

4.4 Carbon Trading

Cambodia, India, Indonesia, Thailand
and Vietnam

November 2024

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on the basis of a decision
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HEAT

WHAT WILL YOU LEARN?

What are Carbon Markets and Key Milestones

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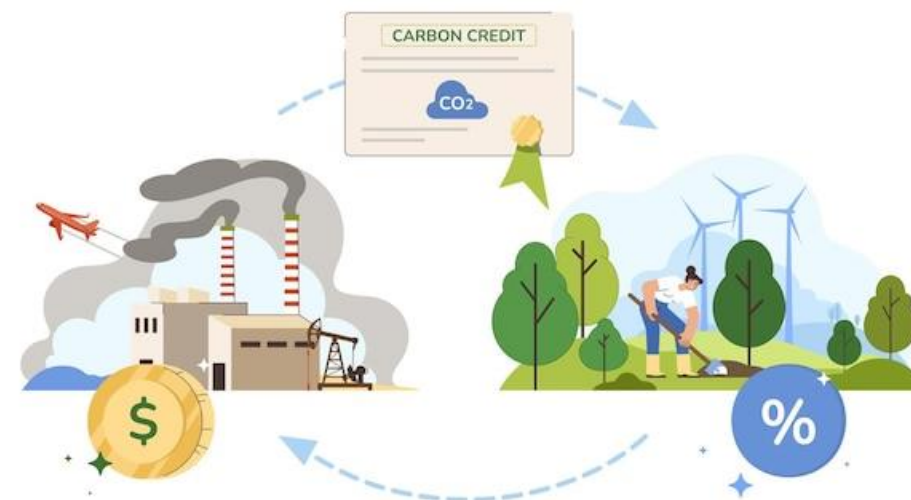
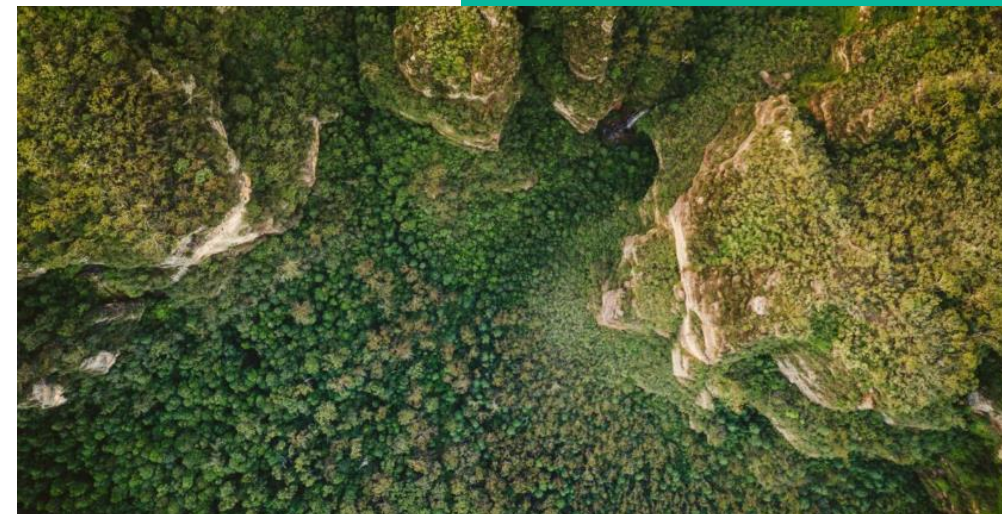
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CARBON MARKETS

