Presenter: Dr. Vu Tan Phuong

Director of Vietnam Forest Certification Office (VFCO)

Having 30 years working experience in forestry sector in Vietnam, Dr. Phuong has implemented numerous researches and consulting activities on forest carbon, forest pricing for policy development, greenhouse gas inventory, emission reduction projects and participated in the development of Nationally Determined Contributions (NDCs) in the field of land use, land use change and forestry (LULUCF).

Hợp tác Đức
DEUTSCHE ZUSAMMENARBEIT

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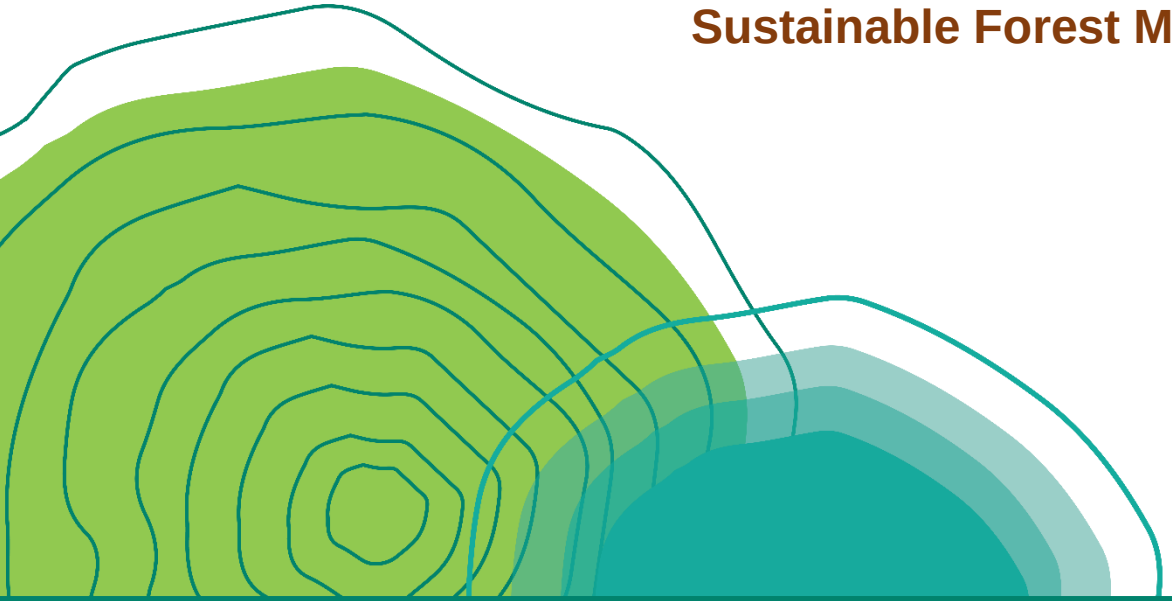
BỘ NÔNG NGHIỆP VÀ PHÁT TRIỂN NÔNG THÔN

BAN QUẢN LÝ CÁC DỰ ÁN LÂM NGHIỆP
MBFP

OVERVIEW OF FOREST CARBON AND CARBON TRADING IN FORESTRY

Mr. Vu Tan Phuong

Sustainable Forest Management Certification Office

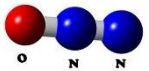


Fundamental knowledge (Basics)

Climate change

- Climate change is changes in climate over time, including both natural **and human-caused changes** (IPCC, 1990).
- Manifestations of climate change include:
  - Changes in soil surface temperature
  - Sea level rise;
  - Changes in precipitation (amount and pattern of precipitation)
  - Extreme weather phenomena (hurricanes, droughts, etc.);
  - Is the greatest environmental challenge of the twenty-first century
  - The main cause is **an increase in the concentration of greenhouse gases** in the atmosphere, mainly due to human activities

Greenhouse gas

Chemical symbol	GWP	Life cycle	Source
CO_2 	1	100	**Burning fossil fuels, loss of biomass, cement production, etc.**
CH_4 	25	12	Burning fossil fuels, agriculture (cattle breeding, fertilization), waste landfill
N_2O 	265	212	Use of fertilizers, burning of fossil fuels, biomass, industrial processes
CFC, [illegible]	10.000-23.000	100 – 3.200	Điện lạnh, chuyển đổi điện năng

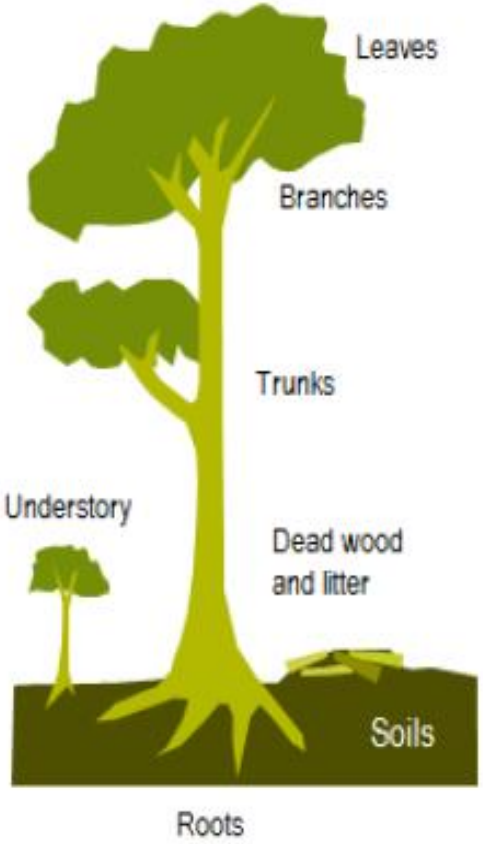
- Gases that cause global warming effect
- All calculated GHGs are converted to the unit of calculation as CO2**, called CO2 equivalent**, abbreviated as CO2e/CO2eq. Convert using global warming coefficient (GWP)
- For example, the emission of 1 ton of CH4 attributable to CO2 would be: 1 ton of CH4 x 25 = 25 tons of CO2eq
- For details on GHG emissions, please visit: CO_2 and Greenhouse Gas Emissions - Our World in Data

Carbon pools

Five main carbon pools:

- **Above-ground biomass (AGB)**
- **Below-ground biomass (roots), BGB**
- Deadwood and, vegetation biomass
- Understory vegetation and shrub biomass
- organic carbon in soil

Land use activities, land use change, and forest management directly affect the changes in carbon pools



