Carbon Finance Environment Management and Environment Impact

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THE WORLD BANK
Environment, Natural Resources & Blue Economy

Previous WB Vision

"The World Bank Group has two ambitious goals: ending extreme poverty and boosting shared prosperity."

October 13, 2023

Ajay Banga delivered a landmark address on the Bank's new vision and mission at the World Bank-IMF Annual Meetings in Marrakech.

"To create a world free of poverty
– on a livable planet."

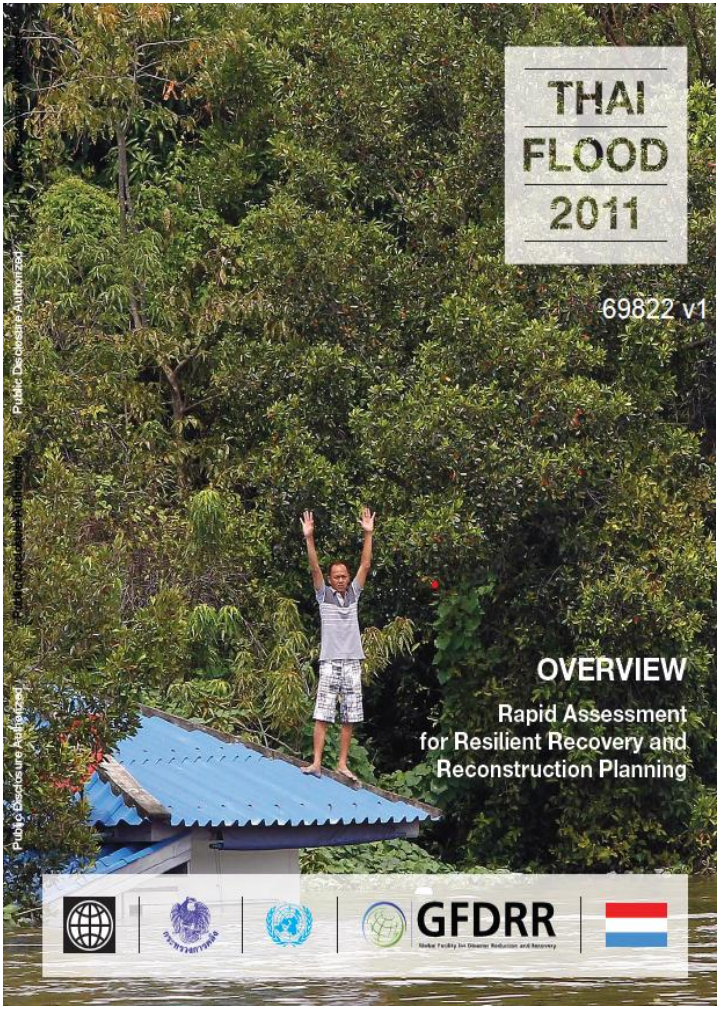
WB Climate Action: Mainstreaming Climate Change Considerations in SCDs

Achievement of Twin Goals and Sustainability

- Assesses climate change as a potential binding constraint to poverty reduction and inclusive growth
- Includes analysis of current and projected climate risks and opportunities (including impacts on GDP and jobs)
- Identifies groups with greater vulnerability to climate change, which could impact shared prosperity
- Determines extent to which climate change poses risks to and opportunities for growth (sustainability)
- Reflects NDC priorities and highlights ongoing government programs and policies supporting NDC implementation

Global Commitments	Kyoto Protocol	Montreal Protocol & KIP	Paris Agreement	ASEAN Marine Debris & Plastic Treaty

Thai Flood 2011: Rapid Assessment for Resilient Recovery and Reconstruction Planning



Damage, Losses and Needs Assessment (DALA) methodology

Damage

- Destruction of physical assets
- Occurs immediately and can be built back

Losses

- Foregone production/income
- Higher expenditures
- Occurs over a period of time and cannot be recovered

Total Effect = Damage + Losses

Damage → **Reconstruction Strategy**
Quality/Techno Improvement
Mitigation Costs
Relocation Costs
Multi-Annual Inflation

→ **Reconstruction Program**
Financing Needs
Reconstruction priorities:
- Sector
- Geographical
- Population groups

