

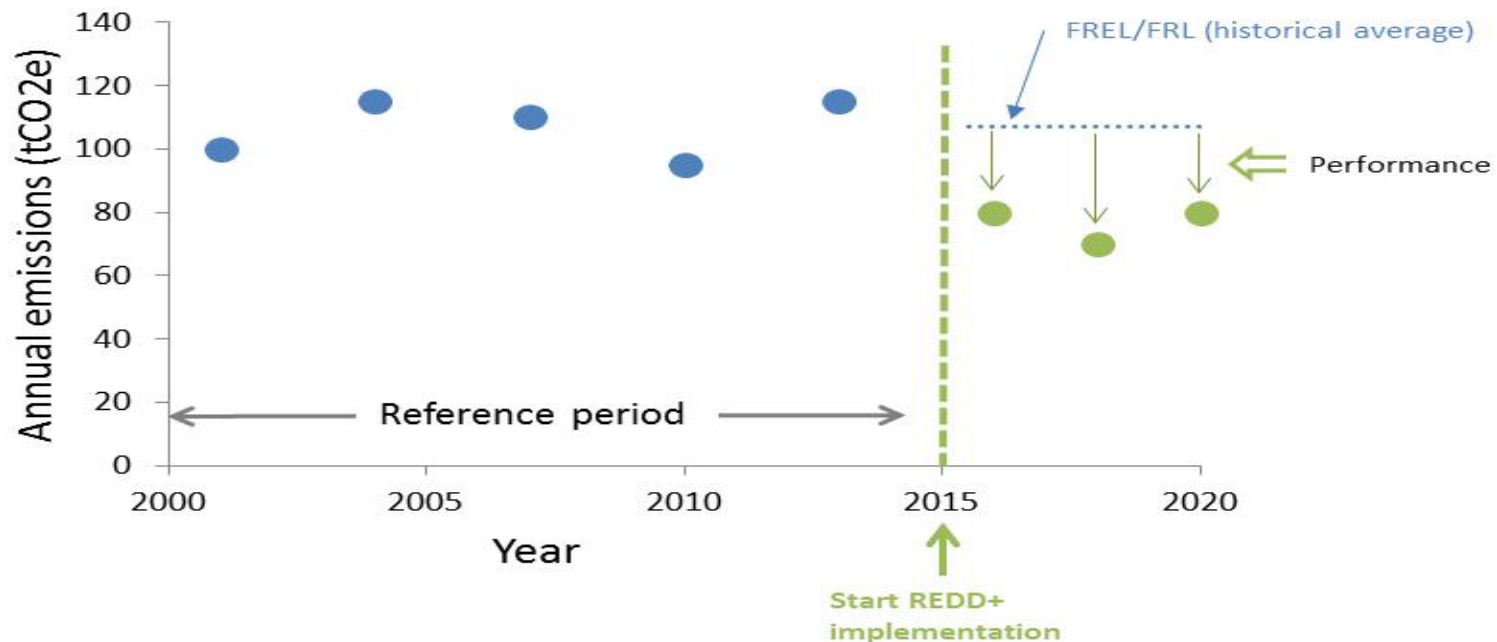
Establishment of Forest Reference Level in Viet Nam

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Forest Inventory and Planning Institute (FIPI)

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What is FREL/FRL?

- Forest Reference Emission Level (FREL) and Forest Reference Level (FRL) are benchmarks for assessing the performance of REDD+.
- FREL: including deforestation & forest degradation
- FRL: including reforestation & forest restoration (i.e. enhancement of C stock)
- To obtain and receive results-based finance, developing country Parties should have a national FREL/FRL, or as an interim measure, subnational FRELs/FRLs (Decision 2/CP.17. Par.64; Decision 1/CP.16. Par.71).