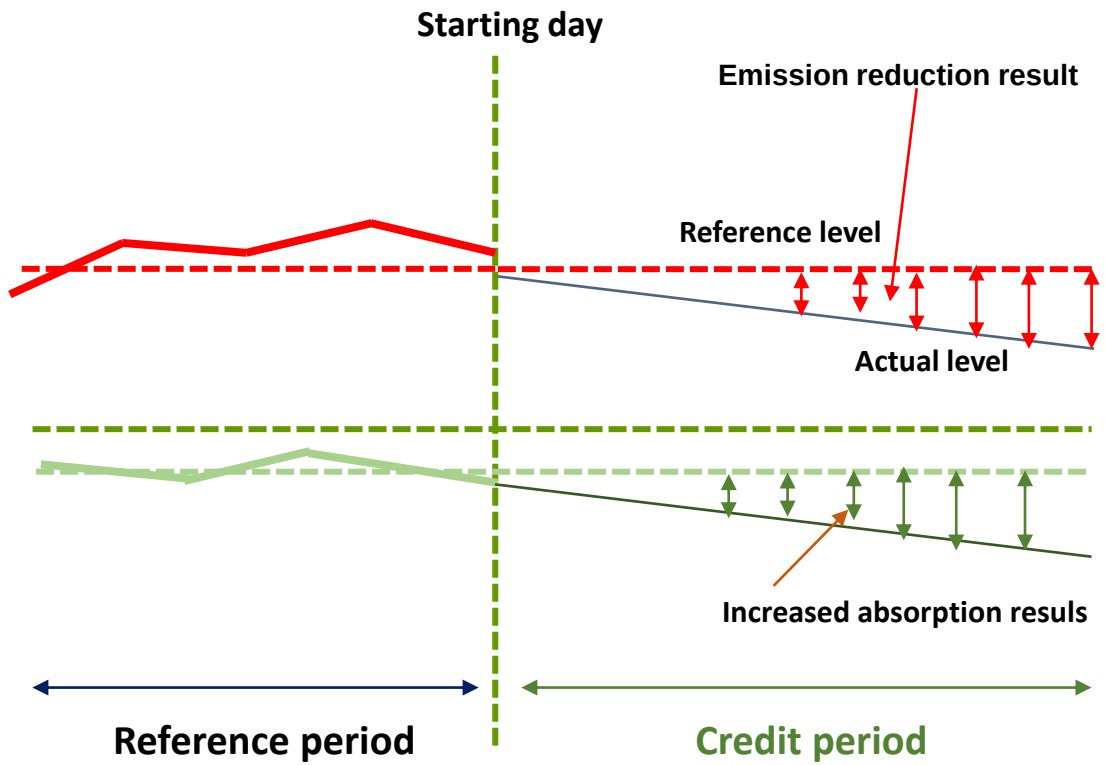
Mitigation measure

1. Are measures to **reduce greenhouse gas emissions** and/or **increase carbon removal**.
2. In forestry, measures to reduce emissions and increase carbon removal include:

- Measures to control deforestation, forest degradation, forest fires
- Measures to plant new forests, improve the quality of natural forests and planted forests; agroforestry cultivation, etc.

Emission/removal reference level

- **An emission/removal reference level,** also known as a baseline, is a reference emission/removal level over a specified period of time in a given geographic area, used to calculate the results of emission reductions or carbon removal increase from interventions
- The development of a reference level can be based on **the past** or based on future scenarios (Business As Ussual – BAU)

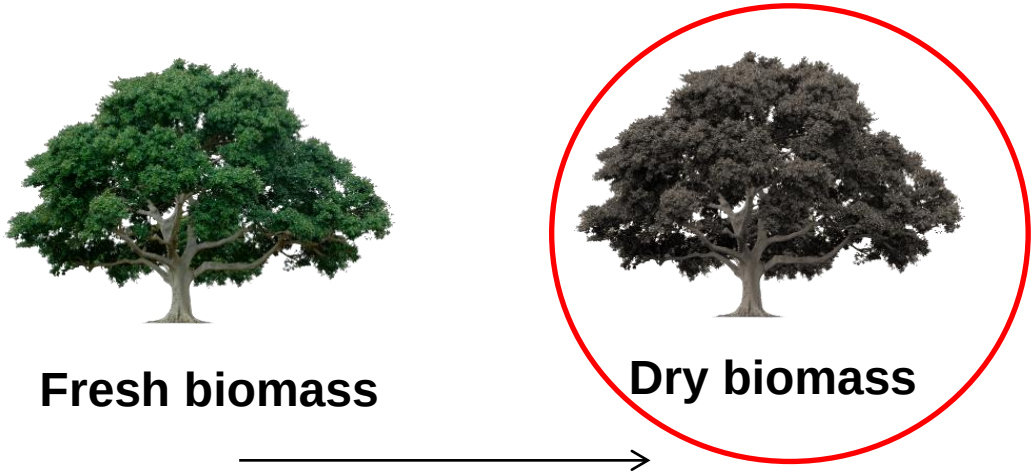


Carbon credit

- **Carbon credits are the amount of reduced carbon emission, increased carbon removal compared to the reference level**
- That is generated from implementation of mitigation measures in compliance with regulations on measurement, monitoring and reporting methods appraised and verified by an independent 3rd party.
- **Validated and verified by an independent 3rd party.**
- Registered and recognized:
- 1 carbon credit equals 1 ton of CO2eq

Biomass

1. Is the mass of dry matter (stems, branches, leaves, roots, etc.), usually expressed as tons/ha (t.d.m/ha)
2. As the basic unit used in calculating changes for biomass carbon sinks

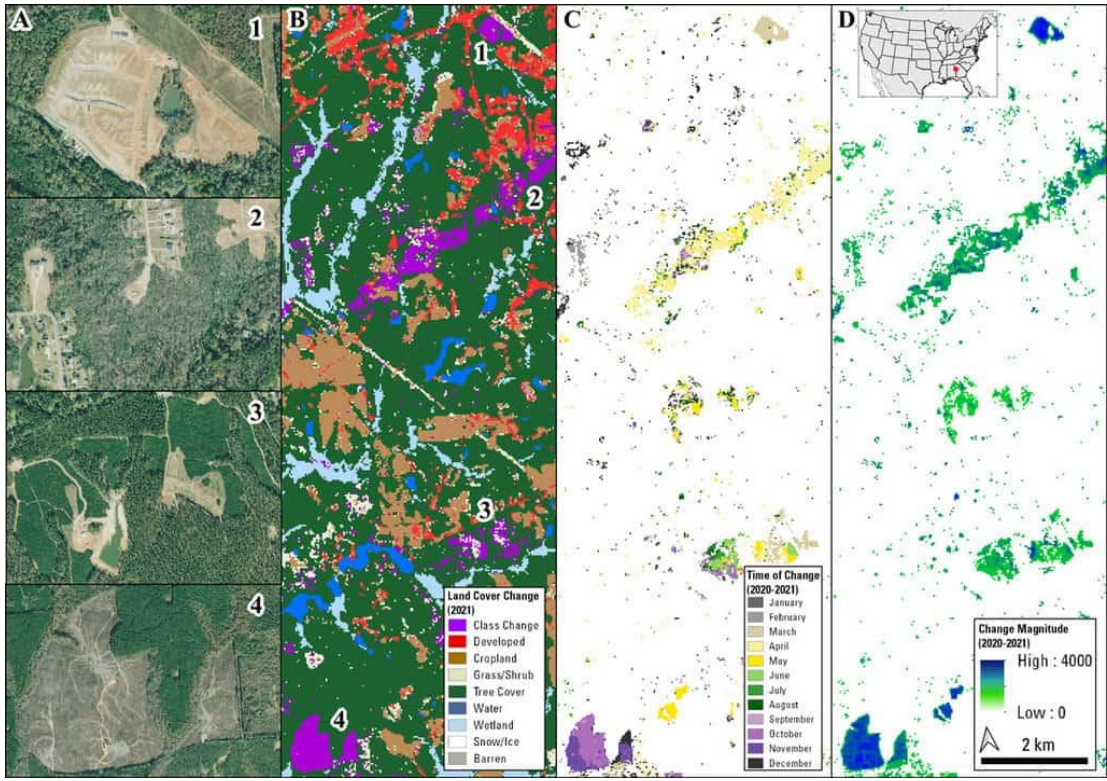


Fresh biomass divided by 2 (~50% water content – location and season)

Activity Data (AD)

- As one of the input data used in calculating carbon emissions/removal
- These are data indicating the direct relevance to carbon emissions or absorption. In the field of forestry and land use, these data include:

- Area of different types of forests/land
- Changes in the area of different types of forests/land
- Volume of harvested wood
- Amount of fuel used
- etc.



