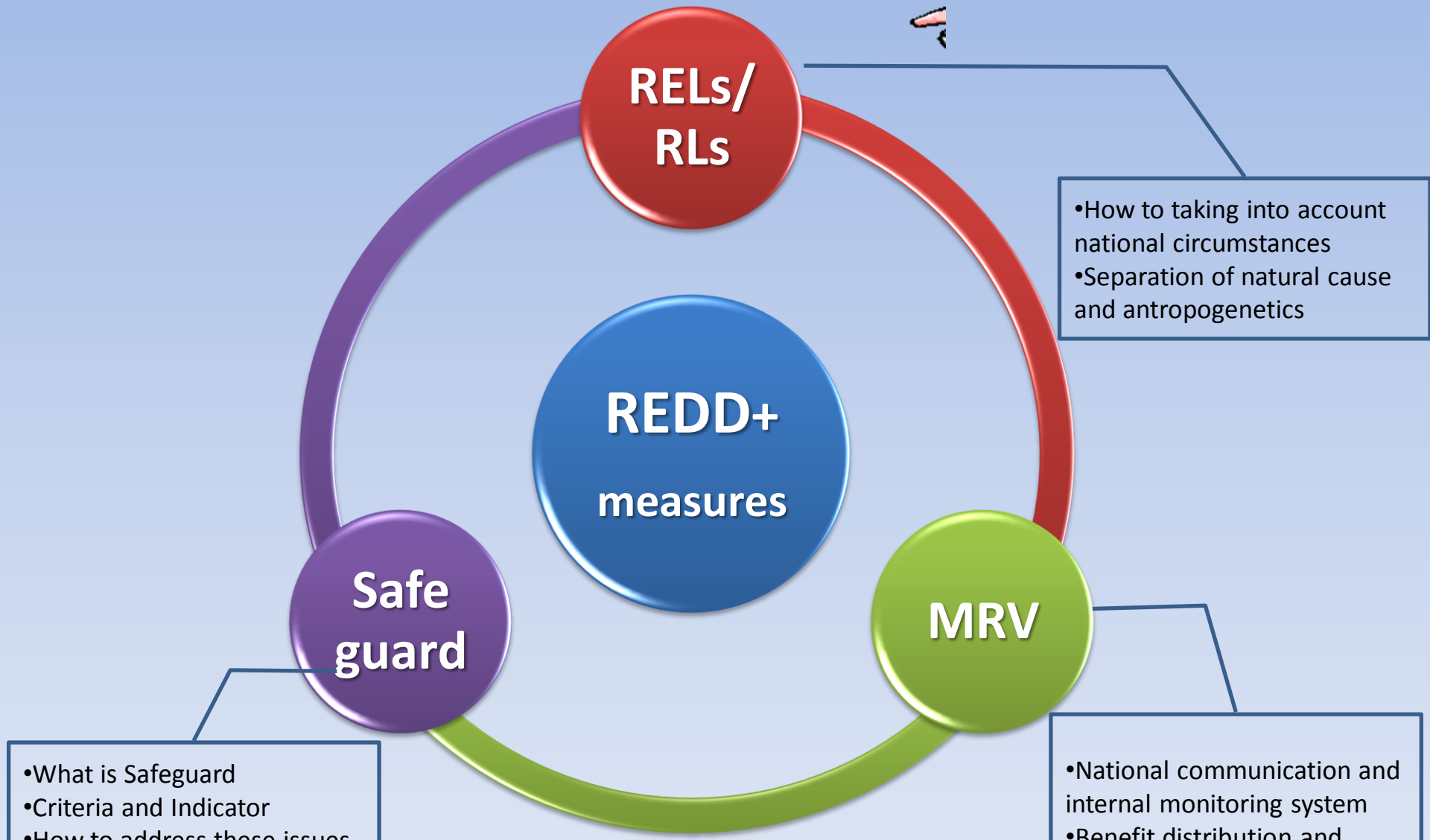
Technical aspect of REDD+ demonstration activities of JICA
-Required skill and technical options-

International Technical Seminar
Towards developing a framework of global REDD+
Session 2
How should REDD+ demonstration activities be implemented and scaled up?