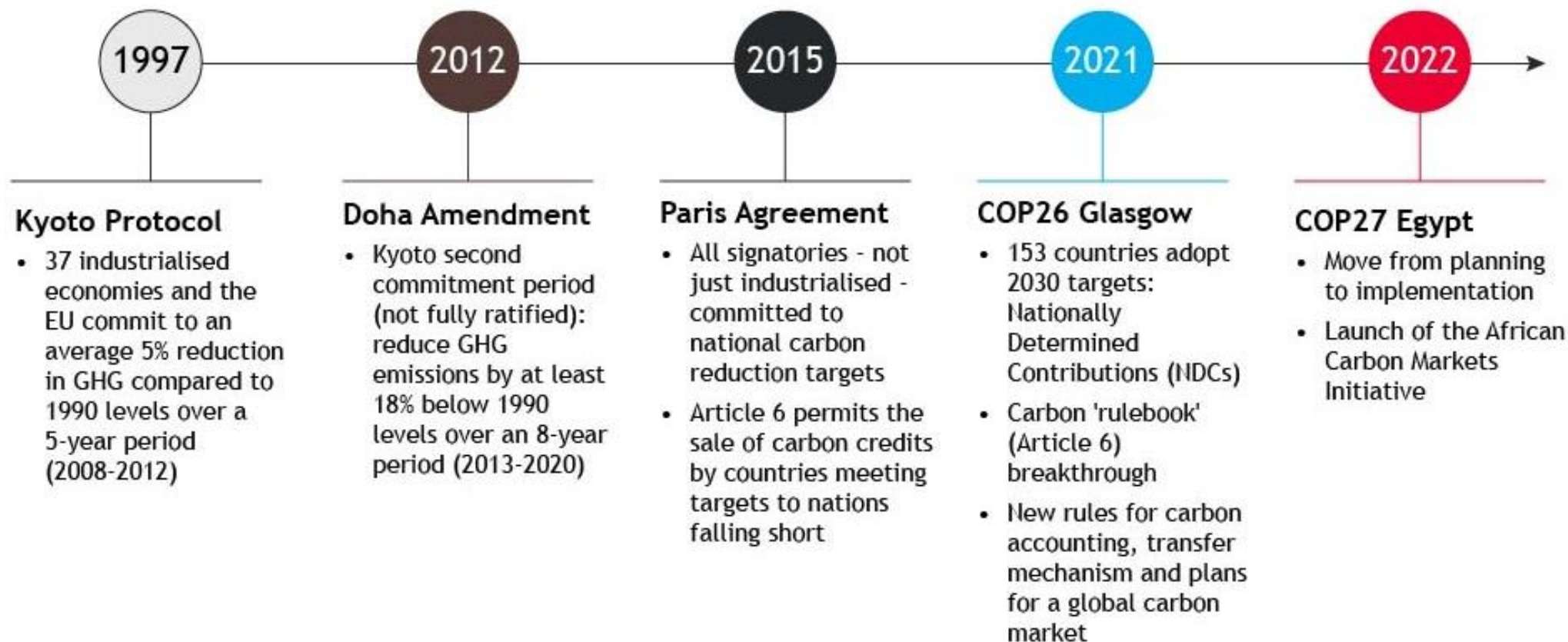
Introduction to carbon markets

- Carbon markets are **carbon pricing mechanisms** enabling governments and non-state actors to trade greenhouse gas (GHG) emissions credits
- **Carbon markets turn emissions reductions and removals into tradeable assets** (Credits are generated from emissions reduction projects, such as energy efficiency and clean energy projects)
- Carbon markets **mobilize resources, reduce costs and incentivize climate action** by enabling countries and companies to **trade carbon credits** through reduction and removal of GHG emissions and thus **transition toward net zero emissions**



OVERVIEW OF CARBON MARKETS

Key milestones



CARBON MARKETS

Its relation to NDCs and Article 6 of Paris Agreement

Significant components of Article 6:

Article 6.2

Creates the *basis for trading in GHG emissions reductions* (or mitigation outcomes) across countries

Article 6.4

Establishes a *mechanism for trading GHG emissions reductions* between countries under the supervision of the COP

Article 6.8

Recognizes non-market approaches to promote mitigation and adaptation. It introduces *cooperation through finance, technology transfer and capacity building*, where no trading of emissions reductions is involved

Article 6 Paris Agreement:

- *Allows countries to voluntarily cooperate with each other to achieve emissions reduction targets set out in their NDCs*
- *Countries will be able to transfer carbon credits earned from the reduction of GHG emissions to help one or more countries meet climate targets*

ARTICLE 6, PARIS AGREEMENT

How it supports carbon markets

- Corresponding adjustment requirements *may extend beyond compliance markets to the voluntary carbon markets*, where demand is driven by the private sector's voluntary commitments to reduce emissions
- *In 2023, 143 of 154 Parties stated in their NDCs that they plan to or will possibly use carbon credits from cooperative approaches under Article 6 as a means to finance climate action and achieve national targets*
- Thus, Article 6 *establishes an international carbon market* with *multilateral governance under the UNFCCC* setting *common global standards and guidance for development and trading in emissions reductions and Internationally Transferred Mitigation Outcomes*

Article 6 Paris Agreement:

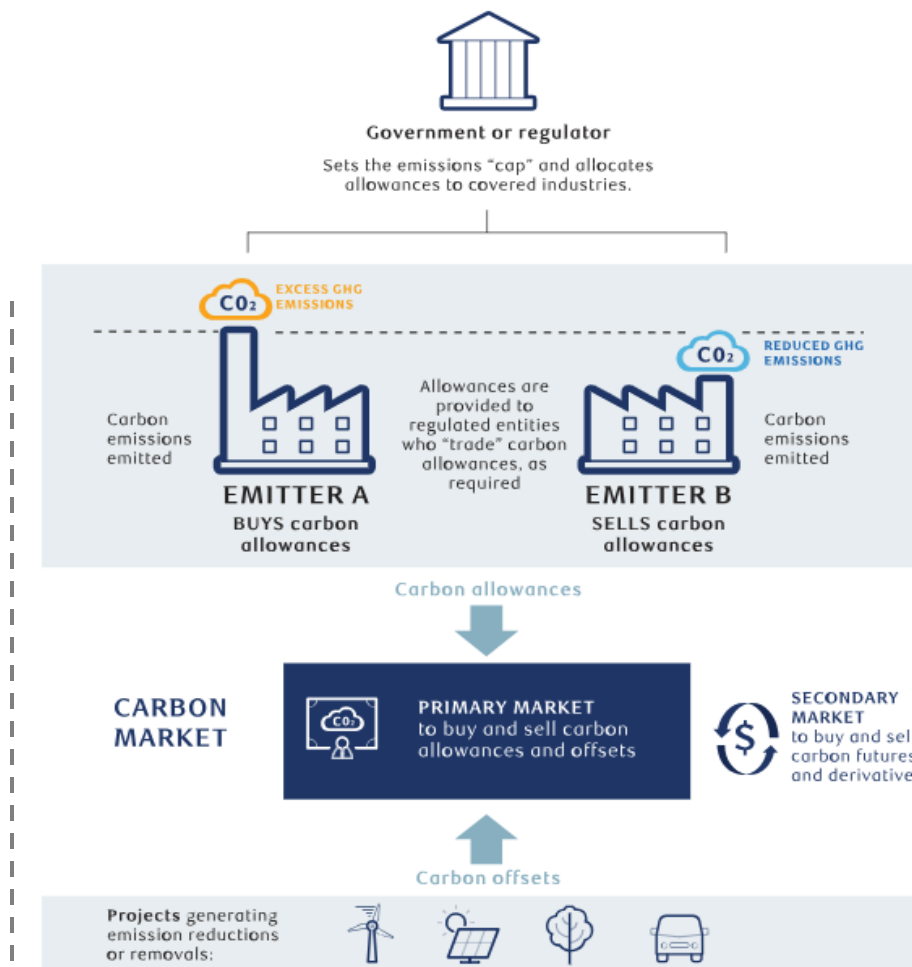
- *Article 6 pertains to the establishment of international compliance carbon markets governed by the rules of the Paris Agreement where countries can trade carbon credits*
- *The agreement on Article 6 established an accounting mechanism known as 'corresponding adjustment' to ensure that double counting does not occur*