Emission Factor (EF)

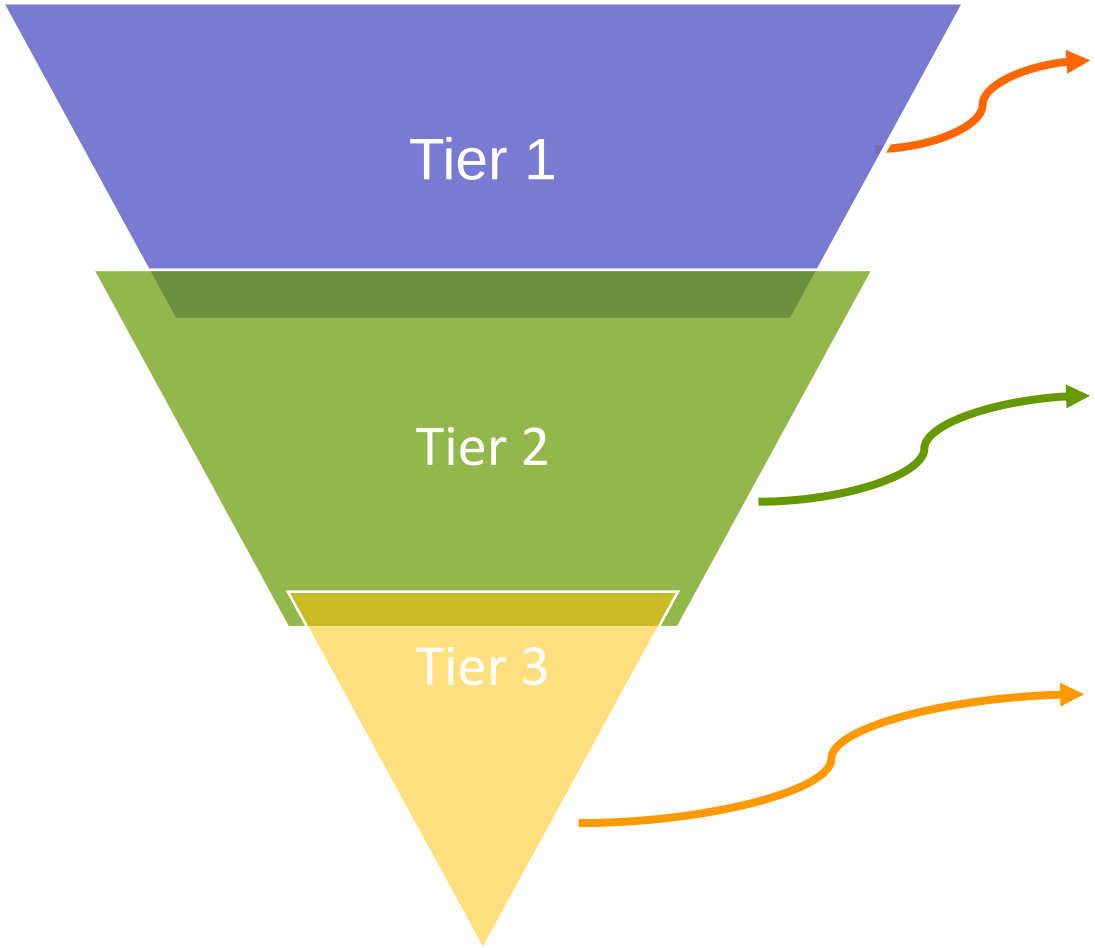
- As a coefficient for determining greenhouse gas emissions per unit of activity metrics
- EF is often built on studies/measurements to produce an average value

For example:

- Forest type A has a reserve of C of 50 tC/ha, converting to type B has a reserve of C of 30 tC/ha, EF for this conversion is: 50-30 = 20 tC/ha (emissions)
- In contrast, forest type B converts to forest type A: EF = 30-50 = -20 tC/ha (removal)
- Type A forest converted into agricultural land, will have EF = 50 tC / ha (by default NN land has 0 C reserves), emissions
- Burning 1 ton of coke, emitting 2.8 tons of CO2, then EF for coke = 2.8 tons of CO2 / 1 ton of coal

- Emission coefficient has been issued in Decision 2626/QD-BTNMT (2022)
- In calculations, published EF research results can be used

Emission/removal accounting approaches



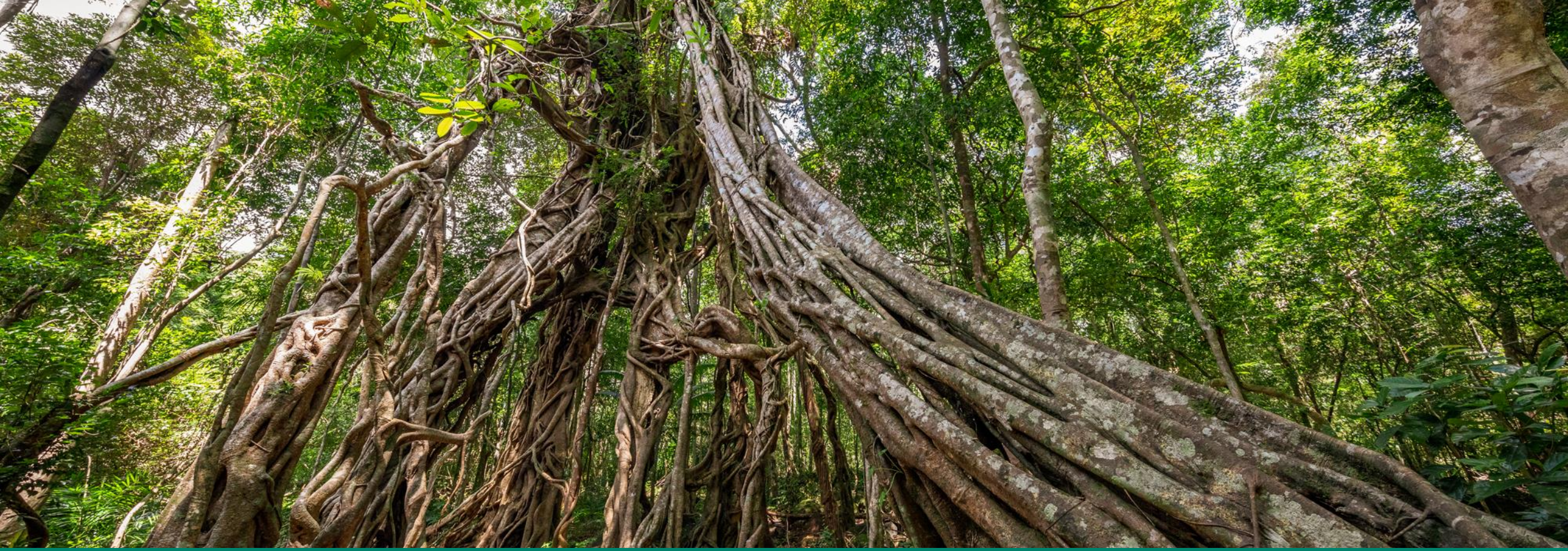
1. Basic approach
2. AD is a statistic or a combination
3. EF is the default IPCC metrics
4. **High uncertainty**