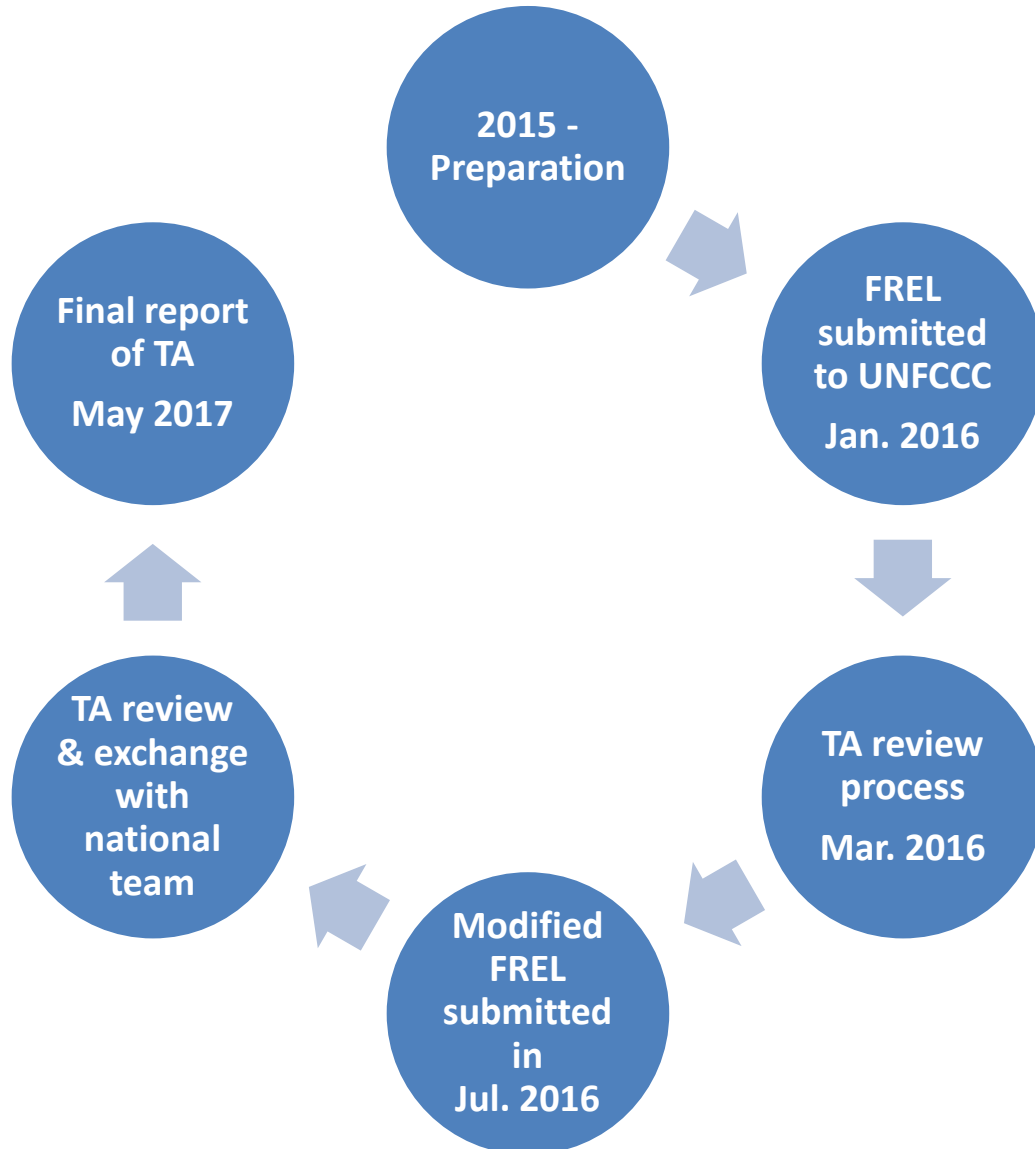
FREL/FRL technical guidance

- Unit: tCO₂/year
- Should follow most recent IPCC guidelines as adopted or encouraged by the COP
- Should maintain consistency with GHG Inventory in National Communications (data & methods)
- Data sets, approaches, models and assumptions should be transparent, complete, consistent and accurate.
- Should conduct uncertainty assessment
- May use a stepwise approach; use subnational FRELs/FRLs as an interim measure
- Should update FREL/FRL periodically taking into account new knowledge, trends and any modification of scope and methodologies
- Allow adjustment to national circumstances

International FREL/FRL process

- FREL/FRL is the only REDD+ element to be technically assessed by UNFCCC
- The technical assessment (TA) is a facilitative process; consider as opportunity for improvement
- 25 countries have submitted FREL/FRL to UNFCCC
- Vietnam is among the countries having TA reports published

Viet Nam FREL/FRL submission process



- Prepared by FIPI and VAFS with technical support from FAO (UN-REDD Programme)
- Consultation meetings for improvement
- Validated & endorsed by MARD (VNFOREST)
- National FREL/FRL submitted to UNFCCC on Jan 2016
- Technical assessment from Mar 2016 to April 2017
- TAR was published on 5 May 2017

FREL/FRL parameters

- **Scale:** national (all forests are considered as managed forests)
- **Scope:** All 5 activities divided into FREL and FRL
- **Reference period:** 1995-2010 (15 years)
- **Pools included:** AGB and BGB
- **Gases included:** only CO₂ (non-CO₂ is insignificant)
- **Data:** NFIMAP's sample plot data and wall-to-wall forest cover maps every 5 years from 1995 to 2010.