CARBON MARKETS

Compliance and voluntary carbon markets

- Currently there exist two types of carbon markets: **compliance markets and voluntary markets**
- A compliance market is a market for **carbon offsets created by the need to comply with a regulatory act**. In a cap-and-trade emissions reductions market, actors buy and sell carbon offsets to comply with the cap or limit imposed on their emissions
- Some of the mechanisms are:
 - Emissions Trading Schemes (ETS)**
 - Clean Development Mechanism (CDM)**
 - Joint Implementation (JI)**
 - Carbon Tax**

Source: The Carbon Market, a Green Economy Growth Tool, Ministère de l'Environnement et de la Lutte contre les changements climatique.; Quebec, Canada;
https://www.environnement.gouv.qc.ca/changementsclimatiques/marche-carbone_en.asp



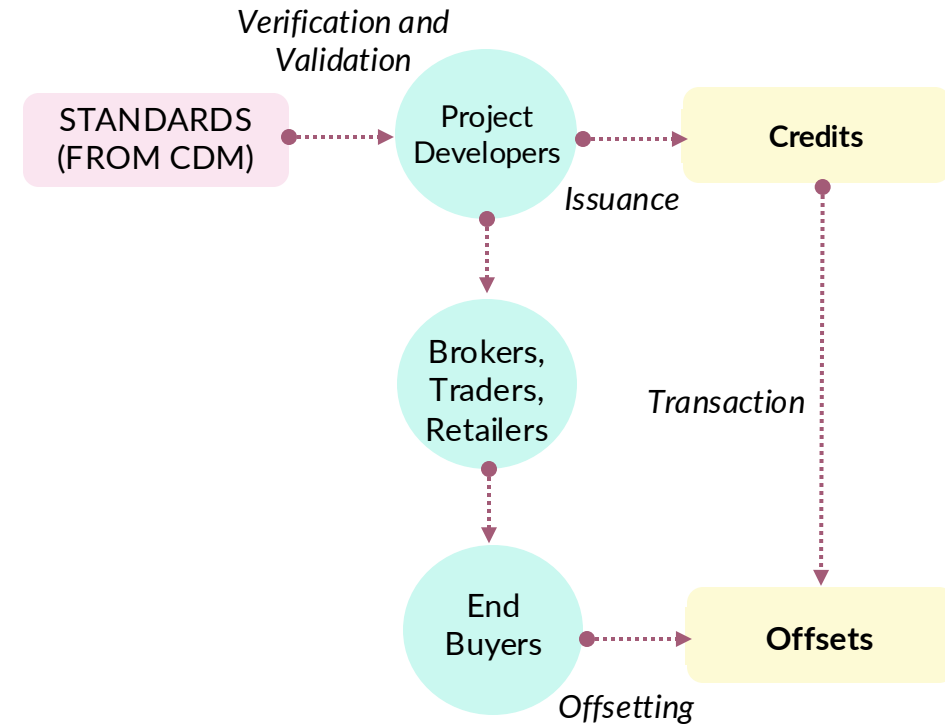
Compliance carbon markets, cap and trade program

Image: Carbon markets are growing: Here's what you need to know
<https://www.rbcwealthmanagement.com/en-eu/insights/carbon-markets-are-growing-heres-what-you-need-to-know>

CARBON MARKETS

Compliance and voluntary carbon markets (continued)

- The voluntary carbon market is a *decentralized market where private actors voluntarily buy and sell carbon credits* that represent certified removals or reductions of GHGs in the atmosphere
- Each carbon credit corresponds to *one metric ton of reduced, avoided or removed CO₂ or equivalent GHG*. It can be used by a company or an individual to compensate for the emissions of one ton of CO₂ or equivalent gases, becoming an offset. It is moved to a register for retired credits, or retirements, and it is no longer tradable
- Compliance markets are currently limited to specific regions. Voluntary carbon credits are significantly more fluid, unrestrained by boundaries set by nation states or political unions. *Voluntary carbon credits also have the potential to be accessed by every sector of the economy instead of a limited number of industries*



