s_cement_industry-3403537.html



Drivers

- Rise in construction industry
- Rise in investment and infrastructure

Opportunity

- Introduction of technology
- Ecofriendly product advancement

Restraints

- High initial investment
- Difficult in maintenance

Objectives

01

Develop and Improve Ecolabel Criteria

- Focus on **Cement and Steel** product groups.

02

Promote Harmonization

- Mutual recognition with other ecolabels, especially in **ASEAN** and **GEN** member.

03

Support for SMEs:

- Assist **SMEs in the construction sector** to transition to a green economy.
- Facilitate ecolabel certification process.

04

Integrate Ecolabel Criteria

- Include these standards in **government contracts for building projects**.

Activity 1

Regional Harmonization of Building Materials Criteria



Objective

- **Harmonize ecolabel criteria** for building materials, starting with cement and steel.



Strategy Development

- Propose a strategy that **considers regional and international differences** in ecolabel criteria.



Collaboration

- Establish a working group with **ASEAN ecolabels and other GEN** members to discuss harmonization



Output

- Present **findings and guidelines** through various platforms including a session at the GIZ Exit Conference in Malaysia
- **At least 2 ecolabel schemes demonstrate interest in harmonizing criteria** for building products

Activity 2 Pilot Implementation



Objective

- Test and validate the harmonized ecolabel criteria by **implementing a pilot** for one building material product category.



Strategy Development

- **Develop pilot requirements** and establish clear **guidelines for manufacturers** to meet the ecolabel criteria.
- Focus on practicality, **ensuring the criteria are achievable.**



Collaboration

- Engage **manufacturers, particularly SMEs**, in the pilot program by offering **training and support.**
- **Monitor and evaluate** the effectiveness of the implementation, **collecting feedback** from stakeholders



Output

- **At least 10 manufacturers apply** for the pilot, including a diverse representation from **SMEs** and other groups.
- **At least 2 manufacturers meet criteria** in the pilot implementation.

Activity 3

Sustainable public procurement for green construction work service contracts



Objective

- Integrate the **harmonized ecolabel criteria into public procurement practices** in Thailand and potentially across ASEAN.



Strategy Development

- Conduct a comprehensive analysis of existing public procurement frameworks to **identify opportunities for ecolabel integration.**



Collaboration

- Collect and **summarize stakeholder opinions** via surveys, interviews, and consultations.
- Join the One Planet network's Consumer Information Programme and **attend workshops on SPP in construction in Asia to share and learn best practices.**



Output

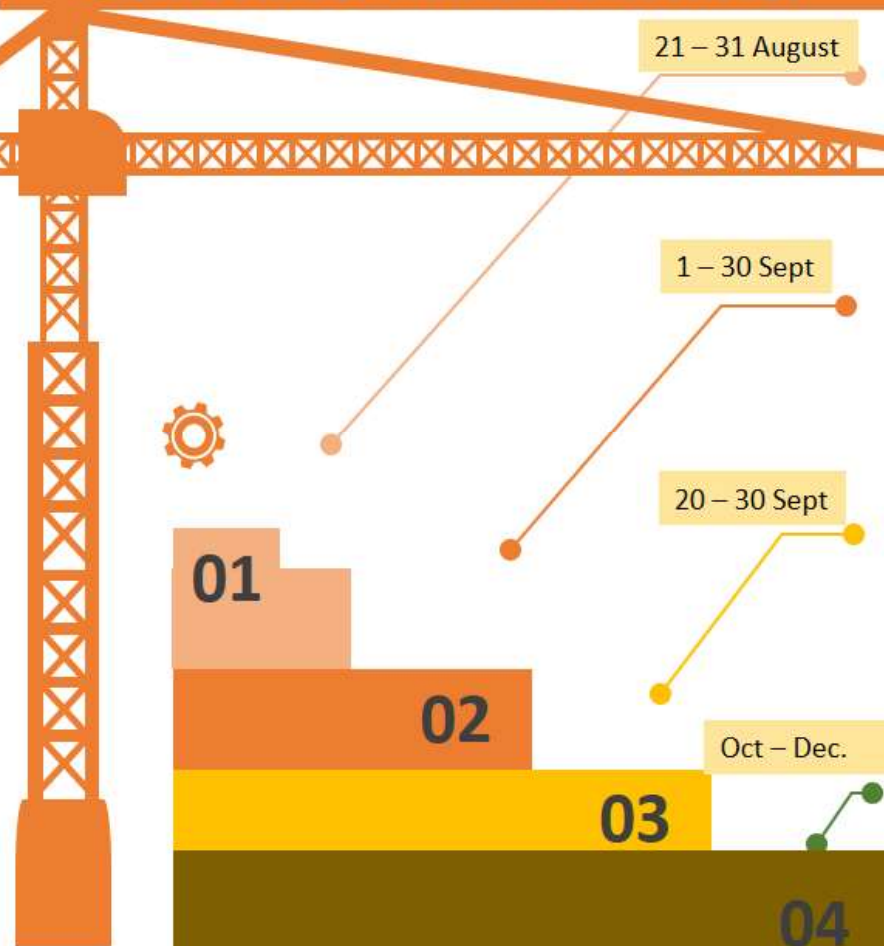
- Develop clear and actionable **guidelines for public procurers** to include ecolabel criteria in tenders and contracts.