NFIMAP: National forest inventory, monitoring and assessment program

Forest definition and classification

Forest definition:

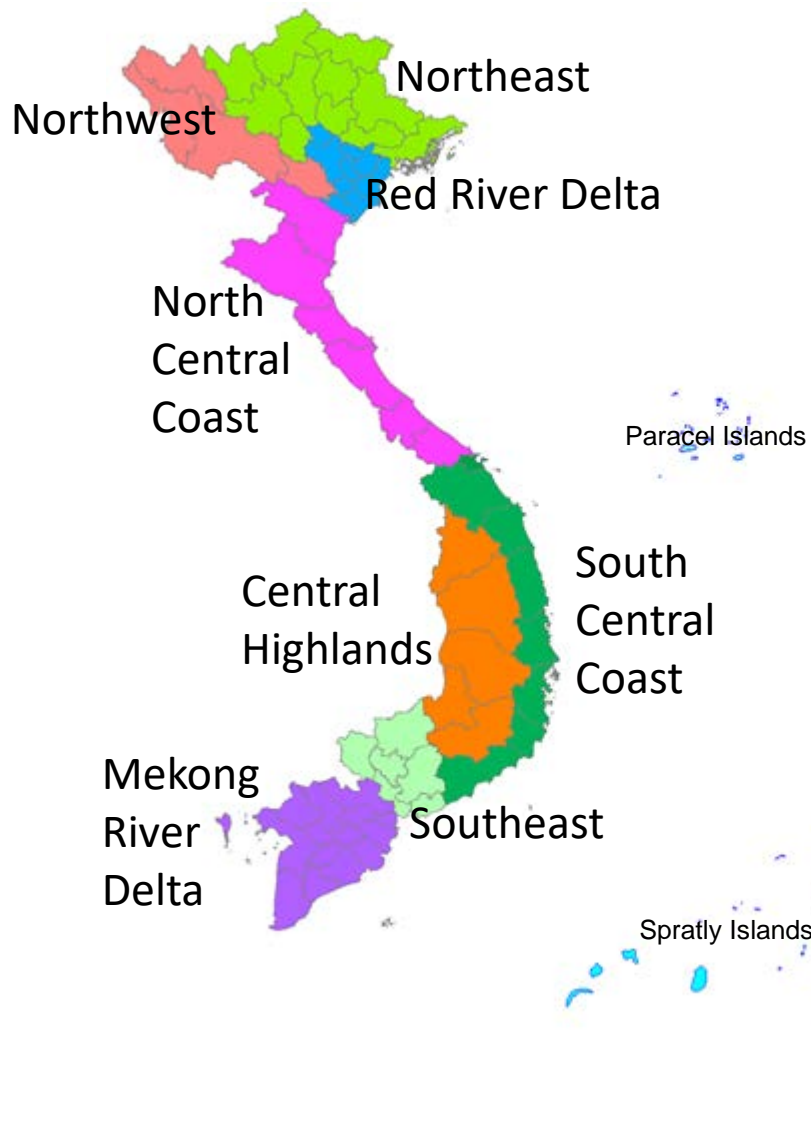
- Following Circular no. 34 (2009)
- Minimum area: 0.5 ha
- Minimum height: 5m
- Minimum canopy cover: 10%

Classification:

- 17 types in total
- 12 forest types (1 to 12)
- Types 1 to 3 are based on timber volume

Code	Forest and land use type
1	EGBL - rich
2	EGBL - medium
3	EGBL - poor
4	EGBL - regrowth
5	Deciduous
6	Bamboo
7	Mixed woody - bamboo
8	Coniferous
9	Mixed broadleaf - coniferous
10	Mangroves
11	Limestone forest
12	Plantations
13	Limestone without forest
14	Bared land
15	Water bodies
16	Residence
17	Other land