Structure of the voluntary carbon market

Source: S&P Global Platts

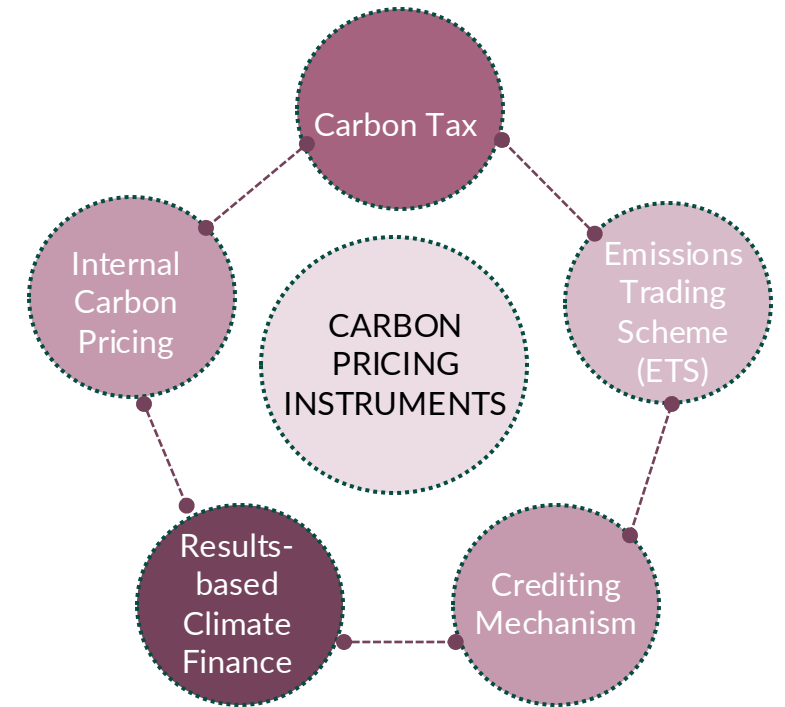
CARBON PRICING

The necessity for carbon pricing

Carbon pricing is an approach to reduce carbon emissions (also referred to as greenhouse gas or GHG emissions) that uses market mechanisms to pass the cost of emitting on to emitters – *“Polluter Pays”*

Why price carbon?

- Can be an **effective policy to spur innovation**, create lasting economic growth and help nations foster a low carbon economy
- Can provide an **economically efficient means of reducing GHG emissions**
- **Sends a price signal** that could **influence** widely dispersed **economic decisions**



Carbon pricing instruments

Source: Carbon Pricing Leadership Coalition

CARBON TRADING INSTRUMENTS

Carbon pricing

Carbon Tax

Puts a **direct price on GHG emissions** for every ton of carbon pollution emitted. It thus creates a financial incentive to lower emissions by switching to more efficient processes or cleaner fuels (i.e., less pollution means lower taxes)

Emissions Trading Scheme (ETS)

Also known as a **cap-and-trade system**—sets a limit ('cap') on total direct GHG emissions from specific sectors and sets up a market where the rights to emit (in the form of carbon permits or allowances) are traded

Results-based Climate Finance (RBCF)

Entities receive funds when they meet pre-defined climate-related goals, such as emissions reductions

Internal Carbon Pricing

Governments and firms assign their own internal price to carbon use to factor this into their investment decisions



Image source: Unsplash

Carbon pricing initiatives are considered 'scheduled for implementation' once they have been formally adopted through legislation and have an official start date and 'under consideration' if the government has announced its intention to work toward implementation



CARBON TAXATION

International norms and examples

The main idea behind taxation schemes is to incentivize emitters to invest in more sustainable technologies

The abatement costs are hard to quantify, setting the right carbon tax is challenging

Almost **one-third** of the carbon tax systems were introduced in the 1990s **by Scandinavian countries**

Smaller countries, including Estonia, Latvia, Liechtenstein, Switzerland, Iceland and Ireland **followed by 2010 and Japan followed in 2012** as the first non-European country

In the last five years, national taxation schemes have been implemented in Canada, Singapore and South Africa



Canada: Nationwide tax on oil, coal and gas



UK: Carbon tax has led electric utilities to switch away from coal



Singapore: Tax targeting GHG emissions from all fossil fuels used by facilities from the industry and power sector

Source: Pérez and Rhode, 2020

CARBON CREDIT TRADING

Standards and measurement, reporting and verification (MRV)

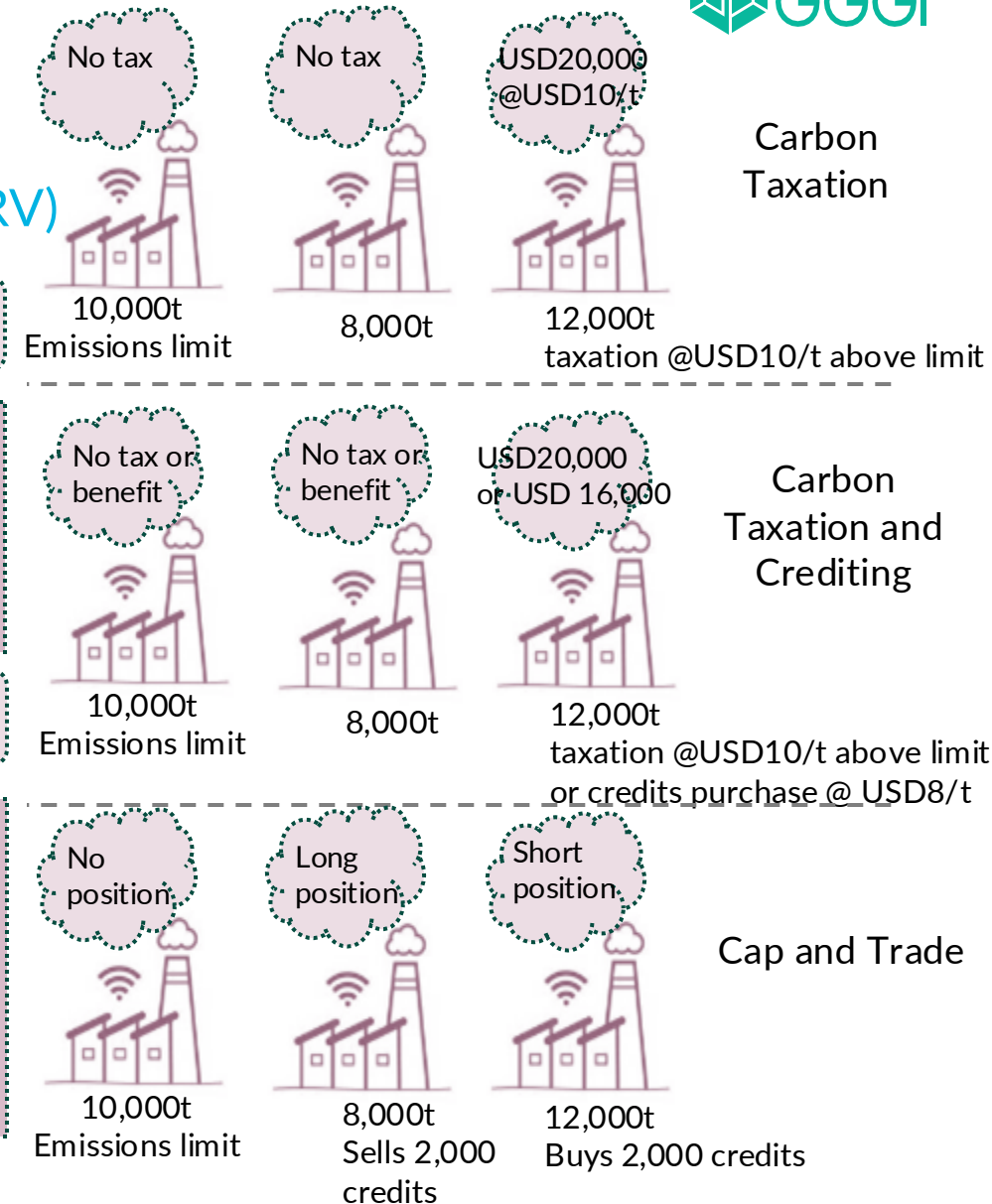
TIME PERIOD
Globally-agreed obligations or individual commitments
Paris Commitment – 2030
EU ETS Phase 4 2040

