Vietnam Greenhouse Gas Inventory - LULUCF - Forestland

Nguyen Trong Hung
Dao Minh Trang
Bach Song Lan
Ministry of Natural Resources and Environment
Vietnam

Bangkok, Thailand
4-7th August 2014

1

Outline

- **Introduction**

- **LULUCF Inventory**

- **Achievements**

- **Gaps**

- **Recommendations**

Introduction

```
┌─────────────────────────────────────────────────────────┐
│              The Goverment of Vietnam                     │
└─────────────────────────────────────────────────────────┘
                            ↓
┌─────────────────────────────────────────────────────────┐
│      Ministry of Natural Resources and Environment        │
└─────────────────────────────────────────────────────────┘
                            ↓
┌─────────────────────────────────────────────────────────┐
│      National Steering Committee for UNFCCC and KP        │
└─────────────────────────────────────────────────────────┘
                            ↓
┌─────────────────────────────────────────────────────────┐
│        National Communication Management Team             │
└─────────────────────────────────────────────────────────┘
                            ↓
┌─────────────────────────────────────────────────────────┐
│            National Technical Expert Team                 │
└─────────────────────────────────────────────────────────┘
```

GHG Working Group	Mitigation/Planning Working Group	Vulnerability and adaptive capacity assessment working group	National Communication Working Group

Centralization approach

Energy	Industry	Agriculture	LULUCF	Waste

Introduction

✓ **National Strategy on Climate Change (2011)**
  ➢ Reduce 5-8% of the total energy consumption from 2011-2015

✓ **Plan of management of GHG emissions and carbon trading activities to the world market (2012)**

  Carrying out the targets of GHG emission reduction and GHG absorption increase by 2020 (base year: 2005)

  ❖ *Energy: 8% (incl. transportation)*
  ❖ *Agriculture: 20%*
  ❖ *LULUCF: 20%*
  ❖ *Waste: 5%*

✓ **National Green Growth Strategy (2012)**
  Reduce GHG emission (2011-2020)
  ➢ Reduce intensity of GHG emissions by 8-10%
  ➢ Reduce energy consumption per unit of GDP by 1-1.5% per year
  ➢ Reduce GHG emissions from energy activities by 10-20%

GHG Inventory - LULUCF

- **1994, 2000, 2005, 2010 (1994 for INC, 2000 for SNC and 2010 maybe for BUR1)**

- **Gain – Loss (IPCC 1996 revised, GPG 2000, GPG LULUCF 2003)**

- **Tiers (most IPCC default, REDD+ and other forest growth study of FSIV)**

- **Activity data (GSO, MARD via FPD, FIPI, FSIV)**

GHG Inventory - LULUCF

Institutional cooperation

Responsible entity of GHG inventory — DMHCC

LULUCF inventory complier in Vietnam — IMHEN

External Expert Organization preparing non-published data for GHG inventory — FIPI, SFRI, GDLA

Technical Adviser — VAFS

Support compiling & Technical Advice — JICA

6

LULUCF inventory - National Forest Inventory Programs

National Forest Inventory and Statistics

| First 81-83 | Second 89-92 | Third 97-99 | Fourth 11-16 |

Forest and Forestry Land Monitoring
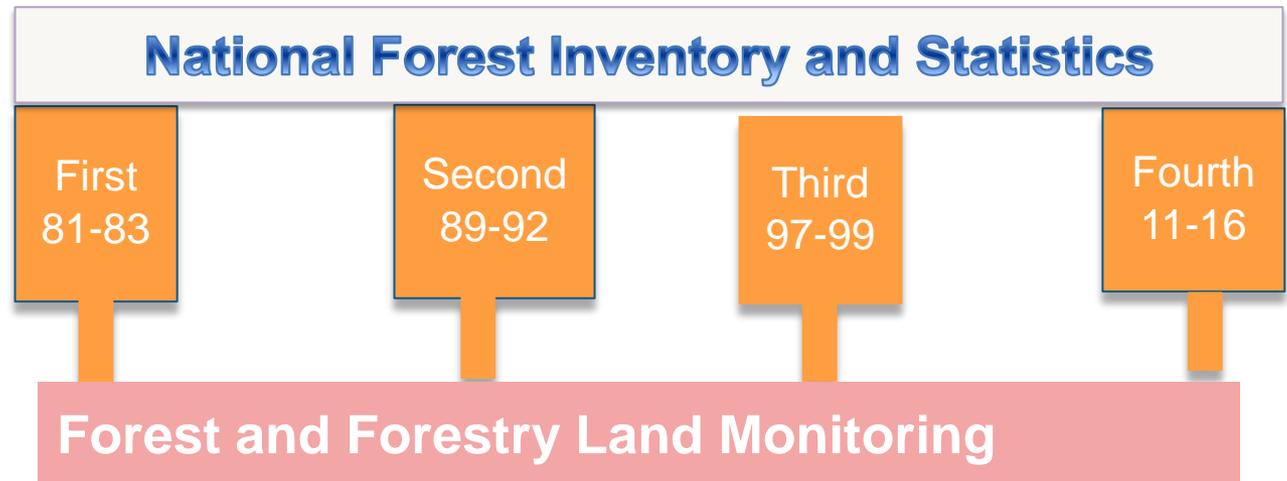
Providing forest stand information such as:

- Area,

- Forest type (species and age for plantation),

- Timber volume, density of bamboo,

- Forest owner,

- Map of forest types, map of forest owners.

| Cycle I 90-95 | Cycle II 96-00 | Cycle III 01-05 | Cycle IV 06-10 | Cycle V 11-16 |

National Forest Resource Inventory, Assessment and Monitoring
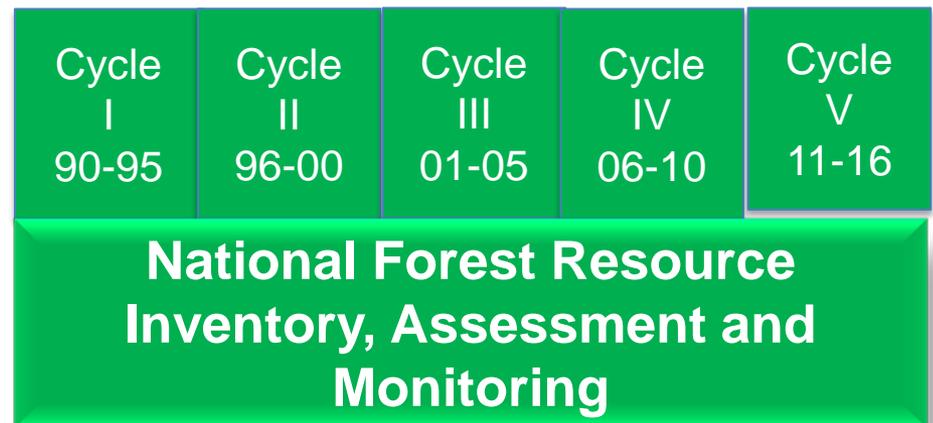
LULUCF – Forest classification and area changes

3 types { -**Special Use Forest**
              - **Production Forest**
              - **Protection Forest**

28.8 **33.2** **34.4** **35.5** **35.8** **36.1** **36.7** **37.0** **38.0** **38.2** **38.7** **39.5**

Forest cover (%)

1998 **1999** **2000** **2001** **2002** **2003** **2004** **2005** **2006** **2007** **2008** **2010**
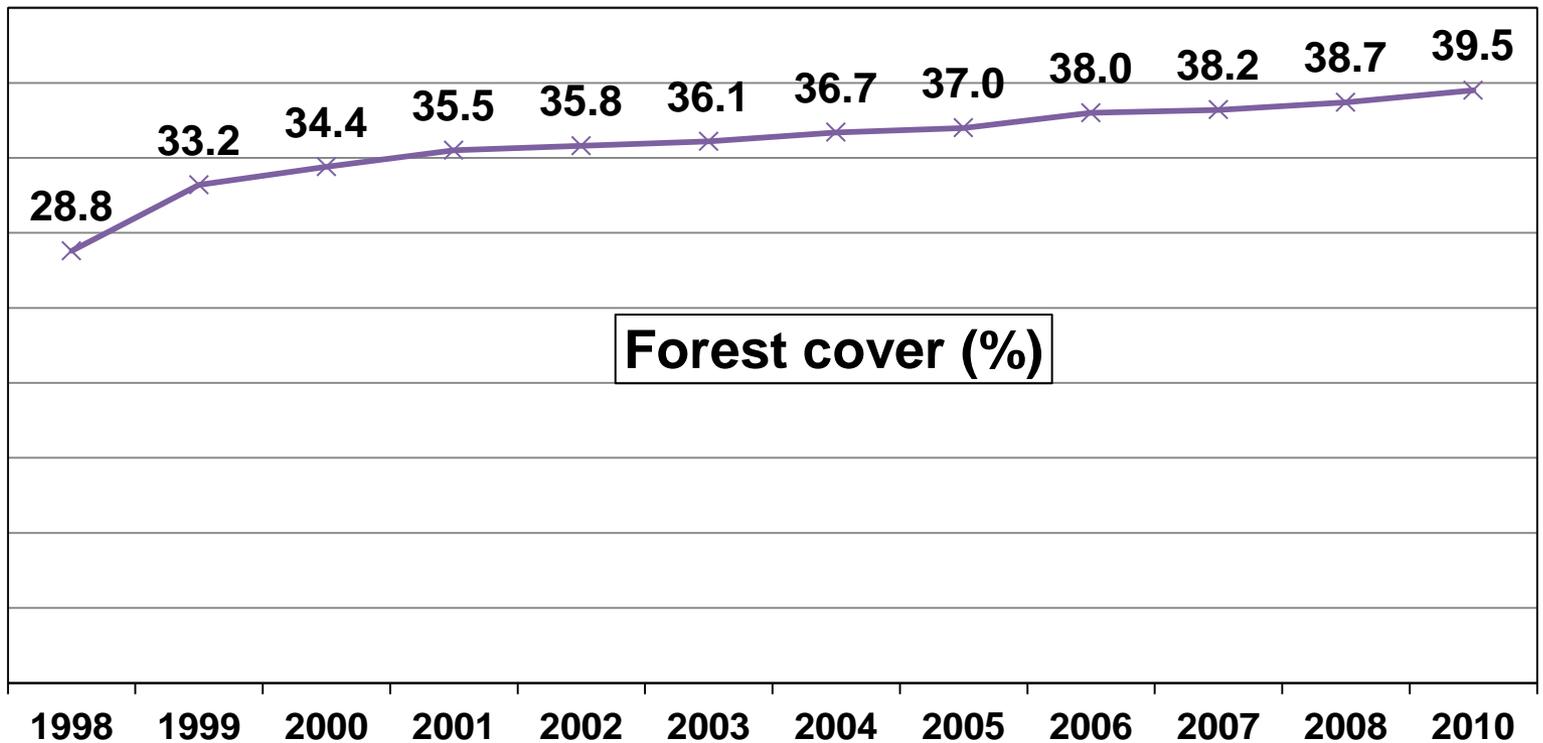
Source: FIPI, 2010