Project Plan

Activity		2024					2025											
		Q3			Q4		Q1			Q2			Q3			Q4		
		Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1	Development of Harmonization criteria strategy.	→																
	Organize a session at the GIZ Exit Conference in Malaysia.	→			↓	The GIZ Exit Conference in Malaysia												
	Collect feedback from interested member.				→	↓	Harmonization strategy											
	Conduct a webinar to present the process results to other countries in partnership with the Consumer Information Programme.						→	↓	Webinar									
	Collect feedback from pilot and revised harmonization criteria.																→	↓
Activity 2	Announcement pilot requirements and training						→	↓	Guideline for manufacturers									
	Monitor and evaluate the report, collecting feedback from stakeholders.										→	Good Practice for manufacturers						
	Development of a Good Practice for manufacturers															→	↓	
Activity 3	Develop SPP guidelines for work service contracts for construction buildings.								→	↓	SPP Guidelines							
	Development of a Good Practice for procurers											→	↓	Good Practice for Procurer				
	Guidelines and good practice present to public procurers.															→		

Activity 1: Regional Harmonization

Step to develop Harmonization strategy



Literature Review

- Review existing ecolabel criteria
- Analyze the challenges and inconsistencies in current criteria
- Considering regional and international differences.

Stakeholder Analysis

- Identify and engage stakeholders, including manufacturers, industry associations, regulatory bodies, environmental organizations, and consumers.
- Conduct surveys or interviews to understand their perspectives and priorities regarding ecolabel criteria.

Criteria Evaluation and Selection

- Utilize life cycle assessment (LCA)
- Develop a comprehensive set of criteria covering environmental and biodiversity impact, resource efficiency, health and safety, and social responsibility.
- Prioritize criteria based on stakeholder input and feasibility.

Harmonization strategy **finalize by 15 Dec 24**

- Propose a strategy for harmonizing ecolabel criteria **18 and 21 Oct 24**
- Establish a framework for collaboration **By end of November 24**
- Develop guidelines for manufacturers to comply with harmonized criteria

1 - 15 December

Criteria for CEMENT from GEN member

After reviewing the ecolabel criteria for cement from GEN member countries and ASEAN neighbors, including Thailand, New Zealand, Taiwan, the Philippines, India, Sri Lanka, Australia, and South Africa, we found the following:

- Criteria from Asian countries like **Thailand, Philippines, and Sri Lanka** often **lack coverage on biodiversity impacts.**



- In contrast, **New Zealand, India, Australia, and South Africa** include sections on raw material acquisition, particularly mining, which impacts **biodiversity**. These should be referenced, and similar mining-related criteria should be added to reduce potential impacts.