Units of CO₂e (Carbon Dioxide Equivalent)

- 1 ton CO₂ = 1 credit
- 1 ton CH₄ = 28 credits
- 1 ton N₂O = 265 credits
- 1 ton SF₆ (sulphur hexafluoride) = 23,500 credits

Standards

- UNFCCC for CDM
- EU for EU Trading Scheme
- Japanese Government for Joint Crediting Mechanism
- California Resources Board for California's Cap and Trade Program
- Verra and Gold Standards for Voluntary Carbon Markets



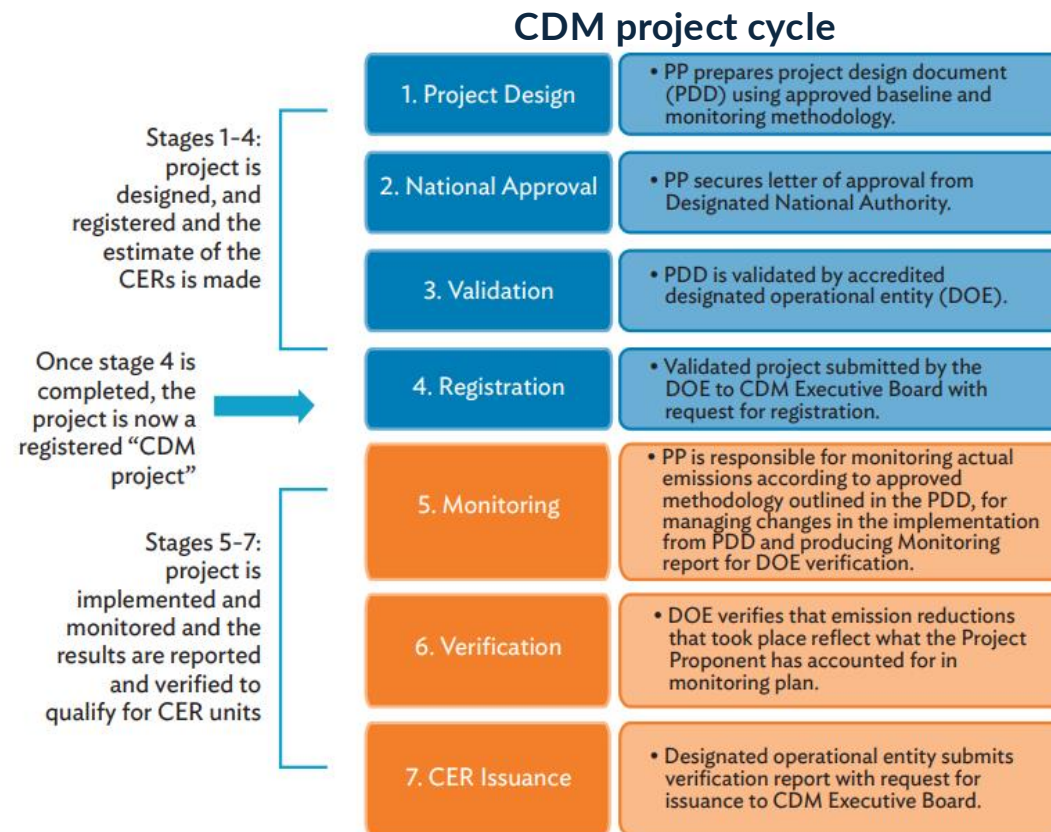
Source: Garnaik

CLEAN DEVELOPMENT MECHANISM

Standards and MRV

Eligible CDM project types:

- Energy Industries (Renewable / Non Renewable)
- Energy Distribution
- Energy Demand
- Manufacturing Industries
- Chemical Industries
- Construction
- Transport
- Mining / Mineral Production and Solvent Use
- Fugitive Emissions from Fuel (Solid, Oil, Gas)
- Waste Handling and Disposal
- Reforestation / Afforestation
- Agriculture and Metal Production



CER – certified reductions; CDM – Clean Development Mechanism; PP – Project Participants
 Note: the CDM project cycle can be broken in two main sections

Source: Asian Development Bank, 2016

Source: UNFCCC, 2014, What is CDM; <http://cdm.unfccc.int/about/index.html>

GOVERNMENT INITIATIVES

Cambodia: Initiatives for carbon trading

Cambodia enacted regulations on December 14, 2023, to implement Article 6 of the Paris Agreement within its borders

These include:

Article 6 Operations Manual

This manual provides a framework for issuing and transferring Internationally Transferred Mitigation Outcomes (ITMOs), which are referred to as authorized Greenhouse Gas Emissions Reductions (GHG ERs)

Positive List Inclusion

Projects must align with the updated Nationally Determined Contributions (NDCs)

Criteria for GHG ER projects



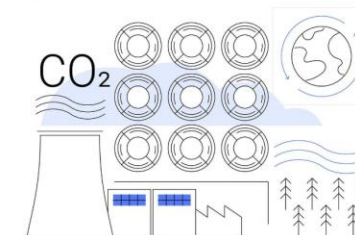
Positive list inclusion



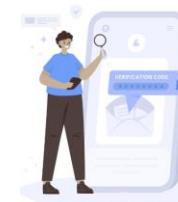
Domestic use preservation



Authorization period



Eligible carbon mechanisms



Verification and
additionality



Environmental
integrity



Alignment

Source: Ministry of Environment, Government of Cambodia, 2024

GOVERNMENT INITIATIVES

Cambodia: Initiatives for carbon trading (continued)

Various initiatives to reduce carbon emissions and achieve neutrality

Asia's Low Carbon Building Transition Project (ALCBT)

Launched in May 2024, this project aims to transition Cambodia's building sector to low carbon buildings. The goal is to reduce energy consumption and GHG emissions

REDD+ Program

The government has developed the REDD+ Program in several provinces to help reduce emissions from deforestation and forest degradation

Decarbonization

Cambodia is decarbonizing its transport and power sector



Source: Ministry of Environment, Government of Cambodia, 2024

Image source: earthjournalism.net

GOVERNMENT INITIATIVES

India: Initiatives for carbon trading

Carbon Credit Trading Scheme (CCTS)

Finalized in June 2023 and scheduled to begin in 2025–2026, this scheme aims to trade GHG emissions using carbon credit certificates. The CCTS has two mechanisms – compliance mechanism and offset mechanism

Perform, Achieve and Trade Scheme (PAT)

Launched in 2012, the scheme covers 13 energy-intensive sectors with *1,333 designated customers*

Renewable Energy Certificates (RECs)

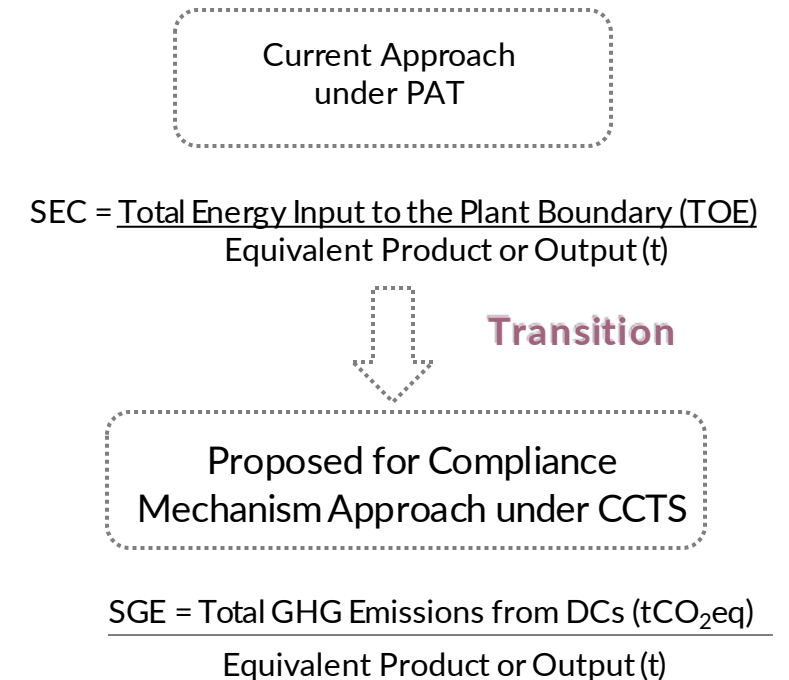
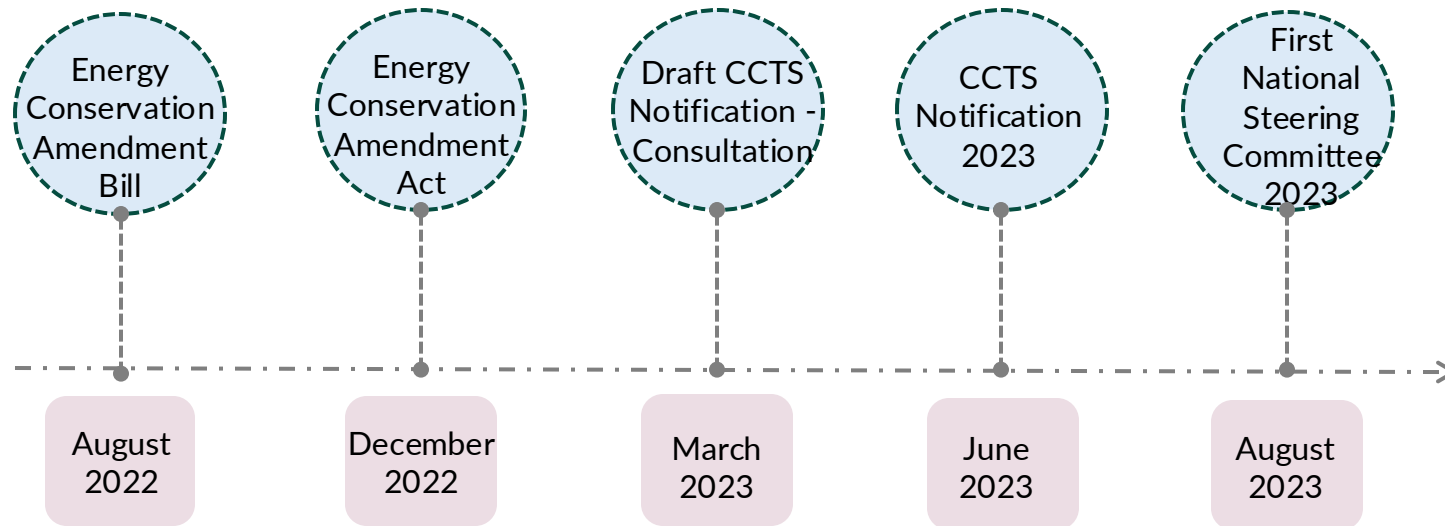
Launched in 2010, it covers 13 sectors including distribution licensees, captive consumers and open access users. *A total of 1,117 projects registered (~5,607MW)*