Land stratification

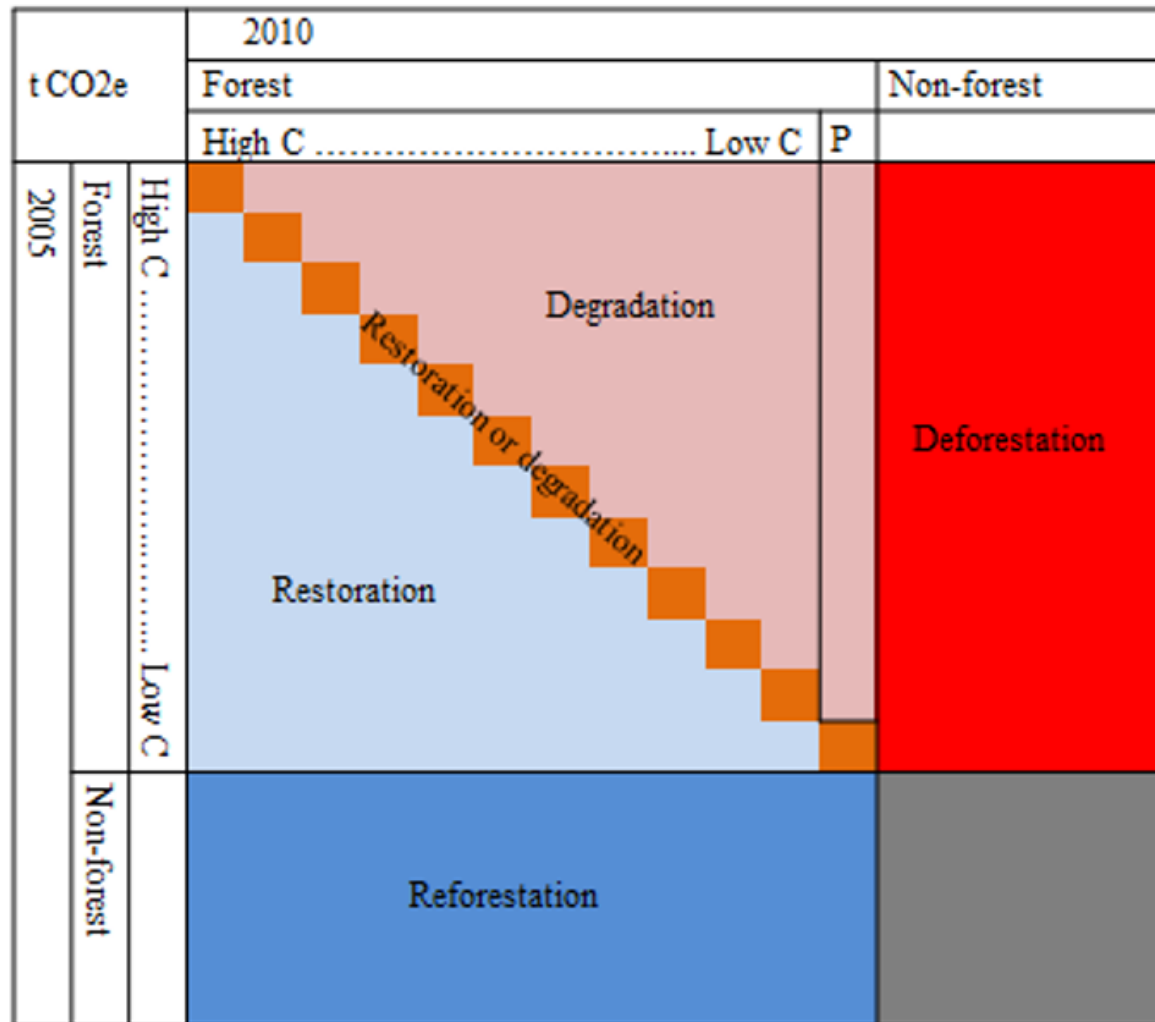


8 agro-ecological
regions based on
both ecological and
administrative units

Activities included

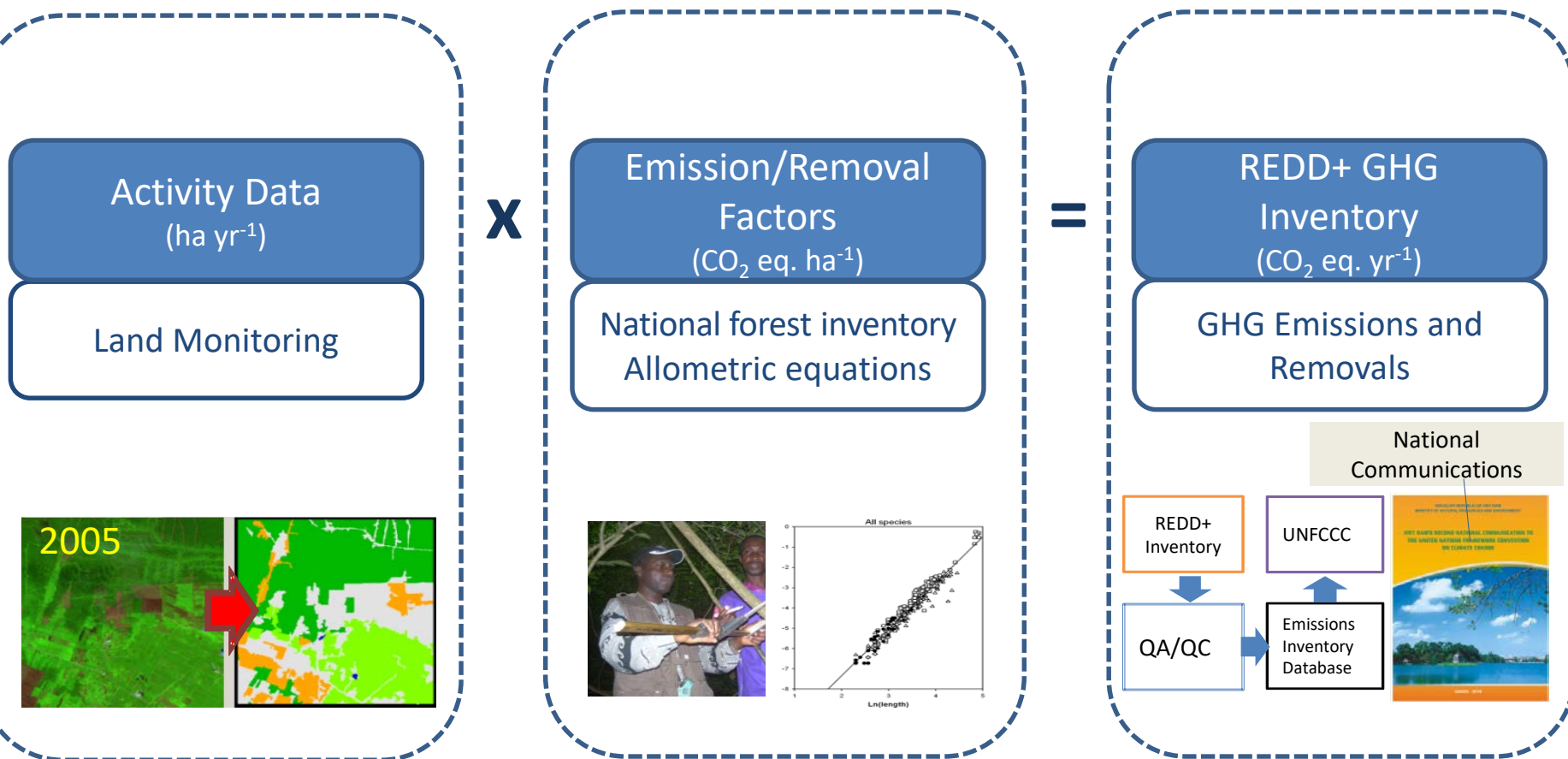
All 5 REDD+ activities are included:

- Reducing emissions from deforestation
- Reducing emissions from forest degradation
- Conservation of C stock
- Sustainable management of forests
- Enhancement of C stock



C: carbon; P: plantation

Approach for calculating emissions/removals



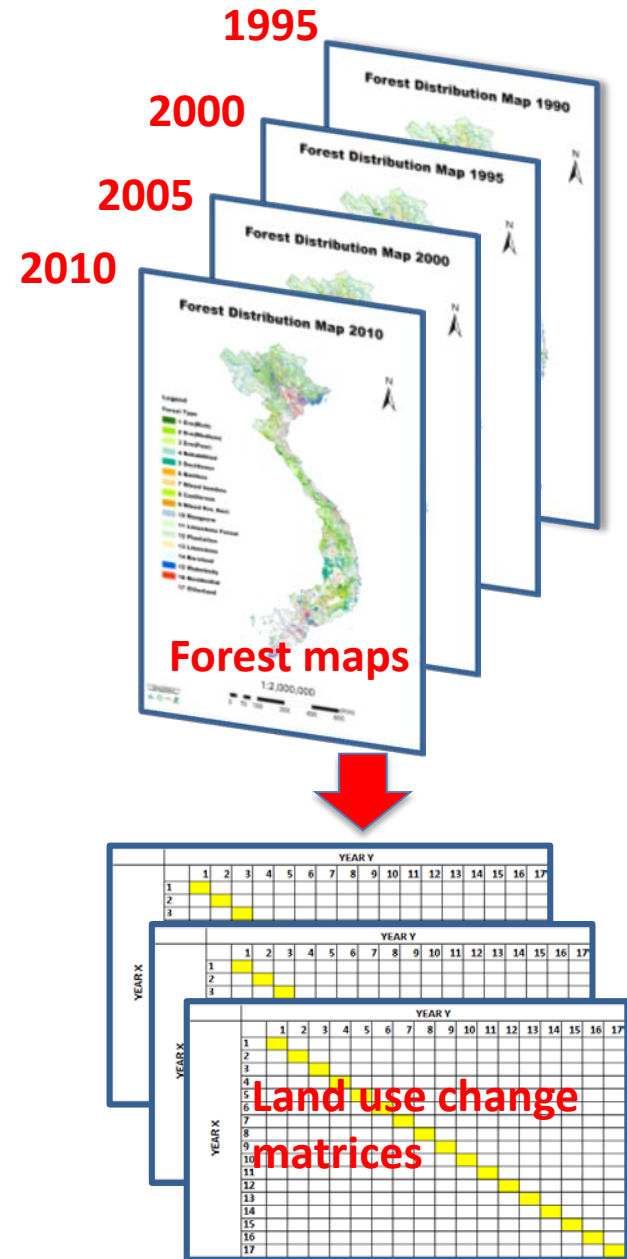
e.g.
100 ha of EGBL forest
deforested each year