LULUCF - Forest changes from 1990 to 2010

1990	1995	2000	2005	2010
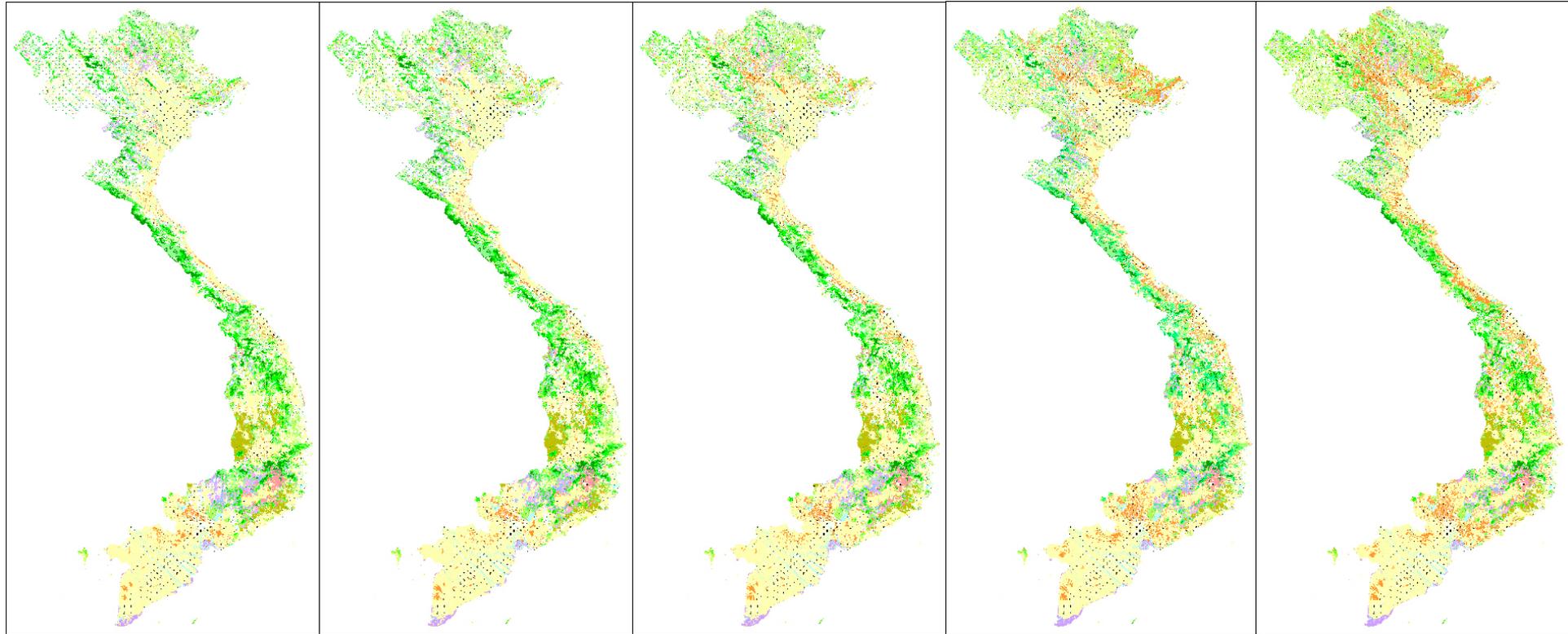
27.2%	28.2%	34.3%	37.0%	39.5%

Source: FIPI, 2010

LULUCF - Forest changes from 1990 to 2010(cont')