Damages and Losses are up to Bt1.4 trillion

Million Baht

Sub Sector	Disaster Effects			Ownership	
	Damage	Losses	Total	Public	Private
Infrastructure					
Water Resources Management	8,715	-	8,715	8,715	-
Transport	23,538	6,938	30,476	30,326	150
Telecommunication	1,290	2,558	3,848	1,597	2,251
Electricity	3,186	5,716	8,901	5,385	3,517
Water Supply and Sanitation	3,497	1,984	5,481	5,481	
Production					
Agriculture, Livestock and Fishery	5,666	34,715	40,381	-	40,381
Manufacturing	513,881	493,258	1,007,139	-	**1,007,139**
Tourism	5,134	89,673	94,808	403	**94,405**
Finance & Banking	-	115,276	115,276	74,076	41,200
Social					
Health	1,684	2,133	3,817	1,627	2,190
Education	13,051	1,798	14,849	10,614	4,235
Housing	45,908	37,889	83,797	-	**83,797**
Cultural Heritage	4,429	3,076	7,505	3,041	4,463
Cross Cutting					
Environment	375	176	551	212	339
TOTAL	**630,354**	**795,191**	**1,425,544**	**141,477**	**1,284,066**

Recovery and Reconstruction Needs (Build-Back-Better)

Sub Sector	Needs			Needs			
	Public	Private	Total	~6 mths	6-24 mths	> 24 mths	Total
Infrastructure							
Water Resources Management	54,075	15,000	**69,075**	3,023	15,462	50,590	**69,075**
Transport	23,583	–	**23,538**	6,866	14,376	2,296	**23,538**
Telecommunication	2,026	2,052	**4,078**	1,675	1,422	980	**4,078**
Electricity	5,625	–	**5,625**	899	3,037	1,689	**5,625**
Water Supply and Sanitation	5,633	–	**5,633**	2,997	2,635	–	**5,633**
Productive							
Agriculture, Livestock and Fishery	4,570	–	**4,570**	3,425	1,125	20	**4,570**
Manufacturing	–	854,356	**854,356**	172,640	668,045	13,671	**854,356**
Tourism	3,218	2,188	**5,466**	4,343	1,123	–	**5,466**
Finance and Banking	234,520	176,919	**411,439**	170,140	187,907	53,392	**411,439**
Social							
Health	2,318	–	**2,318**	1,128	870	319	**2,318**
Social	20,700	–	**20,700**	13,300	7,400	–	**20,700**
Education	13,343	–	**13,343**	8,045	5,298	–	**13,343**
Housing	5,110	46,870	**51,980**	14,990	12,510	24,480	**51,980**
Cultural Heritage	7,514	2,640	**10,153**	6,183	3,971	–	**10,153**
Cross Cutting							
Environment	6,161	2,004	**8,184**	3,724	1,619	2,841	**8,184**
TOTAL	**388,431**	**1,102,027**	**1,490,458**	**413,378**	**926,801**	**150,278**	**1,490,456**
Private needs				304,012	681,587	116,428	**1,102,027**
Public needs				109,366	245,214	33,850	**388,431**
as % post-flood revenues				5.5	10.8	1.4	

Thailand will need more than Bt1.4 trillion to rehabilitate for a stronger and more resilient economy

Adaptation Principles

APPLICATION (6 Actions, Toolbox K-L)

Prioritization, implementation, and monitoring

LEAD MINISTRY

Finance/economy and ministry in charge of climate change

PRIORITY AREA 1
(5 Actions, Toolbox B,
31 Indicators)

Facilitate the adaptation of firms and people

LEAD MINISTRY

Economy (NESDC)

PRIORITY AREA 2
(3 Actions, Toolbox C-D-E,
17 Indicators)

Adapt land use plans and protect critical public assets, services

LEAD MINISTRY

Planning, investment, or infrastructure (MOI)

PRIORITY AREA 3
(6 Actions, Toolbox F,
27 Indicators)

Help firms and people manage residual risks and natural disasters

LEAD MINISTRY

Interior, environment, social protection (MOI, MONRE, MOF)

PRIORITY AREA 4
(4 Actions, Toolbox G-H-I-J,
16 Indicators)