Green Hydrogen Energy and Battery Energy Storage System (BESS)

This is an accelerated movement to create an enabling environment through policy, research and market transformation

GOVERNMENT INITIATIVES

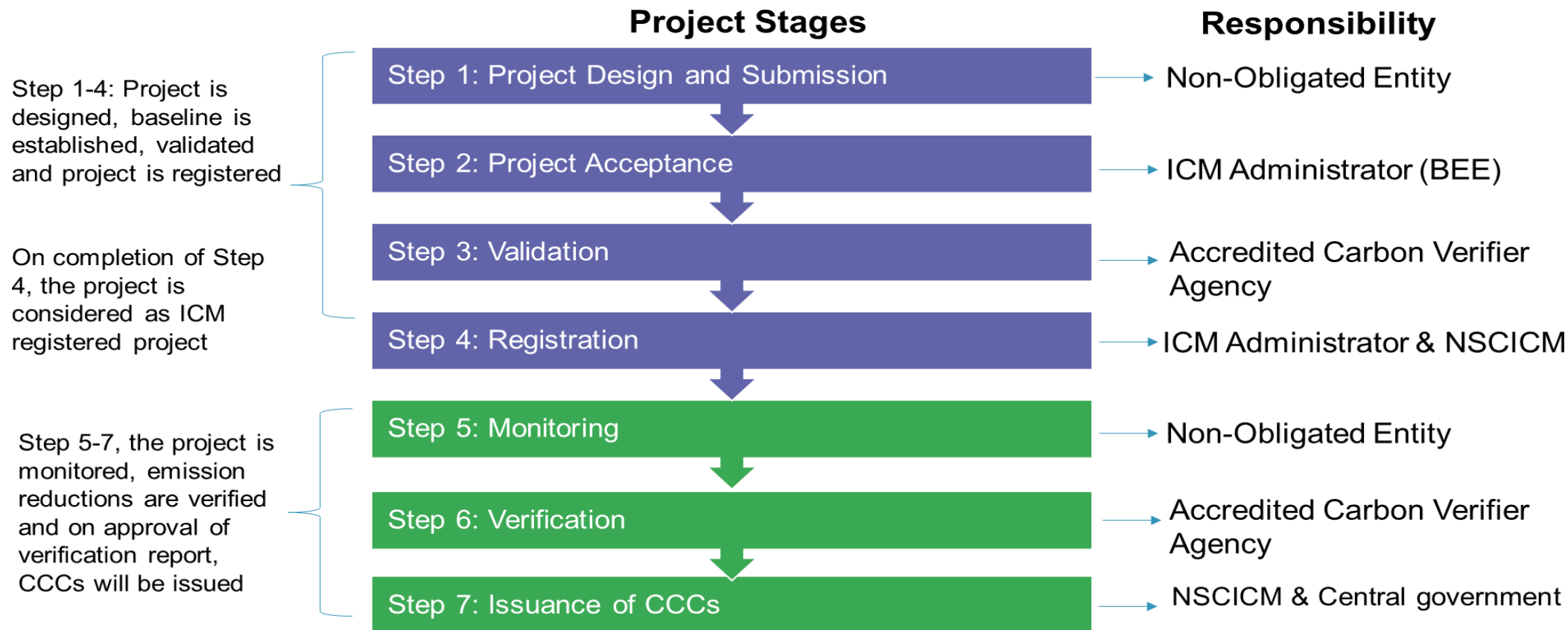
India carbon markets: Key milestones



Source: Garnaik

CARBON MITIGATION PROJECTS

India: Project stages and responsible agencies



Source: Garnaik

GOVERNMENT INITIATIVES

Indonesia: Initiatives for carbon trading

Presidential Regulation on Carbon Pricing and Indonesia Carbon Exchange (IDX Carbon)

On September 26, 2023, the Indonesian Stock Exchange launched the Indonesia Carbon Exchange to achieve the NDC and GHG emissions control in national development