1995

28.2%
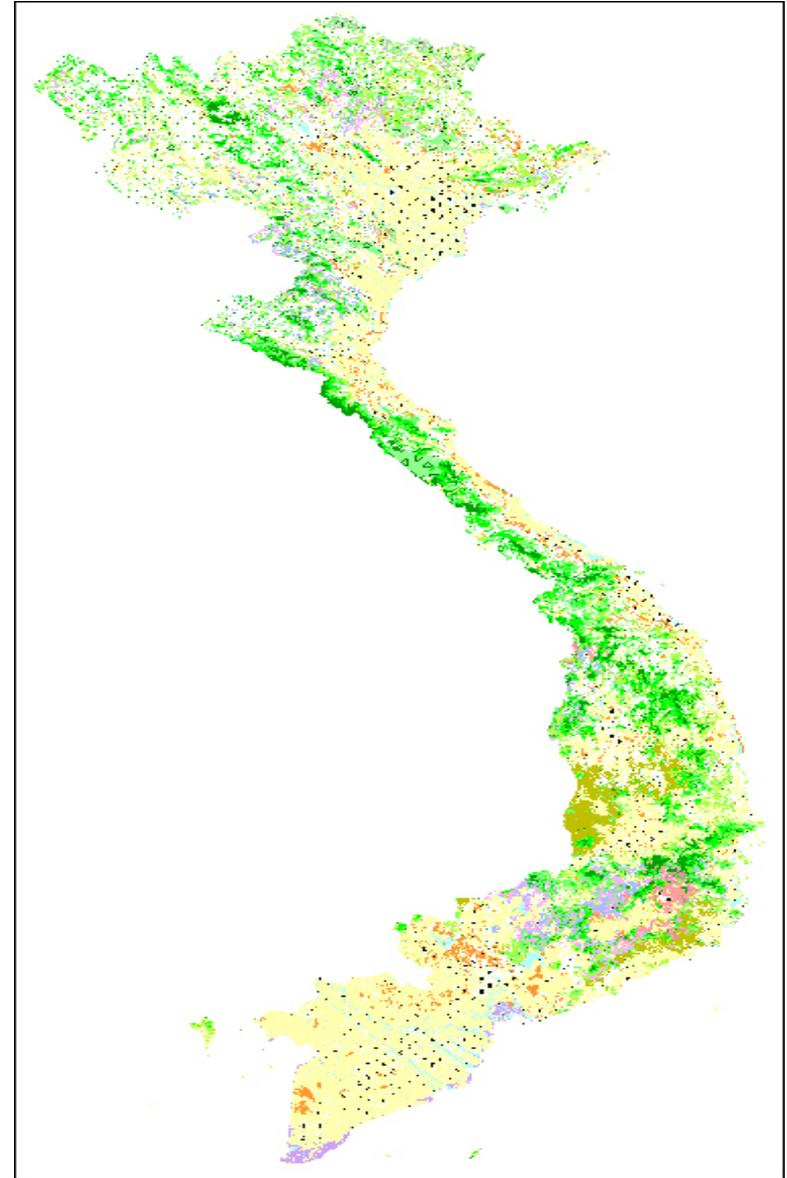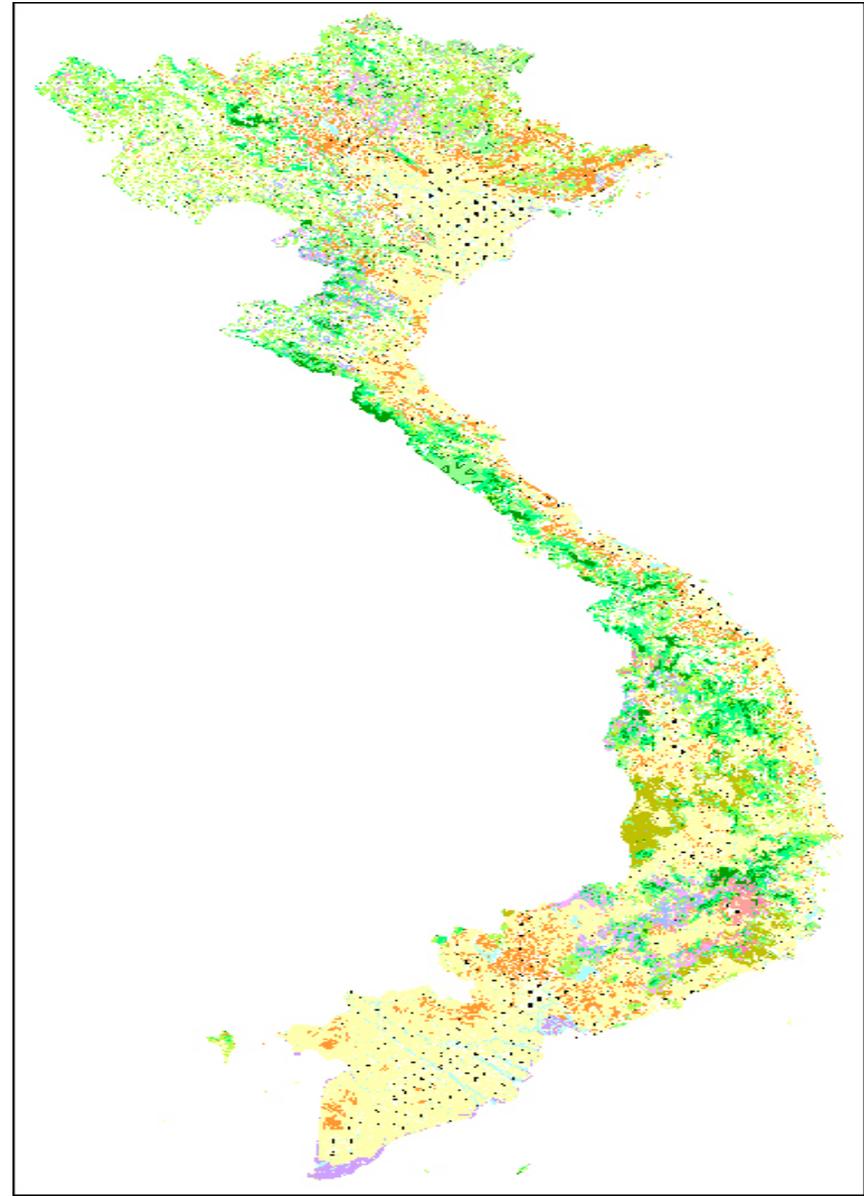
LULUCF - Forest changes from 1990 to 2010(cont')