Manage financial and macro fiscal issues

LEAD MINISTRY

Finance (MOF)

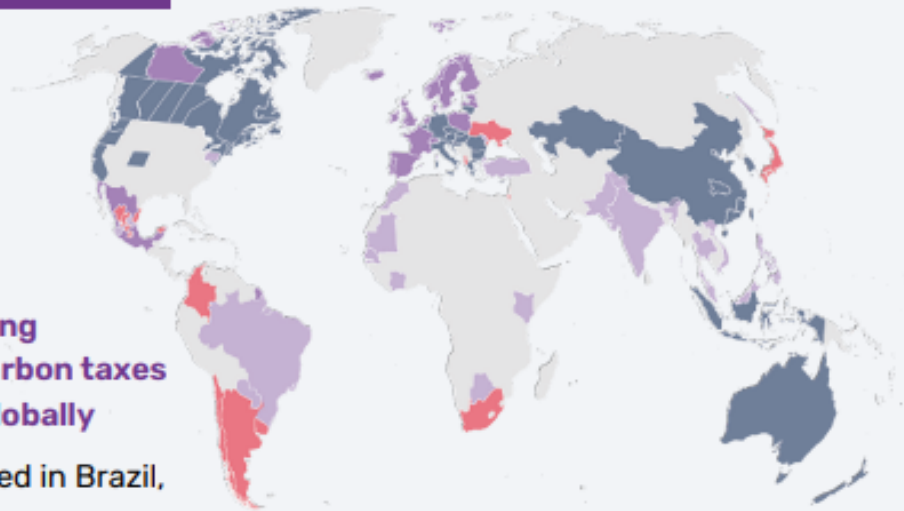
FOUNDATIONS (2 Actions, Toolbox A, 20 Indicators)

Rapid, robust, and inclusive development is the first priority

LEAD MINISTRY *Finance/economy (MOF, NESDC)*

State and Trends of Carbon Pricing 2025

CARBON PRICING

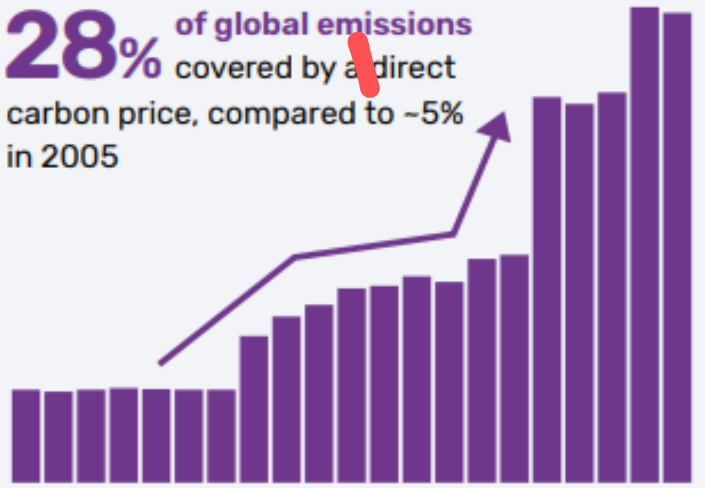


80

emissions trading systems and carbon taxes implemented globally

Plus ETSs planned in Brazil, India, and Türkiye

28% of global emissions covered by a direct carbon price, compared to ~5% in 2005



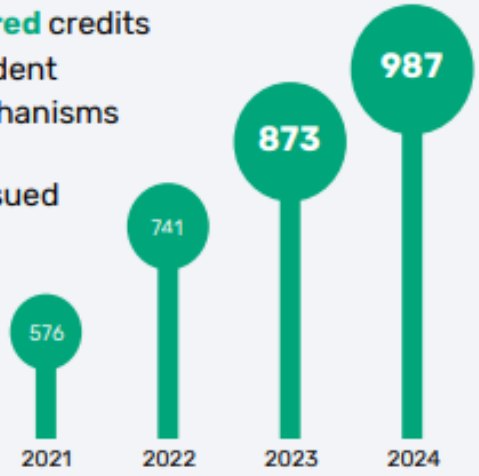
USD 100+ billion in revenues raised for second consecutive year