WHICH CRITERIA SHOULD BE HARMONIZED.

Using the comparative data from the provided table.

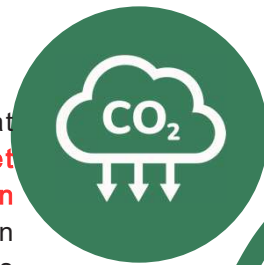
	Thailand 	Philippines 	Srilanka 	India 	Australia 	New Zealand 	South Africa
Cement							
4 Biodiversity	EIA	NA	NA	Enhancement of Mines life	Rehabilitation program	Quarry restoration plan	Biodiversity Act
3 Resource efficiency	-ISO 9001 -Reuse/recycle (Packaging)	Law	-ISO 9001 -Local Raw mat, -Water & Energy consumption	-Local Raw mat, -Water & Energy consumption	ISO 9001	-Alternative fuel >10% -Water & Energy consumption	Water & Energy consumption
2 Pollutant emission control	-ISO 14001 -Air, Water, Dust, Waste	Law	-ISO 14001 -EMS e.g. Waste Water, Waste, Air	Law	-ISO 14001 -EMS e.g. Air, dust, waste, water, noise)	-ISO14001 -EMS e.g. Waste Dust, water	-ISO14001 -EMS e.g. Waste, Dust, water, Pm, NOx, SOx
Health and safety	Heavy Metals (Packaging)	Law	-Chemical Management (limit VOC, Aromatic, Formaldehyde, heavy metal)	Law	-Banned Substances (heavy metal, carcinogen, mutagen)	Law	Banned Substances
Social responsibility	-Law -EPR -Takeback policy (packaging)	Law	-ISO45001 -Takeback policy	-Product stewardship -EPR -Takeback policy	-Law Employment -Workplace H & S -Racial Discrimination Act	Law	-Local Plants -Law Employment -Workplace H & S -Racial Discrimination
1 Carbon footprint report	< 800 kg CO2/ton (for structural works*) < 500 kg CO2/ton (for brickwork/plastering*) < 230 kg CO2/ton (mortar/others**)	NA	NA	-Reduce CO2 > 2% per tonne cement -PSC < 730 kg CO2/ton -PPC < 560 kg CO2/ton	< 605 kg CO2/t of cement. (cal. Production)	< 940kg CO2/t of cement. (cal. Production)	< 605 kg CO2/t of cement. (cal. Production) 15

PERSPECTIVES OF THAI MANUFACTURERS

categorized by criteria topics.

Carbon footprint (31%)

- **Criteria** for carbon emissions that **differ in each country should set criteria as a percentage reduction** instead of specifying a carbon footprint value, as each country has different emission factors.
- Concerns Regarding **Embedded Carbon and Calculation Scope**



Resource efficiency (18%)

- Recommend including criteria related to **alternative fuels** and **renewable energy**.

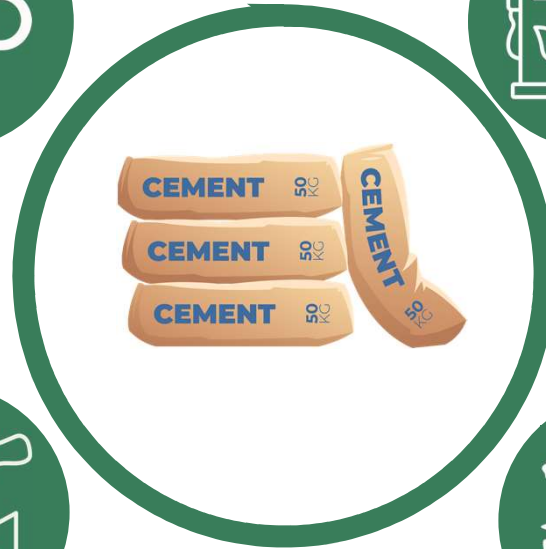
Pollutant emission (18%)

- **Depends on the legislation** in each country.



Biodiversity (18%)

- **Depends on** the Environmental Impact Assessment (EIA) **regulations of each country**.