Indonesian Economic Value of Carbon Trading Scheme

In February 2023, the Ministry of Energy and Mineral Resources launched the Indonesian Economic Value of Carbon (NEK) Trading Scheme. This mandatory, intensity-based ETS is for the power sector and targets coal-fired power plants connected to the Perusahaan Listrik Negara (PLN) grid

GOVERNMENT INITIATIVES

Indonesia: Initiatives for carbon trading (continued)

Issuing PTBAE-PU

PTBAE-PU are emissions allowance for the energy and forestry sector. This is applied to the power plant subsector in the energy sector, and mangrove and peat land located within or outside the forest area in the forestry sector. In January 2023, to kickstart carbon trading, the Ministry of Energy and Mineral Resources issued PTBAE PU for the power plant subsector to 99 coal power plants consisting of 42 power producers

Indonesia's Voluntary Carbon Markets

In 2022, Indonesia launched a voluntary carbon market that allows companies to trade carbon credits. Projects that generate credits include renewable energy, energy efficiency, and land-use changes, including forest conservation (REDD+)

GOVERNMENT INITIATIVES

Thailand: Initiatives for carbon trading

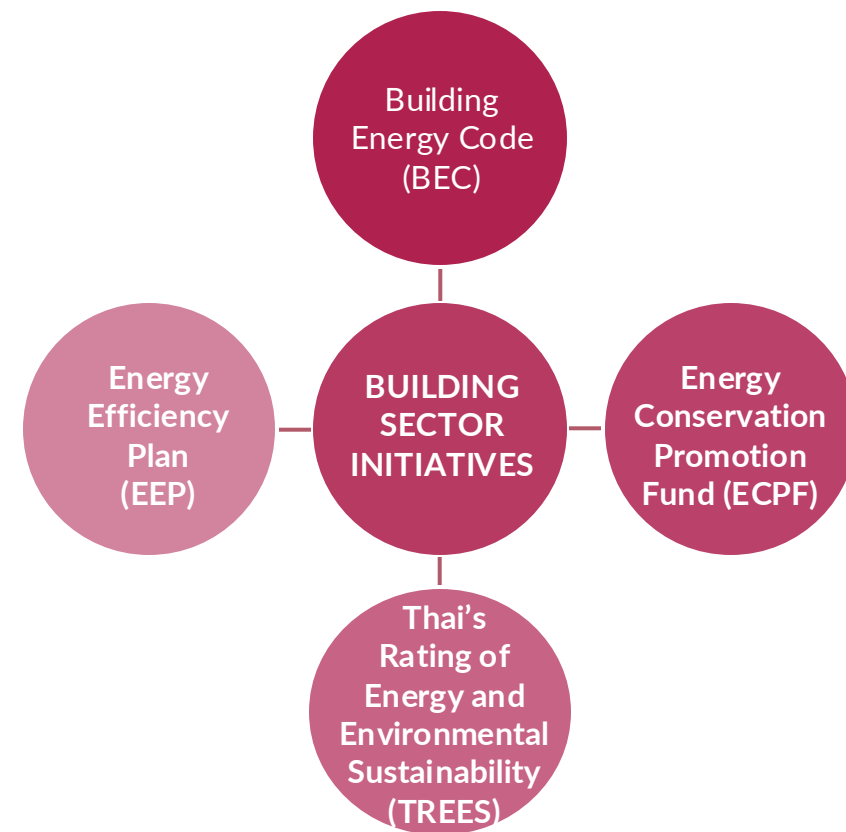
The Thailand Greenhouse Gas Management Organization (TGO) has developed the **Thailand Voluntary Emissions Trading System** (Thailand V-ETS) to promote GHG emissions reduction under the domestic voluntary carbon market

Thailand Carbon Offsetting Program

Organizations can offset their carbon emissions by purchasing carbon credits generated by approved **Thailand Voluntary Emissions Reduction** (T-VER) projects

Thailand Emissions Trading Scheme (under development)

A national carbon trading system to align with its commitment to carbon neutrality by 2050 is being developed. The framework is expected to be like the EU ETS, where emitters trade emissions permits to meet the cap



GOVERNMENT INITIATIVES

Vietnam: Initiatives for carbon trading

Carbon Credit Management Mechanism

On May 7, 2024, Prime Minister Pham Minh Chinh issued a directive to establish a carbon credit management mechanism. The directive aims to help businesses understand the carbon market and meet their NDC targets

Vietnam's National Carbon Market

Vietnam is working on **establishing a national carbon market**, which is expected to be operational by 2027, under the management of the **Ministry of Natural Resources and Environment**. The government has been developing a legal framework to support emissions trading, starting with pilot projects in the energy and industrial sectors. This will **eventually extend to the building sector, especially for large commercial and residential buildings**

GOVERNMENT INITIATIVES

Vietnam: Initiatives for carbon trading (continued)

Vietnam Voluntary Carbon Market

Vietnam is developing a **voluntary carbon market to encourage businesses and organizations** to reduce their emissions and trade carbon credits. Renewable energy projects, forest conservation and energy efficiency in the built environment can generate carbon credits that can be traded in this market

Joint Crediting Mechanism (JCM)

Vietnam participates in the Joint Crediting Mechanism with Japan, where both countries collaborate on low carbon projects. In this mechanism, **Vietnam earns carbon credits through energy-saving projects, including in the building sector**, which can be traded or used to meet emissions targets

National Carbon Credit Exchange

Vietnam plans to establish a national carbon credit exchange that will begin operations in 2028. Before the full rollout, the government will run a pilot carbon trading platform starting in 2025

Thank you!

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