Over **50%** of revenue was used to support environmental, infrastructure, and development projects

CARBON CREDIT MARKETS

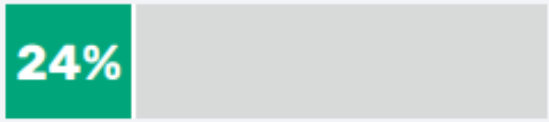
~1 **billion unretired** credits from independent crediting mechanisms

2/3 are from credits issued before 2022

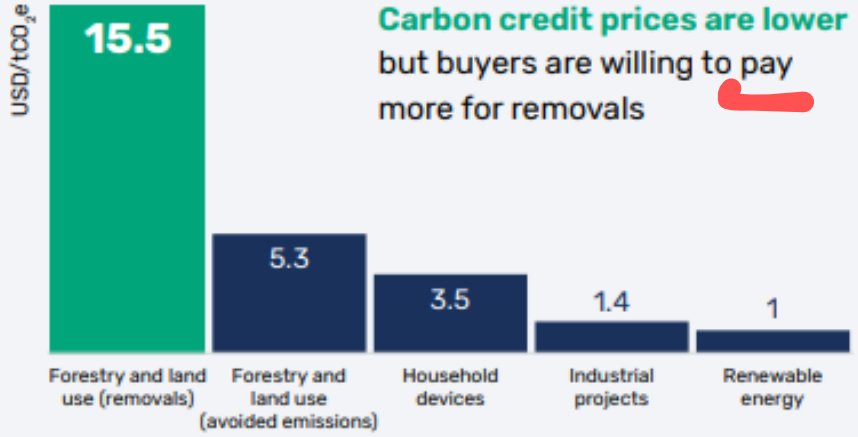


~3x **more domestic compliance retirements** in 2024, compared to 2023

In 2024, almost **a quarter** of global credit retirements were to meet domestic compliance obligations



Carbon credit prices are lower but buyers are willing to pay more for removals



As of April 1, 2025

Forestry Sector: REDD+ Readiness support & PROGREEN Forest Fire Management

REDD+ Readiness Support (FCPF)

- Institutional strengthening for REDD+ readiness organizations at national and regional level
- Analytical work on drivers of deforestation, based on which REDD+ Strategy will be developed
- Development of FREL and MRV system
- Inclusive stakeholder engagement process through SESA/ESMF process
- Benefit sharing mechanism
- Awareness raising on forests and climate change

Figure 2 REDD+ workshop (provided by Thailand government)

PROGREEN: Forest Fire Management

Activity 1: Wildfire Risk Map and Management Information System

The objective of the activity is to propose recommendations to increase the effectiveness of wildfire management, particularly in early warning systems and emergency response by:

- improving the accuracy of the wildfire risk map and the early warning system
- integrating DNP MIS information with other agencies' MIS systems on wildfire reporting and emergency response in the 9 northern provinces

Activity 2: Value Chain Assessment

The objectives of this activity are to:

- Review and understand the livelihood of people including ethnic groups living within and surrounding the forest areas with high occurrence of fire in the targeted landscape in 9 northern provinces (Chiang Mai, Chiang Rai, Lamphun, Lampang, Payao, Phrae, Nan, Tak, and Maehongsorn);
- Review the current efforts of the government and non-governmental organizations in providing alternative livelihoods as well as good agriculture practices/climate-smart agriculture practices to forest/non-forest dependent communities to avoid the wildfire;
- Propose options to increase income-generating activities. This will be done through community consultations in collaboration with relevant stakeholders to reduce wildfire risk; and
- Recommend policies along the proposed agricultural value chains to transform income-generating activities to prevent wildfires in the target/study areas.