Remark

- **Fact/Information**
- **Propose**

Criteria for STEEL from GEN member

After reviewing the ecolabel criteria for steel from GEN member countries and neighboring ASEAN nations, including Australia, India, New Zealand, Brazil, Japan, and South Africa, the following observations were made:

- Most ASEAN countries, such as the **Philippines**, and other Asian countries like **Sri Lanka**, currently **do not have established ecolabel criteria for steel**.



- The criteria from **India**, **New Zealand**, **Brazil**, and **Japan** generally lack comprehensive coverage regarding biodiversity impacts.



- In contrast, the criteria from **Australia** and **South Africa** include specific sections addressing the acquisition of raw materials, with a particular focus on mining processes that impact **biodiversity**. These criteria should serve as a reference, and it is recommended to incorporate similar mining-related criteria to mitigate potential environmental impacts effectively.



Which criteria should be harmonized.

Using the comparative data from the provided table.

	Thailand 	Brazil 	Japan 	India 	Australia 	New Zealand 	South Africa
STEEL							
1 Biodiversity	NA	NA	NA	NA	Rehabilitation program	NA	Rehabilitation program
1 Resource efficiency	-ISO50001 -Recycle raw mat -Water & Energy consumption Limit	-Water & Energy consumption	Consideration of new resources use	-Renewable Energy	Recycle raw mat and water	Energy and Water management	Energy and Water management
2 Pollutant emission control	-ISO 14001 -Air, Water, Dust, Waste	-Air, Water, Waste	Reduce waste generation	-EMS e.g. Waste Water	-EMS e.g. Air, dioxin, PCB, waste)	-EMS e.g. Waste Dust, water and Air	-EMS e.g. Waste Dust, water and Air
Health and safety	Heavy Metals -Radioactivity check	Heavy Metals	NA	NA	-Banned Substances	Banned Substances	Banned Substances
CSR Social responsibility	-OSHAH 18001	Labor Law	NA	NA	-Labour Rights	NA	-Local Plants -Local Labor
3 Carbon footprint report	< 1.0 t CO2 / t produced steel	CO2 emission inventory	Consideration of CO2 per tonne of crude steel	NA	< 1.6 t CO2 / t produced steel	NA	NA

PERSPECTIVES OF THAI MANUFACTURERS

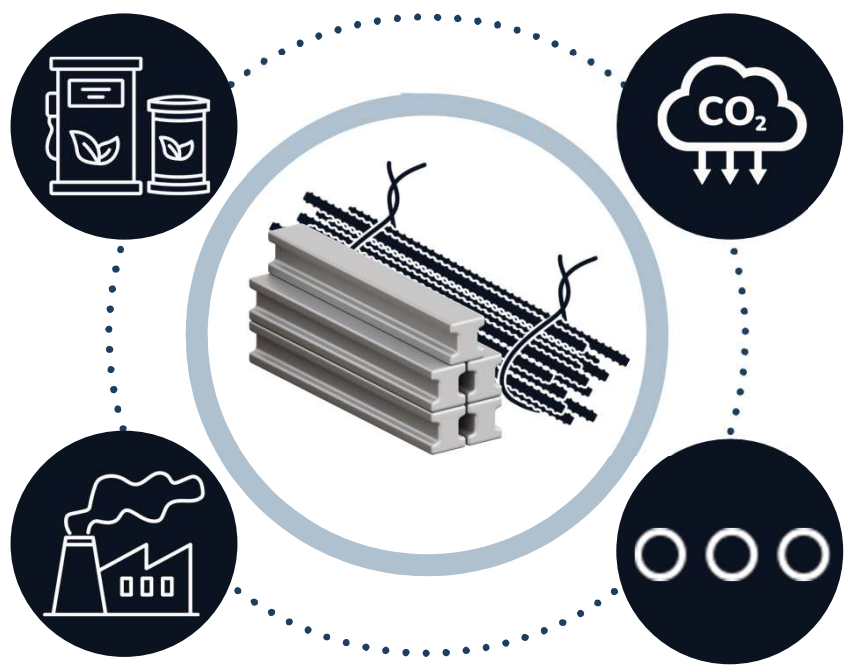
categorized by criteria topics.