1. Improved approach
2. AD is Spatial data
3. EF is the national data combined with the IPCC's default data

Reduced uncertainty

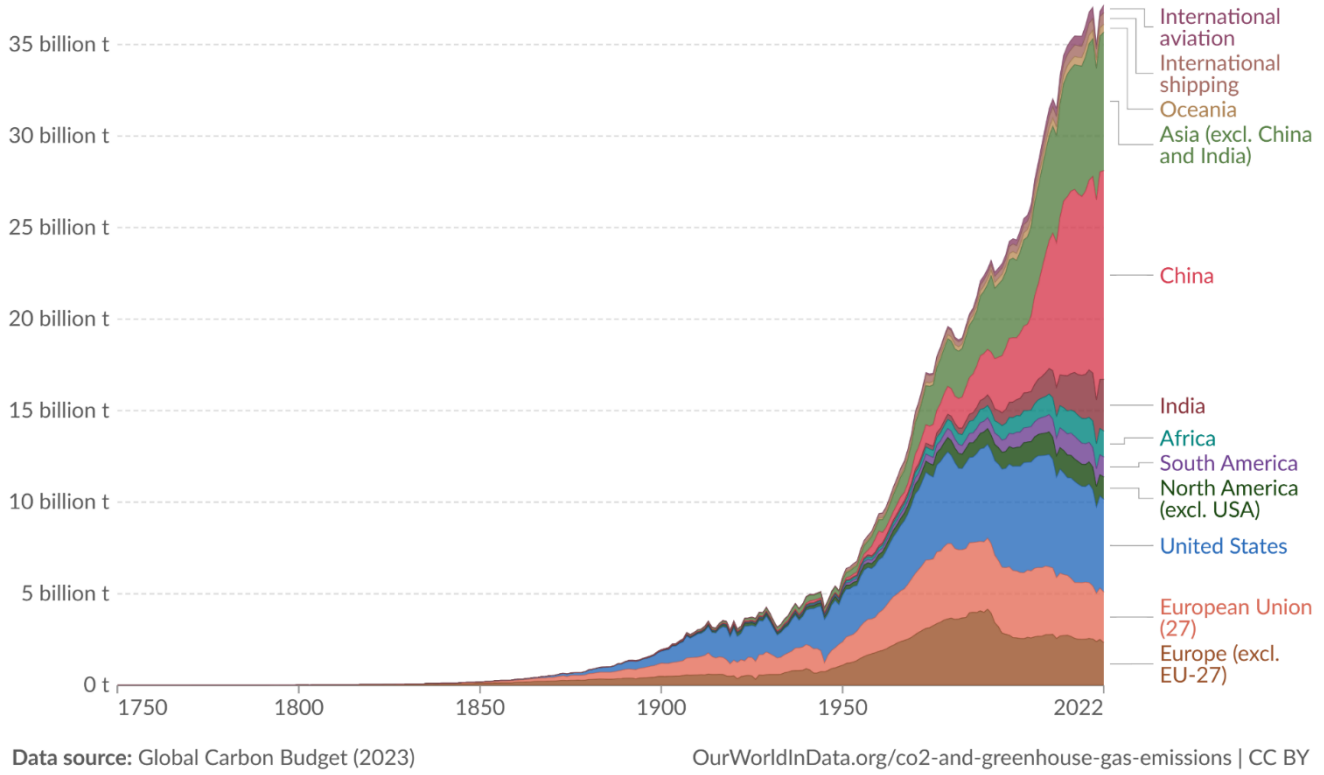
1. Advanced approach with a high level of detail
2. AD is Spatial data
3. EF is national data

Low uncertainty



CURRENT STATUS AND EMISSION REDUCTION TARGETS

Global emissions
excluding emissions from the land-use sector



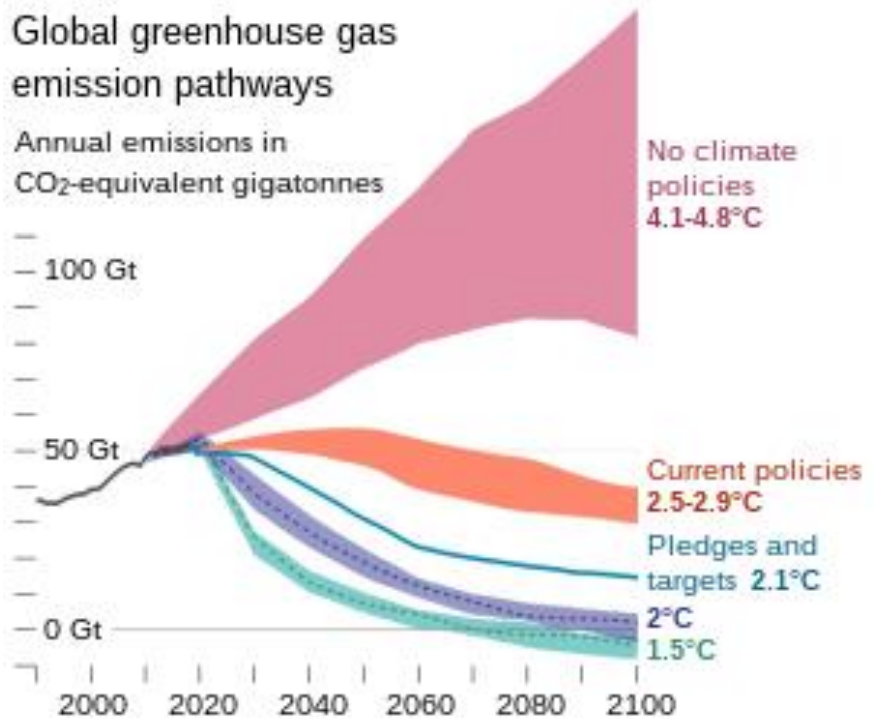
1. Fossil emissions: Fossil emissions measure the quantity of carbon dioxide (CO_2) emitted from the burning of fossil fuels, and directly from industrial processes such as cement and steel production. Fossil CO_2 includes emissions from coal, oil, gas, flaring, cement, steel, and other industrial processes. Fossil emissions do not include land use change, deforestation, soils, or vegetation.