PROGREEN

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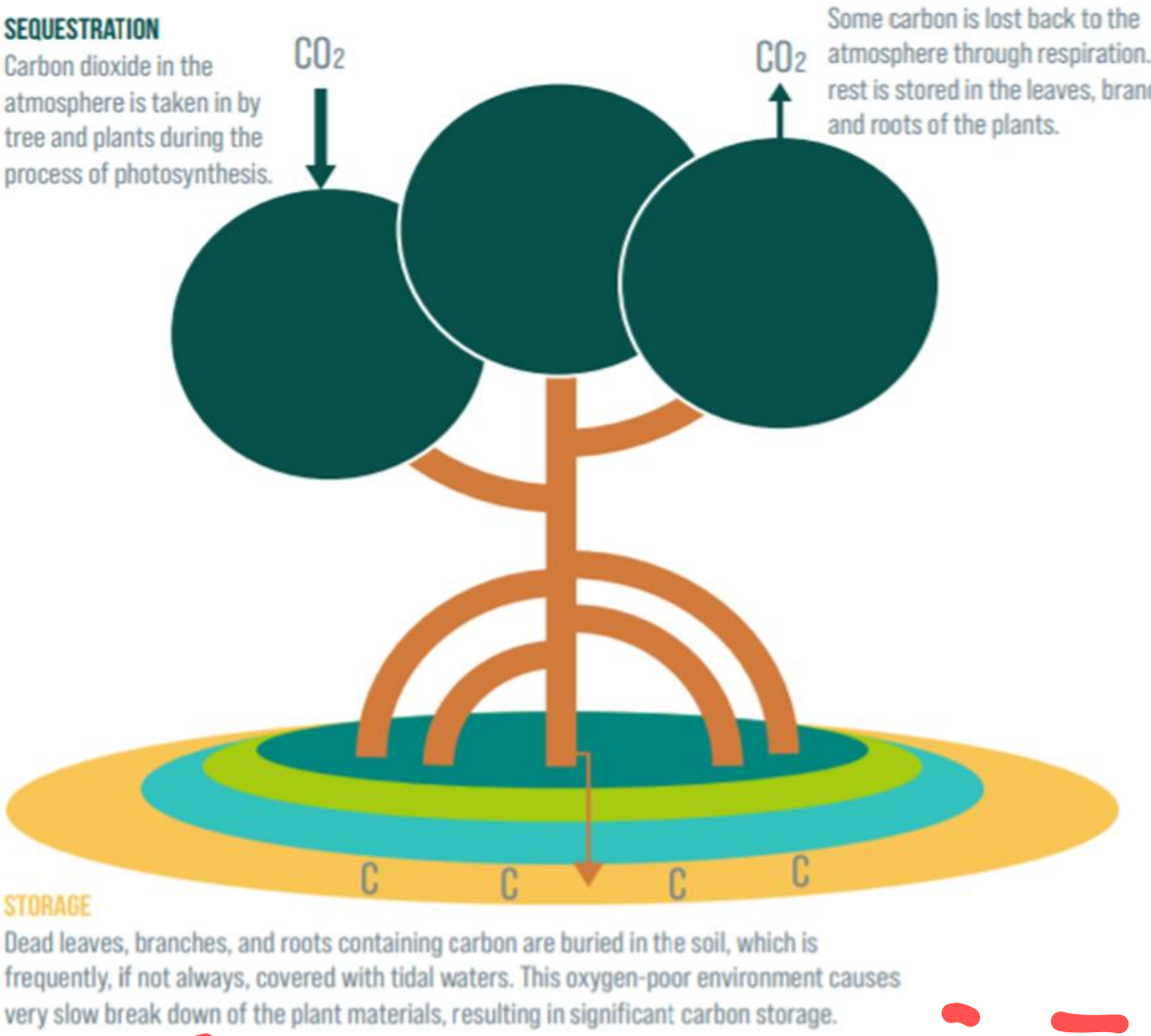
Environment, Natural Resources & Blue Economy

Importance of Blue Carbon

- *Defined:* carbon stored in marine and coastal ecosystems (mangroves, seagrasses and salt marshes)
- Over 170 countries host blue carbon ecosystems
- Provide essential benefits for **climate adaptation** (coastal protection and food security for many coastal communities) and **climate mitigation**
- Growing attention for its potential to absorb greenhouse gas emissions.
  - Blue carbon habitats can sequester and store more carbon per unit area than terrestrial forests

- **COP26 (Article 21) - marine ecosystems recognized for the first time as a critical carbon sink**

Mangroves - Carbon Capture and Storage



Like all forests, mangroves convert carbon-dioxide into **leaves, wood and roots, increasing their carbon stocks in biomass** as they grow.