Resource efficiency (39%)

- Caution is needed for water and energy conservation measures, as **Thailand lacks complete data.**
- **Renewable energy use in Thailand is limited,** making it hard to define exact amounts.
- **TGL criteria for rebar and steel pipes specifies water and electricity use** but **doesn't address raw material sourcing.**
- There are concerns about obtaining necessary documentation.

Pollutant emission (39%)

Depends on the legislation in each country.



Carbon footprint (11%)

- **TGL sets a strict limit of CO2 emissions.** The new limit should not exceed this standard.
- Recommend **using the GHG figure from TGL** for its positive environmental impact.

Other Concern (11%)

e.g. Harmonized Criteria

- Operators **should be able to obtain certification from one country** and use the label **in all collaborating countries.**
- The criteria should be universal, such as the implementation of the ISO 14001 system in all collaborating countries

Remark

- **Fact/Information**
- **Propose**

Propose product scope for the pilot project

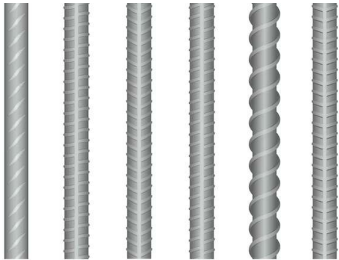


We inquired with the manufacturers about the product scope for the pilot project, providing details regarding other countries as follows



- Portland blast-furnace slag cement
- Hydraulic Cement
- Blended Hydraulic Cement (or Portland-Pozzolan Cement) ASTM C595
- Mixed cement
- Mansory cement ASTM C91
- Cementing product e.g. Mortar, Concrete

Steel bar



- BS 4449
- JIS G 31112
- ASTM A 615/A615M-96a
- ISO 6935-2
- JIS G3444
- ASTM A500
- BS EN 10219

Steel pipe



- Carbon steel for reinforcement concrete
- Steel bars for concrete reinforcement
- Deformed and plain billet-Steel bas for concrete reinforcement
- Steel for reinforcement of concrete-Part 2 : Ribbed bars
- Carbon steel tubes for general structural purposes
- Cold-Formed Welded Carbon Steel Structural Tubing in Rounds and Shapes.
- Cold Formed Welded Structural Hollow Section

Propose for harmonization agreement

General requirements

- Operate base on ISO14024
- Criteria should be universal, such as the implementation of the ISO standard
- Certification can use in all collaborating countries.
- Manufacturer shall be certified ISO 9001, ISO14001 or comply with these standards
- Manufacturer shall present the social responsibility practice e.g. EPR rules, Labor rights rules

Specific requirements

Cement

Key Focus Areas:

- Biodiversity conservation through EIA standard
- Percentage of CO₂ emissions reduction
- Resource efficiency improvements
- Use of alternative raw materials and fuels

Steel

Key Focus Areas:

- Limit level of CO₂ emissions
- Reduction of greenhouse gas emission
- Resource efficiency during steel manufacturing
- Recycling practices for steel

! Your opinion is value !

We kindly request your assistance in sharing your thought or distributing our questionnaire to manufacturers in your respective countries to collect similar preliminary information.

Cement



<https://forms.gle/ad5zYRCtvBt2Uy6bA>

Steel



<https://forms.gle/w8XTQzyWctsV7ivM7>

By 31 October 2024

Next step to develop harmonization strategy

- Propose a strategy for harmonizing ecolabel criteria 18 and 21 Oct 24
- Establish a framework for collaboration November 24
- Develop guidelines for manufacturers to comply with harmonized criteria 1 – 15 December



TEI THAILAND ENVIRONMENT INSTITUTE

สถาบันสิ่งแวดล้อมไทย

THANK YOU



www.tei.or.th/greenlabel/index.html



www.facebook.com/greenlabelthailand



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