Each ha of deforestation of
EGBL forest emits 500 tCO₂e

Emission is $100 \times 500 =$
50,000 tCO₂e per year

Activity data generation

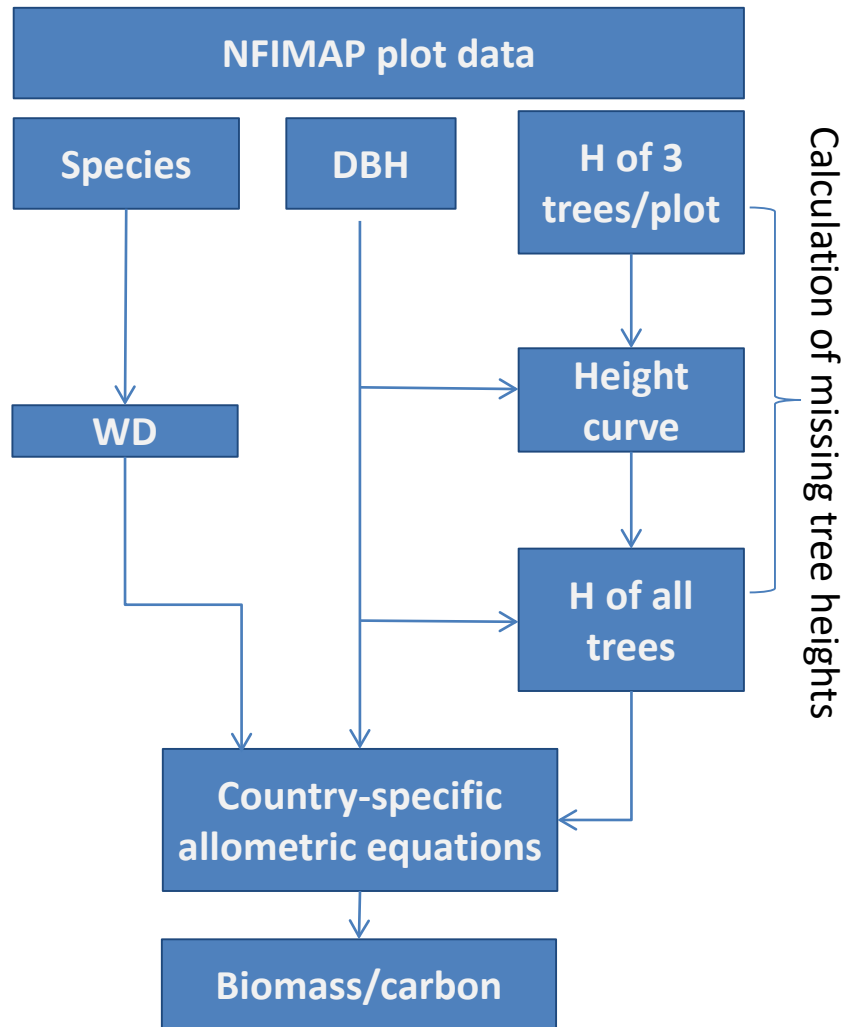
- Forest cover maps (1995, 2000, 2005 and 2010) are used
- Originally generated by FIPI as results of NFIMAP 4 cycles
- Based on satellite imagery interpretation in combination with ground surveys
- Improved by several international and national supports (NORDECO, JICA, MARD, UN-REDD)
- Equivalent to IPCC's Approach 3



Emission/removal factors calculation

- Calculated as the difference of C densities between 2 classes of change, and converted to tCO₂e.
 - $EF/RF = (C_{\text{before}} - C_{\text{after}}) \times 44/12$
 - If > 0 : emission factor (EF)
 - If < 0 : removal factor (RF)
- C densities for forest types are derived from NFI 4 cycles plot data in combination with country-specific allometric equations
- For mangroves, C densities are taken from literature review
- For non-forest areas, C densities are assumed as 0
- IPCC's default root-to-shoot ratio (0.20 for AGB < 125 tC/ha and 0.24 otherwise), carbon fraction (0.47)
- Equivalent to IPCC's Tier 2

Carbon densities calculation



AGB: Country-specific data & AEs

+ For the North East, North West and Red River Delta regions:

$$AGB = 0.666 \times (DBH^2 \times H_{mt} \times WD/10)^{0.940}$$

+ For the North Central Coast region:

$$AGB = 0.669 \times (DBH^2 \times H_{mt} \times WD/10)^{0.940}$$

+ For the South Central Coast region:

$$AGB = 0.655 \times (DBH^2 \times H_{mt} \times WD/10)^{0.940}$$

+ For the Central Highlands region:

$$AGB = 0.924 \times (DBH^2 \times H_{mt} \times WD/10)^{0.940}$$

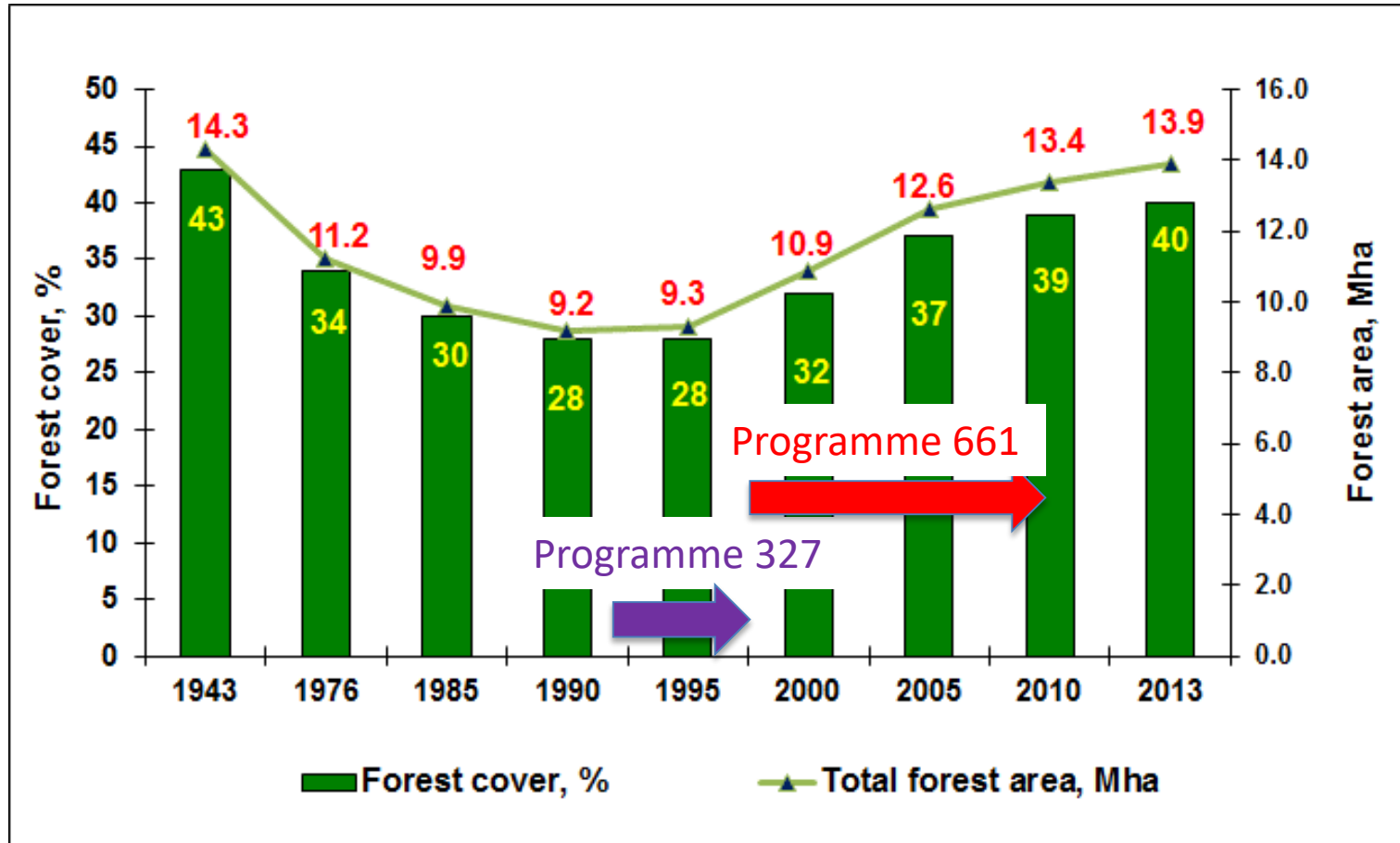
+ For the South East and Mekong River Delta regions:

$$AGB = 0.790 \times (DBH^2 \times H_{mt} \times WD/10)^{0.925}$$

BGB: Default R/S ratios (0.20 or 0.24)