One reason that blue-carbon ecosystems make such effective sinks is that **submerged forests are denser than their land-based equivalents.**

They can also trap **floating debris and organic matter, which settles on the sea floor** and can double the amount of carbon stored away.

Source: The State of the World's Mangroves, 2021

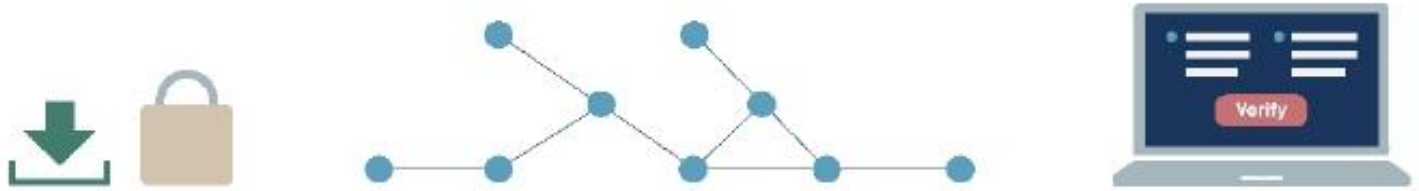
TRACEABILITY IN THE AG VALUE CHAIN

1
Farm production
Commodity harvested on farm within a defined distance from an aggregation point

2
Commodity aggregation site
Farmers deliver goods to an identified location

3
Goods delivery recorded
Quantity of goods, batch number, GPS location, delivery, etc

4
Satellite-based deforestation rating
Change analysis performed on real-time and historic satellite data based on the geographic location of the origin of the goods



5
Data securely stored
Delivery data and change data securely stored

6
Data is available on a blockchain-like technology
Data captured is made publically available on a decentralized private blockchain-like technology

7
Verification information utilized
Stakeholders and third parties can verify the origin and status of the product by accessing the public and immutable data record

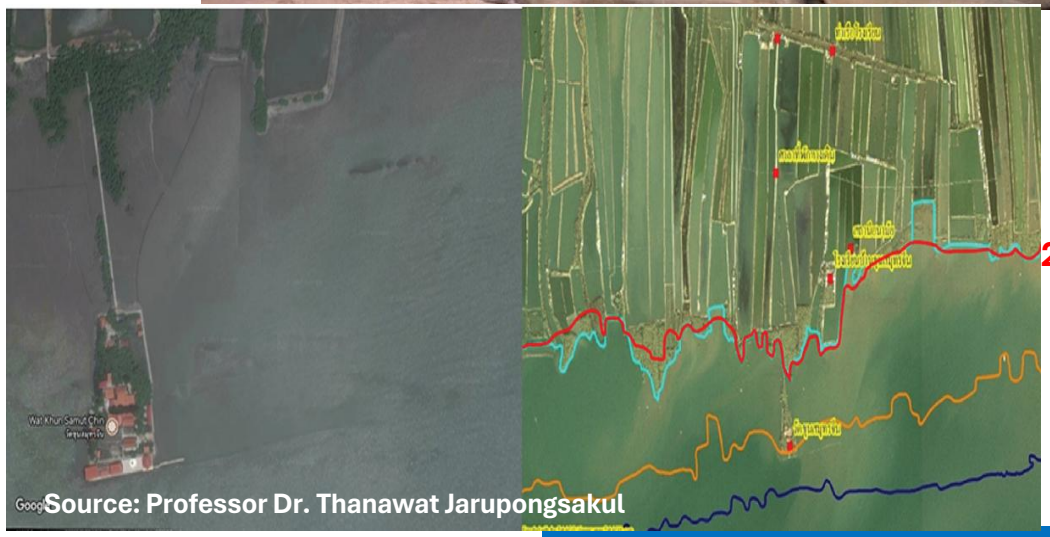
WORLD BANK GROUP
Climate Change

BioCarbon Fund

Example Cases of Adaptation and Sustainable Environmental Impact Management

BEFORE

AFTER



LEED - Leadership in Energy and Environmental Design

ESG Finance

Inventory

Intangible Assets

Goodwill

DJSI – Dow Johns Sustainability Indices

THANK YOU