Total 37 billion tCO2eq

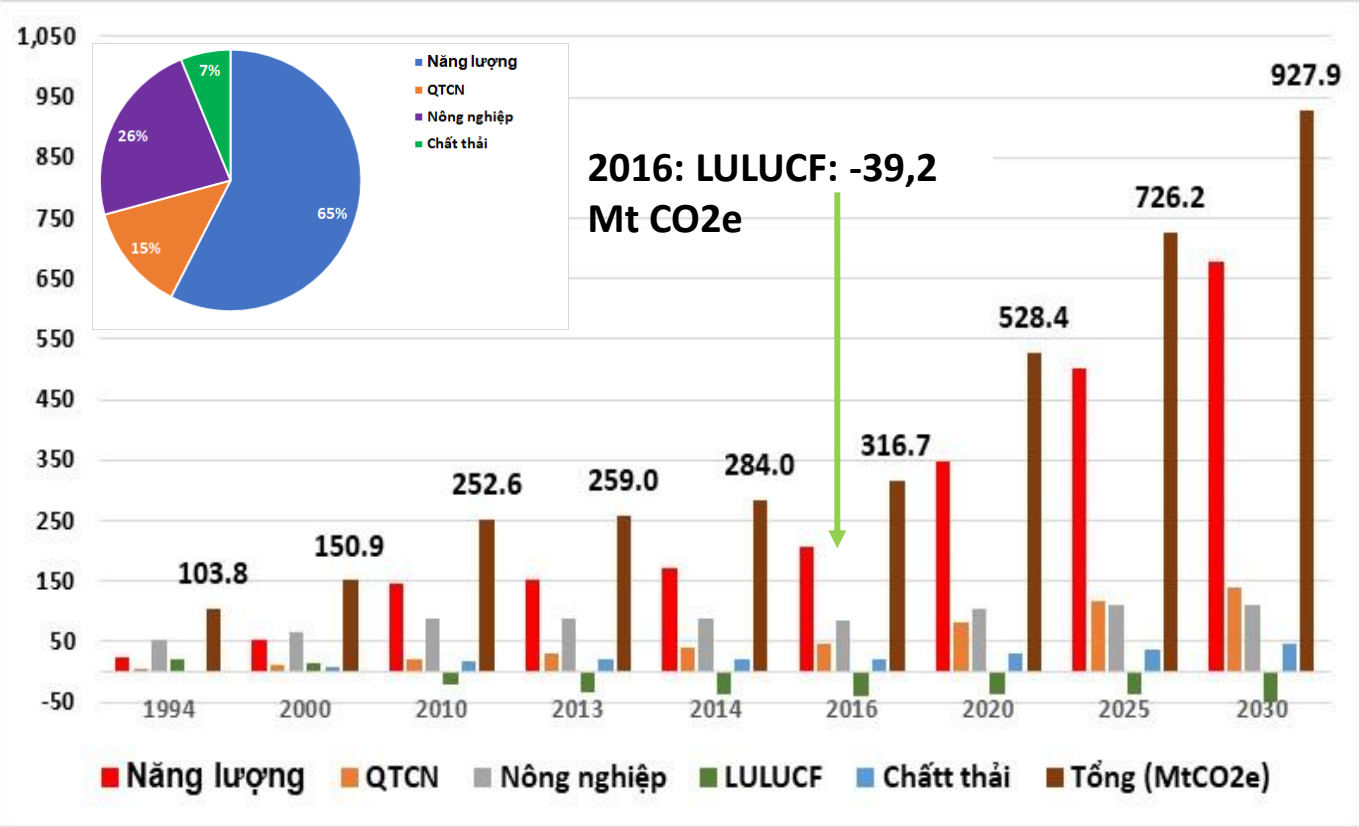
- **China: 11.4 billion tCO2eq**
- **US: 5.1 billion tCO2eq**
- **India: 2.6 billion tCO2eq**
- **Asia (China and India): 7.6 billion tCOeq**
- **EU: 2,8 billion tCO2eq**
- **North America: 1.2 billion tCO2eq**
- **South America: 1.0 billion tCO2eq**
- **Africa: 1.4 billion tCO2eq**

Climate target

- Agreed in the Paris Agreement 2015
- To keep the earth's temperature from rising above 2°C by the end of the 21st century
- Encourage efforts to achieve global temperature rise of no more than 1.5°C by the end of the 21st century
- 196 countries signed the Paris Agreement and submitted nationally determined contributions (NDCs)