2000

34.3%
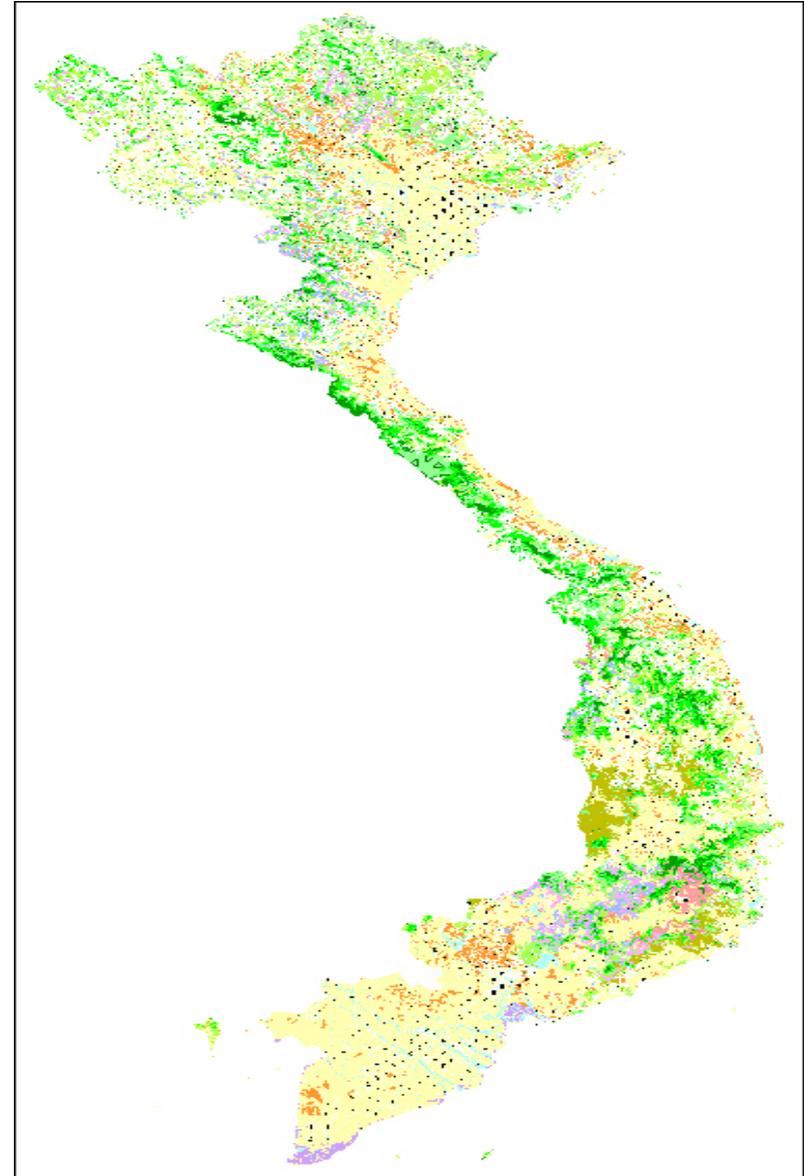
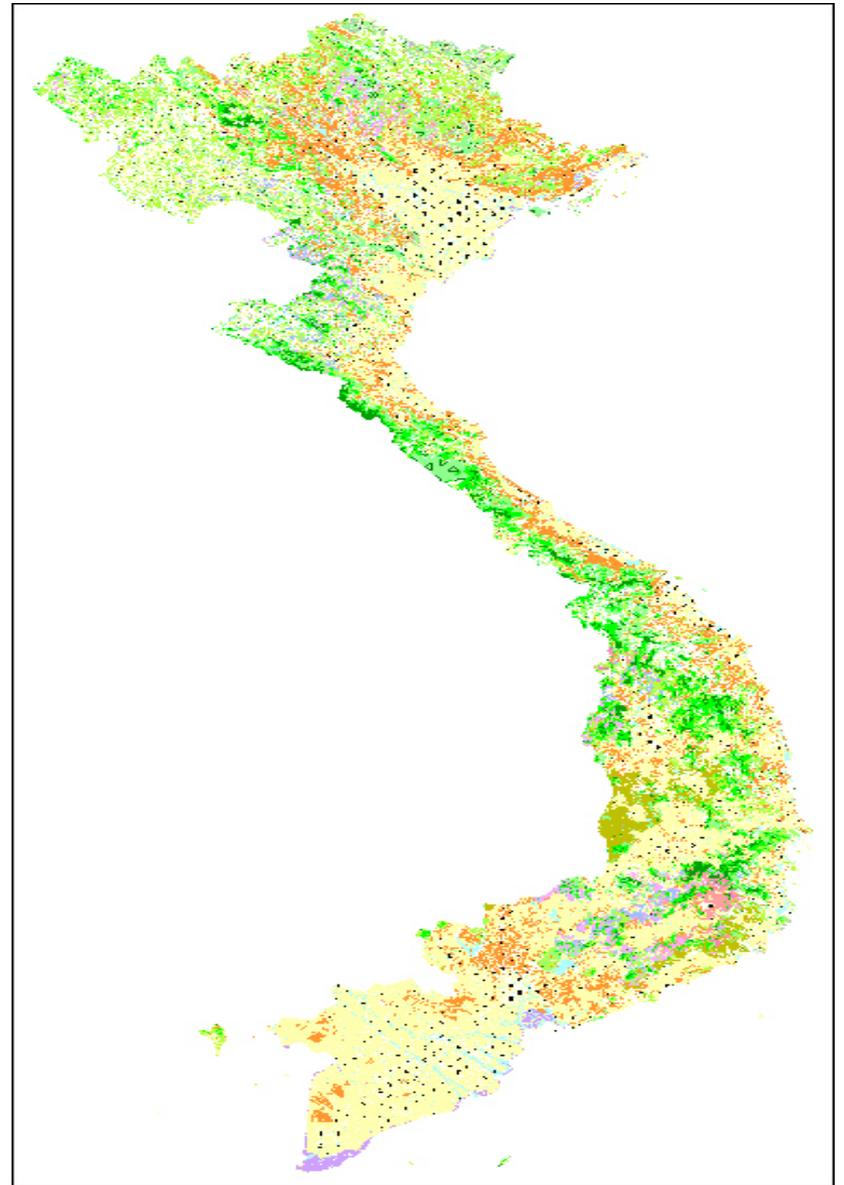# LULUCF - Forest changes from 1990 to 2010(cont')