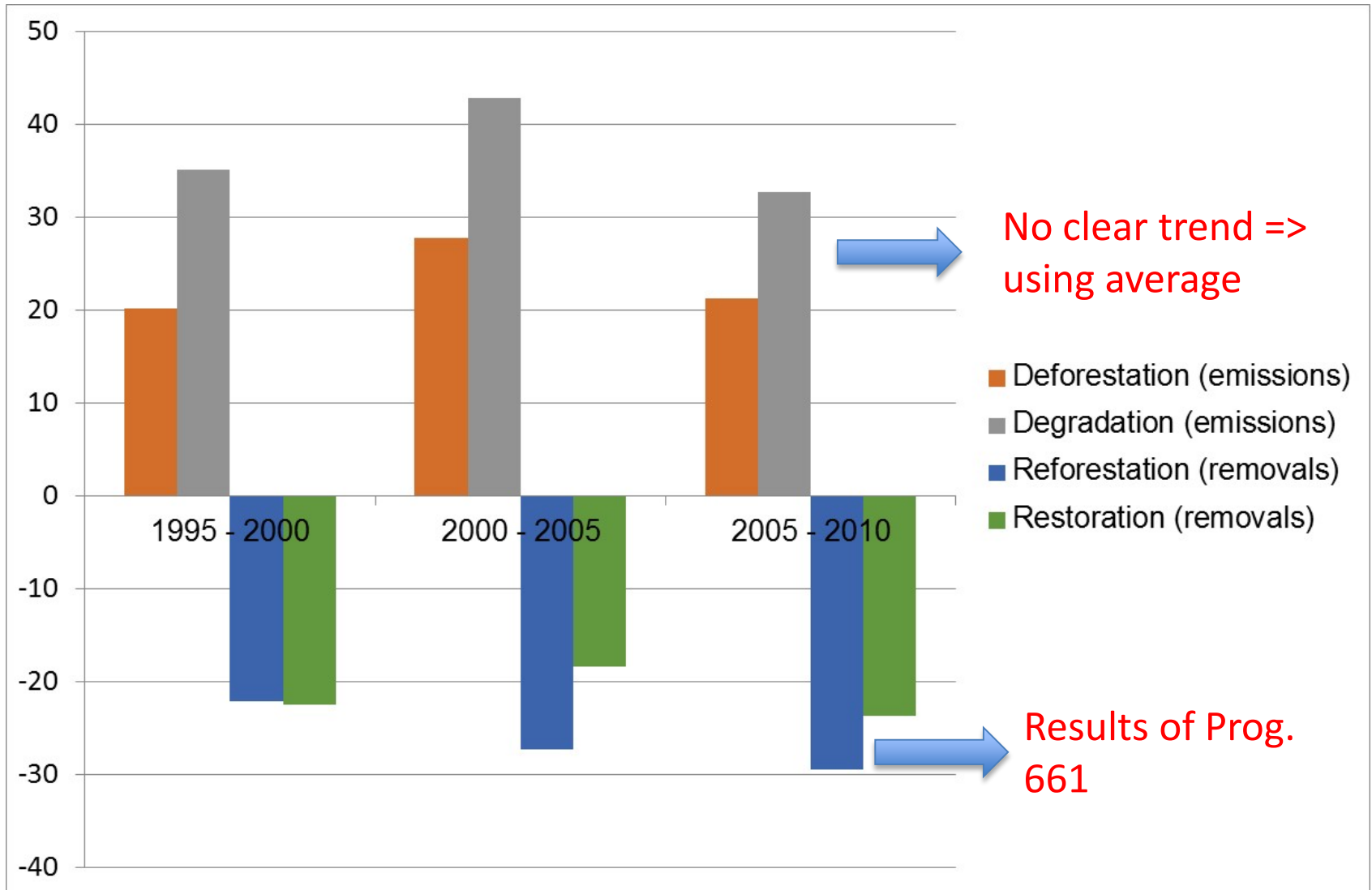
Carbon: Default carbon fraction (0.47)

National circumstances & adjustment



→ Need to adjust for the major national efforts of reforestation under Prog. 661
Method: Conduct studies to estimate the successful rate of Prog. 661

Results of emissions and removals



Proposed FREL/FRL



Summary of technical assessment

- Viet Nam's FREL/FRL is overall accordance with the guidelines for submission of information on FREL/FRL
- Acknowledges Viet Nam's efforts to improve the transparency of the data used in the construction of its FREL/FRL
- Commends Viet Nam for showing a strong commitment to the continuous improvement of its FREL/FRL estimates in line with the stepwise approach



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Report of the technical assessment of the proposed forest reference emission level of Viet Nam submitted in 2016

Summary

This report covers the technical assessment of the submission of Viet Nam, on a voluntary basis, on its proposed forest reference emission level (FREL) and forest reference level (FRL), in accordance with decision 13/CP.19 and in the context of results-based payments. The FREL/FRL proposed by Viet Nam cover the activities "reducing emissions from deforestation", "reducing emissions from forest degradation" and "enhancement of forest carbon stocks", which are among the activities included in decision 1/CP.16, paragraph 70. In its submission, Viet Nam has developed a national FREL/FRL. The assessment team notes that the data and information used by Viet Nam in constructing its FREL/FRL, provided in its submission as well as during the assessment session, are in overall accordance with the guidelines contained in the annex to decision 12/CP.17. This report contains the assessed FREL/FRL and a few areas identified by the assessment team for future technical improvement, according to the scope of the technical assessment in the annex to decision 13/CP.19.

TA recommendations

- Use of a consistent approach to geospatial image interpretation across the time series
- Harmonization of the activity data and emission factors used between the GHG inventory and the FREL/FRL submission
- Provision of time-series information on forest and land use transitions
- Use of time-series consistent data in the estimation of carbon stock densities
- Improvement of the definition of forest degradation to include thresholds like canopy cover or carbon stock decline to exclude short-term loss of carbon stocks
- Inclusion of non-biomass pools and non-CO₂ gases
- Assessment of the effect of forest fires on the resulting non-CO₂ emissions from deforestation and forest degradation

Future improvements

- Develop forest cover maps based on previous maps to increase consistency and reduce artifact changes
- Generate time-series information on forest and land use transitions
- Harmonize the activity data and emission factors used between GHG inventory (LULUCF) and FREL/FRL
- Include other carbon pools (deadwood, litter)
- Revise the classification system to make uncertainty assessment easier



Thank you for your attention!

FREL/FRL development process has been supported by:

- UN-REDD Viet Nam Programme
- Norway, Finland, Japan Governments
- FAO
- MARD
- Others