Current status and forecast of Greenhouse gas emissions 2030



VN 2016: 3.9 tCO2/person

VN 2020: 5.3 tCO2/person

VN 2030: 8.4 tCO2/person

Global average 2021: 4.7 tCO2/person

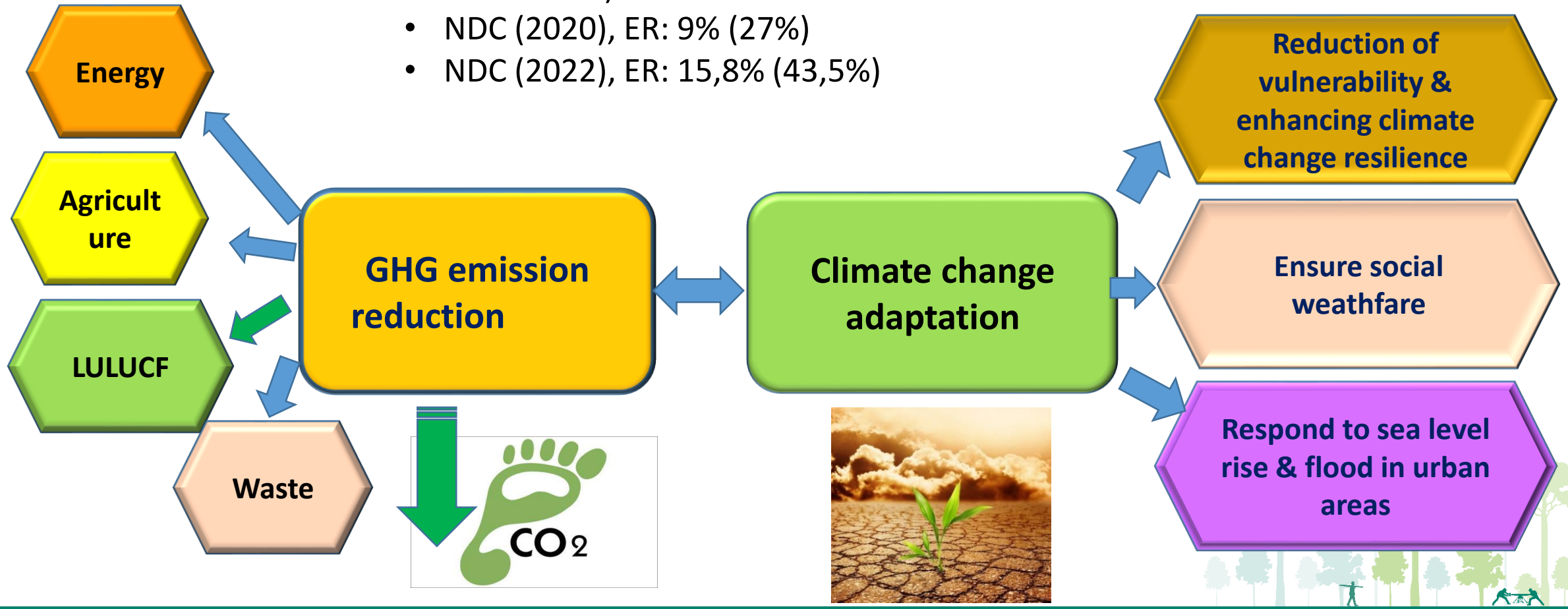
Source: MONRE

Vietnam's commitment and policy on emission reduction

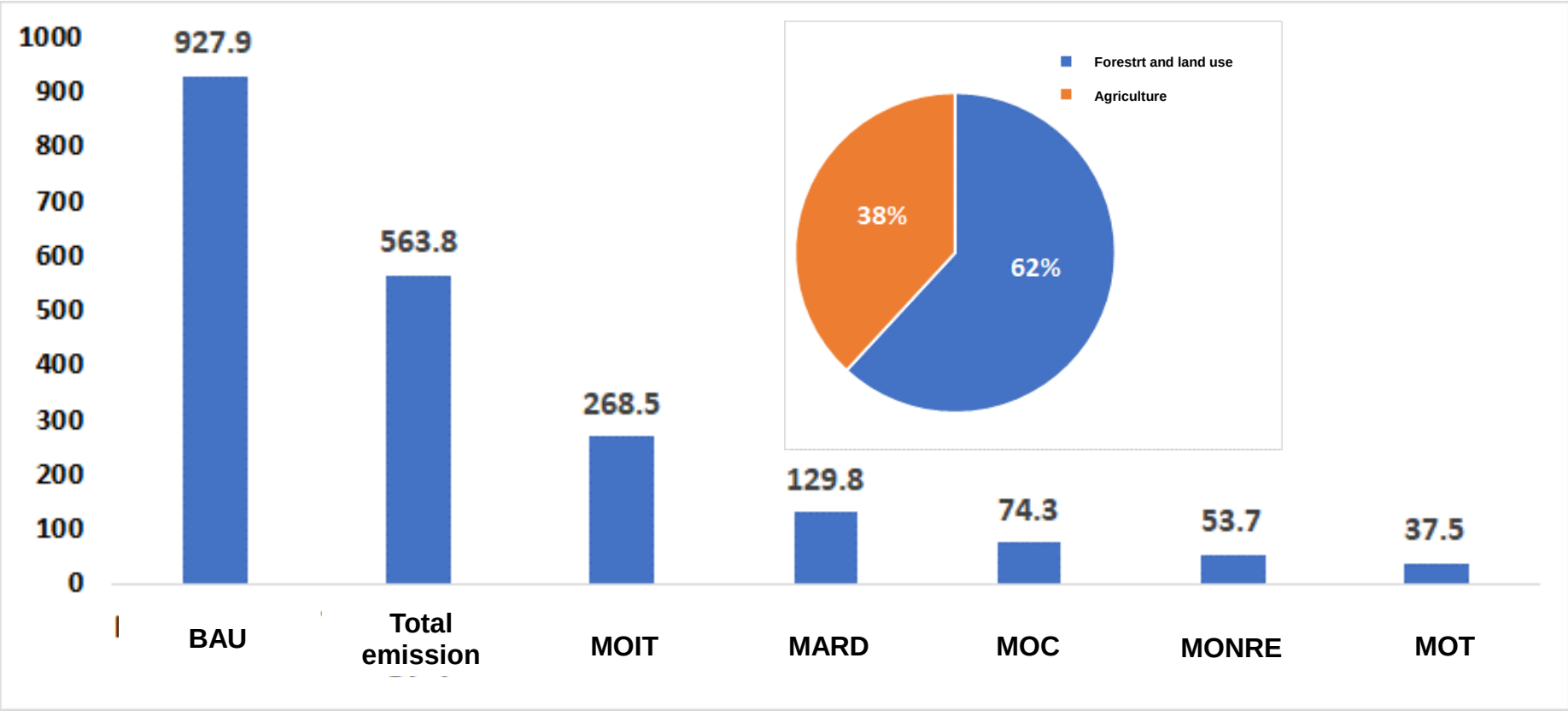
- Law on Environmental Protection 2020, Decree 06/2022/ND-CP, National Strategy for Climate Change, NDC 2022 – emission reduction and towards Net Zero goals by 2050 and carbon market development
- Paris Agreement and Nationally Determined Contributions (NDCs) – climate change mitigation and adaptation
- Action Plan to reduce methane emissions (QĐ 942/QD-TTg, 2022)
- Decision 500/QD-TTg – Power development planning VIII – focusing on renewable energy
- Decision 1693/QD-BNN-KHCN NDC Implementation Plan for Agriculture and Rural Development
- The Ministry of Finance is developing a project to develop the carbon market in Vietnam
- Directive 13 /CT-TTg (02/05/2024) on strengthening the management of carbon credits to implement the Nationally Determined Contribution (NDC)

NDC

- Paris Agreement signed: 2015
- INDC (9/2015), ER: 8% - unconditional (25% - conditional)
- NDC (2020), ER: 9% (27%)
- NDC (2022), ER: 15,8% (43,5%)

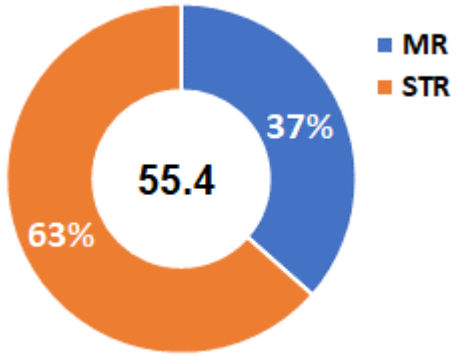
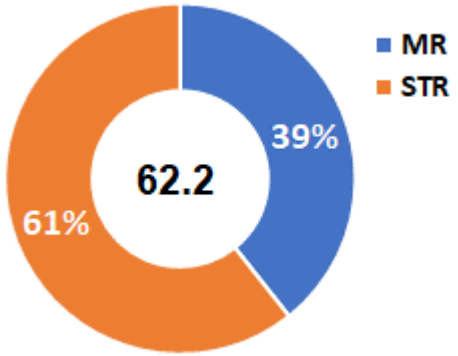
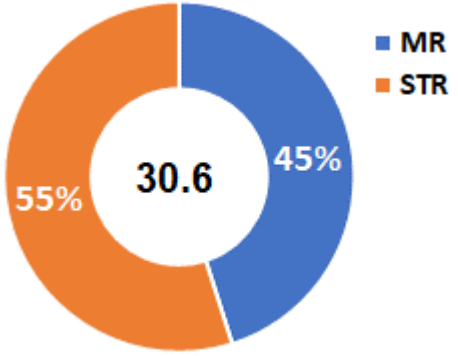
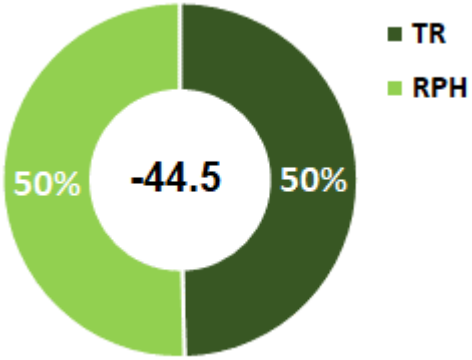
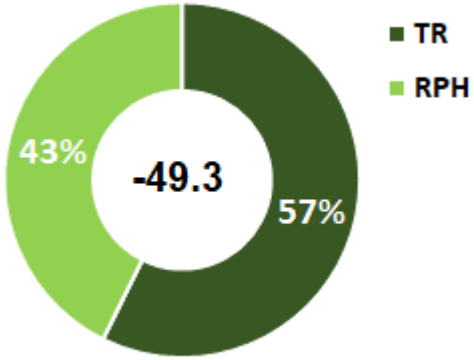
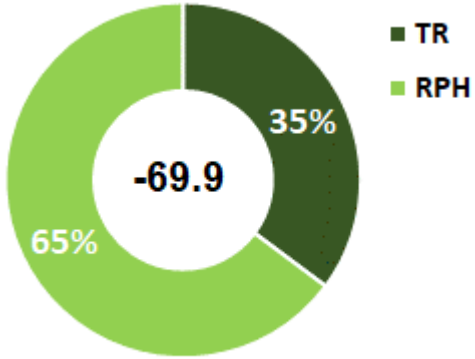