2005

37.0%

LULUCF - Forest changes from 1990 to 2010(cont')

2010

39.5%

LULUCF – Land category distribution

IPCC LAND CLASSIFICATION				
Land use category		Unit	2005	2010
Forest land	Forest land remaining forest land	kha	7,355	10,259
	Land converted to forest land	kha	5,262	3,129
Cropland	Cropland Remaining Cropland	kha	6,284	6,588
	Land Converted to Cropland	kha	3,082	3,488
Grassland	Grassland Remaining Grassland	kha	1,906	1,608
	Land Converted to Grassland	kha	204	393
Wetlands	Wetlands Remaining Wetlands	kha	1,148	1,155
	Land Converted to Wetlands	kha	689	611
Settlements	Settlements Remaining Settlements	kha	1,317	1,551
	Land Converted to Settlements	kha	775	1,040
Other land	Other Land Remaining Other Land	kha	3,848	1,935
	Land Converted to Other Land	kha	1,251	1,338

Source: NIR 2005 and Draft NIR 2010

LULUCF- Reclassification of land use categories

GPG LULUCF	Type of land use	GSO
Forest land	Productive forest	Agricultural land
	Protective forest	Agricultural land
	Specially used forest	Agricultural land
Grassland	Weed land for animal raising	Agricultural land
Cropland	Paddy land	Agricultural land
	Other annual cropland	Agricultural land
	Perennial crop land	Agricultural land
Wetland	Water surface land for fishing	Agricultural land
	Rivers and specialized water surfaces	Non-agricultural land
Settlement	Rural home stead land	Non-agricultural land
	Urban home stead land	Non-agricultural land
	Land used by offices and non-profit agencies	Non-agricultural land
	Security and defence land [1]	Non-agricultural land
	Land for non-agricultural production and business	Non-agricultural land
	Public land	Non-agricultural land
	Religious land	Non-agricultural land
	Cemetery	Non-agricultural land
Other land	Other non-agricultural land	Non- agricultural land
	Land for salt production	Agricultural land
	Other agricultural land	Agricultural land
	Unused flat land	Unused land
	Unused mountainous land	Unused land
	Non tree rocky mountain	Unused land
	Other increase [2]	

1) In the land use matrix prepared by the Land Agency, the security land and defense land are combined into one category "security and defense land" in the period 2001-2005 however they are separated in the period 2006-2010.