GHG emission reduction target by 2030



Source: Decree 06/2022/NĐ-CP

CARBON EMISSIONS & REMOVALS 1995-2020 IN FORESTRY

	1995-2000	2000-2010	2010-2020
Annual averaged Emissions (Mt CO2e)			
Annual averaged removals (Mt CO2e)			
Net annual emissions (Mt CO2e)	14.6	12.9	-39.3

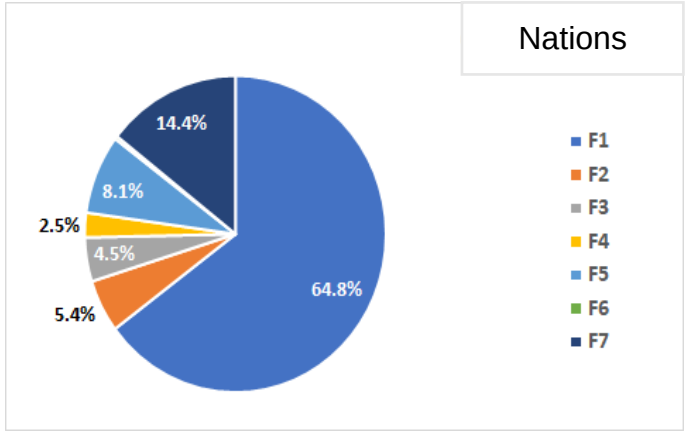
Source: MARD, 2016, 2021

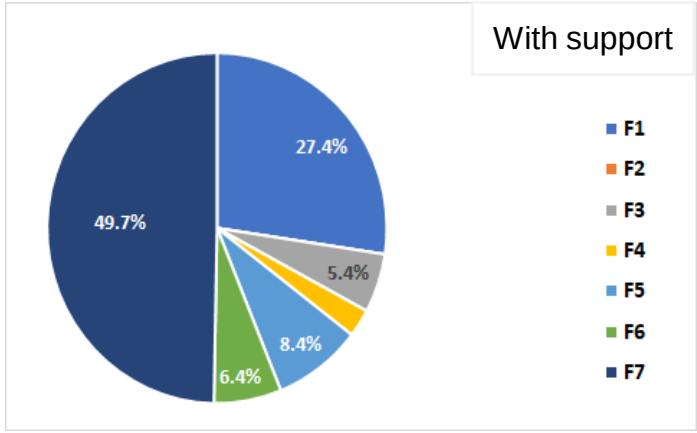
Measures to reduce emissions in forestry and land use

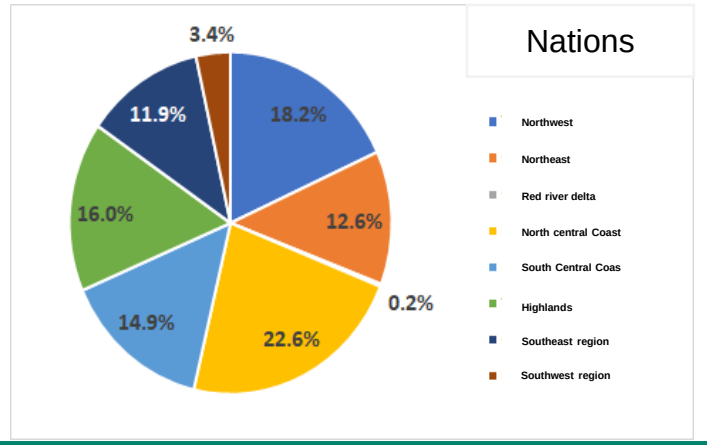
1. Protecting existing natural forests in mountainous areas (F1)
2. Protecting coastal forests (F2)
3. Restoring special-use and protection forests (F3)
4. Improving the quality and carbon stock of poor natural forests (F4)
5. Increasing the productivity and carbon stock of large timber plantations (F5)
6. Expanding agroforestry models to enhance carbon stock and soil conservation (F6)
7. Sustainable forest management and forest certification (F7)

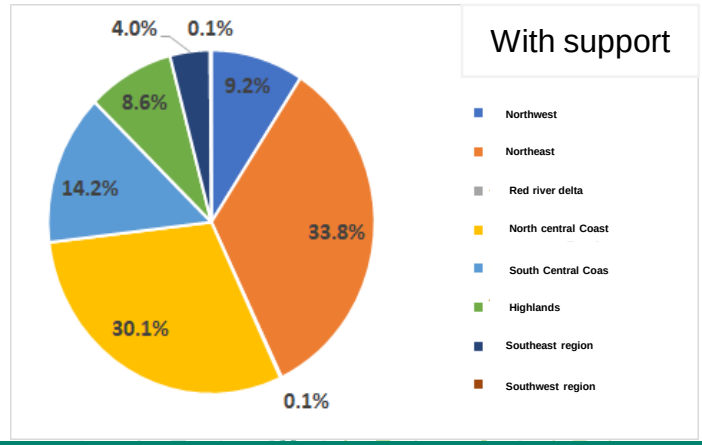
GPT potential under mitigation measures 2021-2030

- Nation: 82 Mt CO2e
- With support: 104 Mt CO2e
- Total: 186 Mt CO23









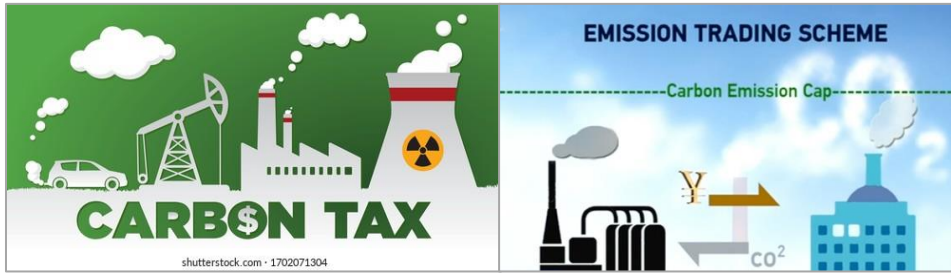
CARBON TRADING IN FORESTRY

Carbon market

Mandatory market (3-138$/tCO2)

National regulations (carbon tax, emission quotas, Emission Trading System - ETS)