2) This category does not belong to Vietnamese land use categories but is included in the land use

LULUCF- Data sources

Source of data for gain-loss method for carbon stock change in Forest land remaining Forest land

Data	Data source
Gain	
Forest Area	FPD, 2005
Loss	
Commercial Harvest	GSO, 2011
Fuelwood gathering	RCFEE report (based on national study)
Area of fire in forest	GSO, 2011
Area of destoryed forest	GSO, 2011
Area subject to damage of insect	FPD, 2005

LULUCF- Data sources

IPCC Category	Activity Data(AD)	AD Data Source	Publishing Frequency
5A. Forest Land	Forest area and volume	Forest area by province from the Forestory Protection Department (FPD).	annually
		Forest area and volume in each forest type for eight eco region from Forestry Inventory and Planning Institute (FIPI)	Every five years (Not published)
5B. Cropland	Area of perennial crop	General Statistic Office (GSO)	annually
	Converted area to Cropland	calculated from the land use matrix of the Land Agency	Every five years
5C. Grassland	Converted area to Grassland	calculated from the land use matrix of the Land Agency	Every five years

Stoking volume per area per ecozone

Standing Volume per hector in m^3/ha

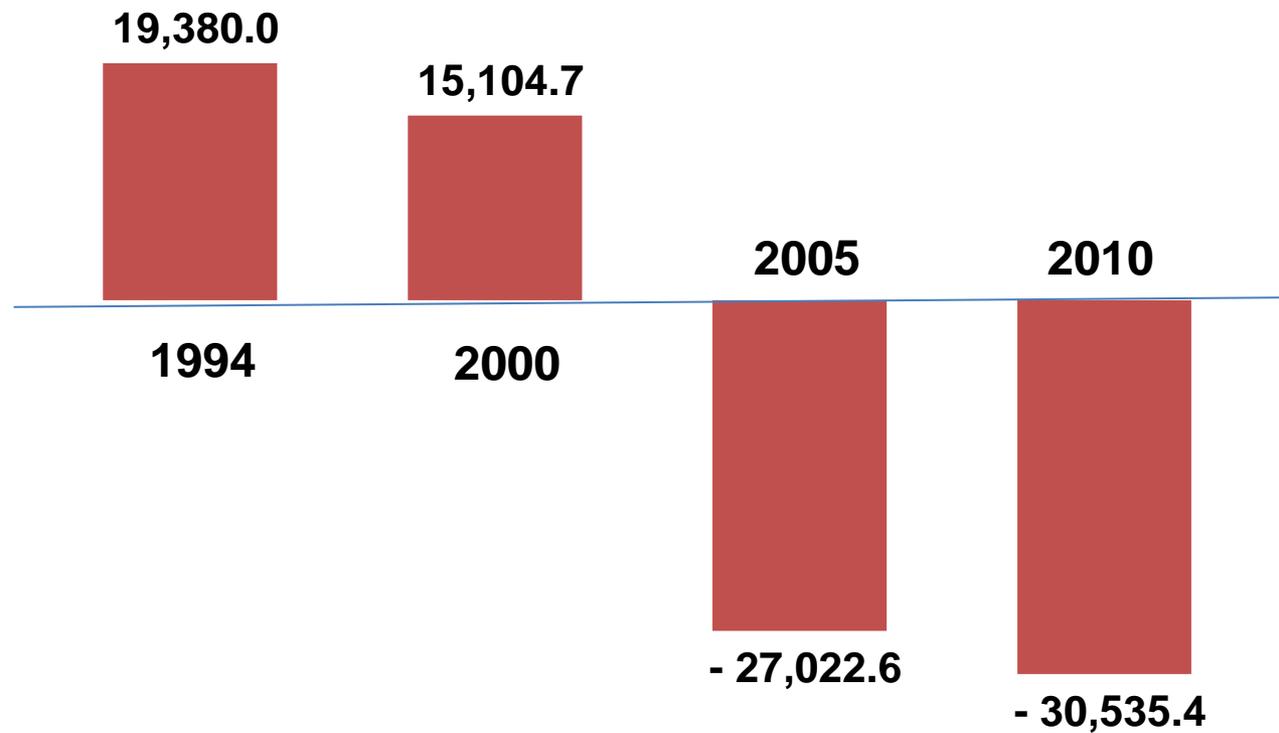|	North East	North West	Red River Delta	North Central	South Central	Central Highlands	South East	South West
Natural Wood Forest - Evergreen - Broadleaf - Rich	200	275	169	256	271	247	274	194
Natural Wood Forest - Evergreen - Broadleaf - Medium	130	111	123	137	167	164	142	179
Natural Wood Forest - Evergreen - Broadleaf - Poor	59	46	35	84	76	87	99	115
Natural Wood Forest - Evergreen - Broadleaf - Regrowth	18	25	25	41	66	82	82	45
Natural Wood Forest - Deciduous					67	86	67	
Natural Wood Forest - Coniferous forest					165	142		
Natural Wood Forest - Mixed Broadleaf and Coniferous						138	135	
Bamboo forest			0	0		0	0	
Mixed Wood and Bamboo forest	57	47	71	61	80	88	108	50
Mangrove forest	40		40	40	40		40	21
Rocky mountainous forest	34	48	46	80			66	
Plantation forest	19	17	25	19	54	20	30	19

Achievements

- **NIR 2005, 2010**

- **Coordination amongst LMs,**

- **GHG Inventory system to be developed,**

- **Capacity building**

   GHG inventory national staffs and related agencies are trained , on-site coach by experts of GEF, JICA, SEA project, LEAP,…
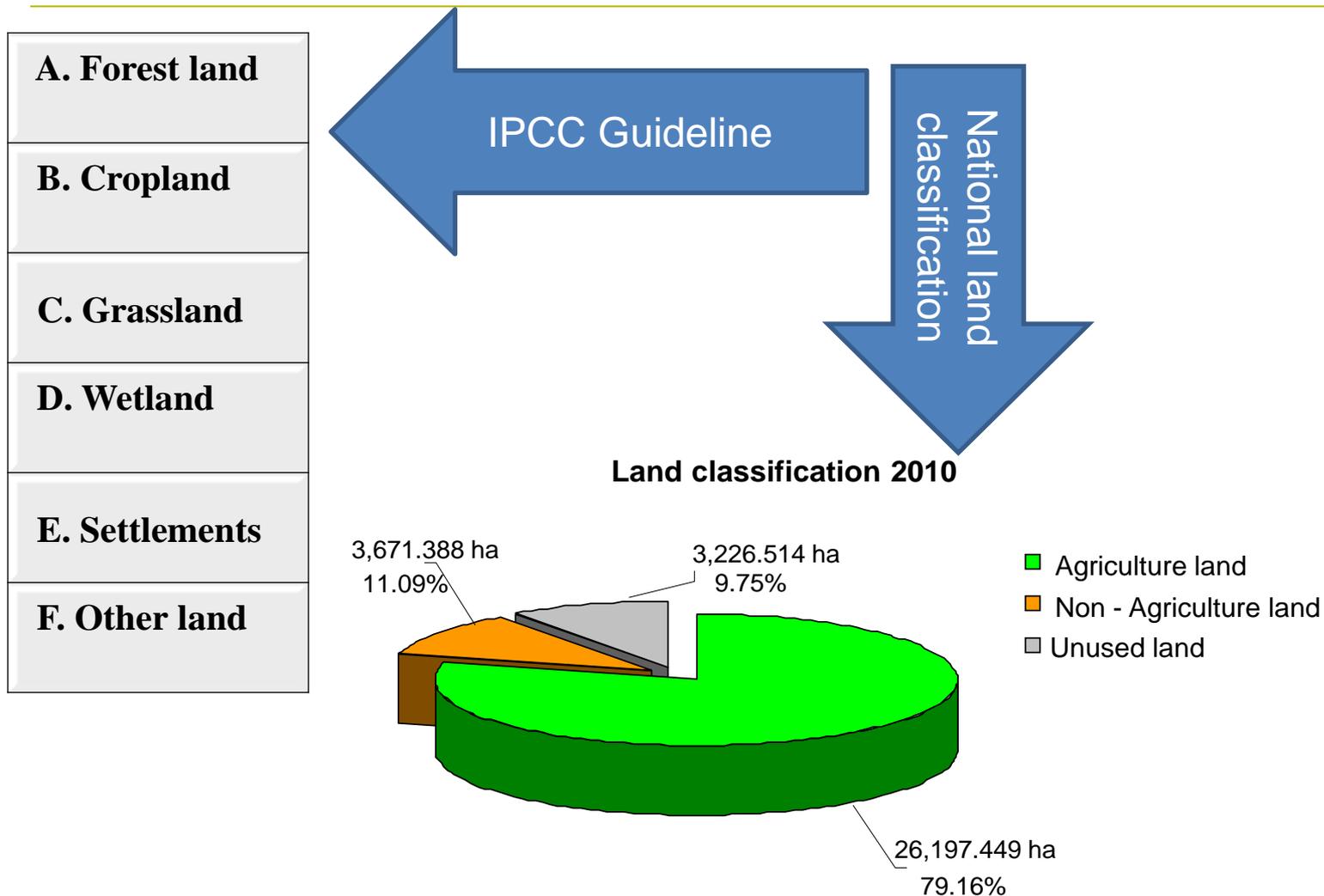
Achievement (cont')

LULUCF inventory results

Year	Value
1994	19,380.0
2000	15,104.7
2005	- 27,022.6
2010	- 30,535.4

Source: INC, SNC, NIR 2005 and Draft NIR 2010

Gaps (Cont') – Example in land classification

A. Forest land

B. Cropland

C. Grassland

D. Wetland

E. Settlements

F. Other land

IPCC Guideline

National land classification

Land classification 2010

3,671.388 ha
11.09%

3,226.514 ha
9.75%

■ Agriculture land
■ Non - Agriculture land
□ Unused land

26,197.449 ha
79.16%

Source: MONRE, 2011

Necessary supports

- Further training on mitigation analyzing and modeling, data archiving,

- Experience sharing and networking

- Enhance activity data for improving the accuracy of calculation in the future. E.g GHG emissions from peatland estimated

- Development of database for national GHGI

- Developing LU/LC/soil mapping system

Necessary supports

- **Developing Country Specific for peatland, soils, mass of available fuel and the combustion efficiency or fraction of biomass combusted,**

- **"Unused flat land" and "Unused mountainous land" of the land use type might have some living biomass - country-specific parameters needs studying**

THANK YOU FOR YOUR ATTENTION

For further information:

Department of Meteorology, Hydrology and Climate Change
Ministry of Natural Resources and Environment
No. 10 Ton That Thuyet Str., Hanoi, Viet Nam
Tel: 84-4-37759384/37759385; Fax: 84-4-37759382
Email: vnccoffice@fpt.vn
Website: noccop.org.vn