Usually applied within the national boundary/scope



Voluntary market (2.5 - 7.0 $/tCO2)

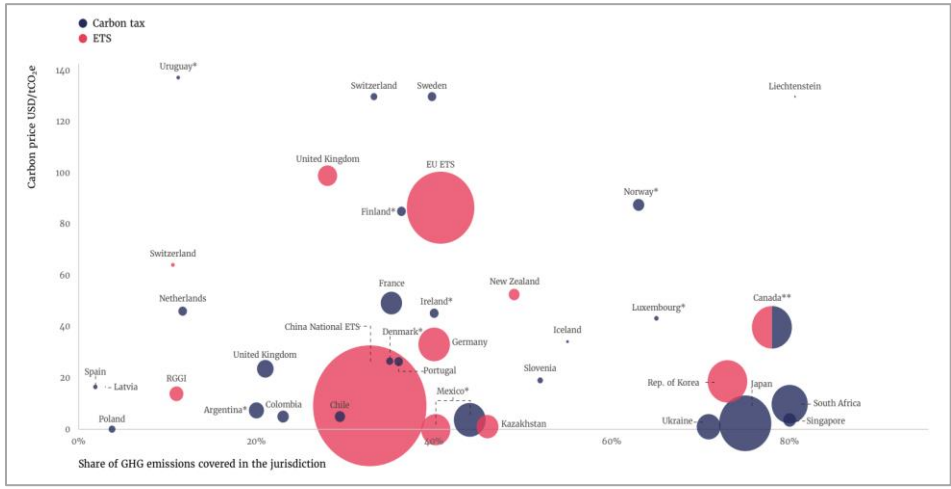
Carbon trading between organizations on a voluntary basis (VCM)

Bilateral and multilateral carbon trading mechanisms (JCM)

Science-based initiatives (STBi)

Mechanism under Article 6 of the Paris Agreement (through Government)

Operates based on carbon standards



Carbon Trading in the voluntary market by Project Type in the Forestry and Land Use Sector 2022-2030

Project type	2022			2023		
	Volume (Mt CO2e)	Value (Million USD)	Price (USD/tCO2e)	Volume (Mt CO2e)	Value (Million USD)	Price (USD/tCO2e)
REDD+ (all types)	57.4	584.2	**10.19**	28.2	222.3	**7.87**
New afforestation Reforestation/ Reforestation /Natural Plant Regeneration (ARR)	10.8	129.8	**12.05**	4.1	64.8	**15.74**
Improved forest management(IFM)	4.5	66.2	**14.67**	2.4	38.9	**16.21**
Blue carbon	3.4	39.3	**11.58**	0.38	3.2	**8.33**

- **194 projects, applied 16 standards, implemented in 38 countries**
- **Latin America and the Caribbean have the largest volume of credit transactions (36%), Africa (25%), Asia (18%)**
- **78% of carbon credits traded from REDD+ projects**
- **45% of carbon credits applied VCS standards, followed by Gold standard (37%), CDM (20%)**

Carbon standards applied in the voluntary market for forestry and land use

Verified Carbon Standard
A VERRA STANDARD

2007; accounted for 90% of transactions; activities: Reforestation/reforestation; improved forest management; reduced emissions from deforestation and forest degradation; wetland restoration and conservation. Details: https://verra.org/

ART
Architecture for REDD+ Transactions

2021; TREES - The REDD+ Environmental Excellence Standards, managed by WI: Activities that generate emissions reductions from deforestation and forest degradation; increased carbon removals from forest restoration. Details: https://www.artredd.org/trees/

Gold Standard for the Global Goals

2003; activities related to greenhouse gas removals, e.g. afforestation and reforestation. Details: https://www.goldstandard.org/

CCBA

2014; CCBA – Climate, Community and Biodiversity Alliance: Including reducing emissions from deforestation and forest degradation; removal of greenhouse gases from afforestation, forest restoration, agroforestry, etc. https://www.climate-standards.org/ccb-standards/

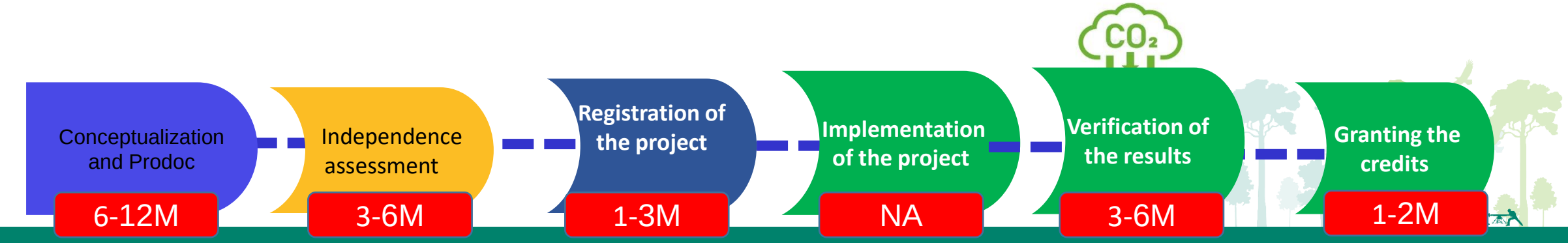
PLAN VIVO
For nature, climate and communities

2001. Reduce emissions from deforestation and forest degradation; wetlands and other ecosystems; forest and ecosystem restoration (greenhouse gas removals); and improved forest management (greenhouse gas absorption). Details: https://www.planvivo.org/

General requirements for carbon projects in line with the voluntary carbon market

There are different regulations for carbon standards and normally include:

- Proper operation
- Reference time, credit period
- Carbon tanks, greenhouse gases
- Methods of measurement and calculation, reporting (MRV)
- Risks (displacement, emission reversal)
- Complementarity (amount of emission reduction, absorption increase)
- Assessing uncertainty



Carbon projects in forestry sector

- National REDD+ reference level
- National REDD+ program
- National and regional forest biomass forecasting equations
- REDD+ results report 2018-2020 – Annex of BUR3

- North Central Coast Emission Reduction Program (ERP)
- First Monitoring and Measurement Report (MMR1) verified and validated
- Transfer of 10.3 million tons of CO2eq (51.5 million USD)

- Transfer of approximately 6 million tons (10$/tCO2) from the North Central and Central Highlands ERP (2022-2026)
- Applying TREES standards, submitted registration documents and the first report
- Currently preparing for third-party independent validation, expected to be completed in Q1/2026

- GCF payment for REDD+ performance results 2014-2020
- JICA supports proposal development, estimated at approximately 65 million USD, to be submitted in 2025
- Feasibility study in the northern mountainous region (15 provinces)
- Preparing a letter of intent for the agreement of investment

Lessons learnt in implementing forest carbon projects

To have clear legal framework on investment, carbon rights, and benefit sharing; coordination mechanism among sectoral ministries, and localities

To ensure technical competence in the entire implementation process, especially capacity in project conceptualization, measurement, reporting and appraisal

Ensure transparency and disclosure of information and data in service of measurement, reporting and appraisal, benefit sharing, and implementation of measures to ensure social environmental safety

To optimize investment resources through integrating programs, projects, and diversifying carbon markets; to ensure effective implementation

Thank you for listening !