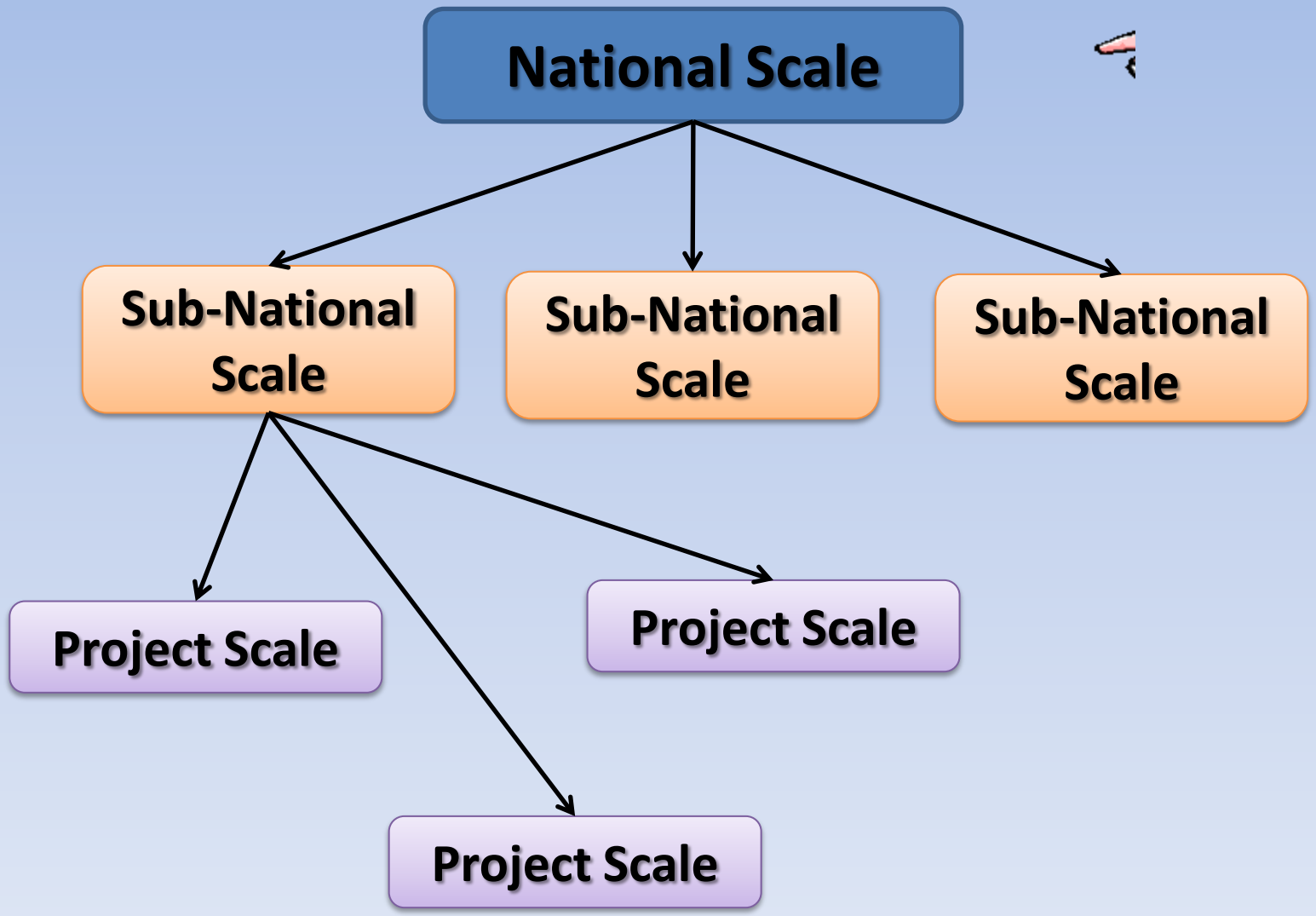
Japan Forest Technology Association
KEI SUZUKI

February 8, 2012

Three Contents of REDD+



Three Scales of REDD+



Outline of the JICA REDD Study

“Study on Potential Forests and Land Related to Climate Change and Forests”

■Objectives

The Study contributes to facilitation of international efforts for mitigation of global climate change under UNFCCC through identifying the potential areas for A/R CDM projects and the reducing emissions from deforestation and forest degradation in developing countries (REDD) and examining possibilities of non-UNFCCC approaches in Viet Nam.

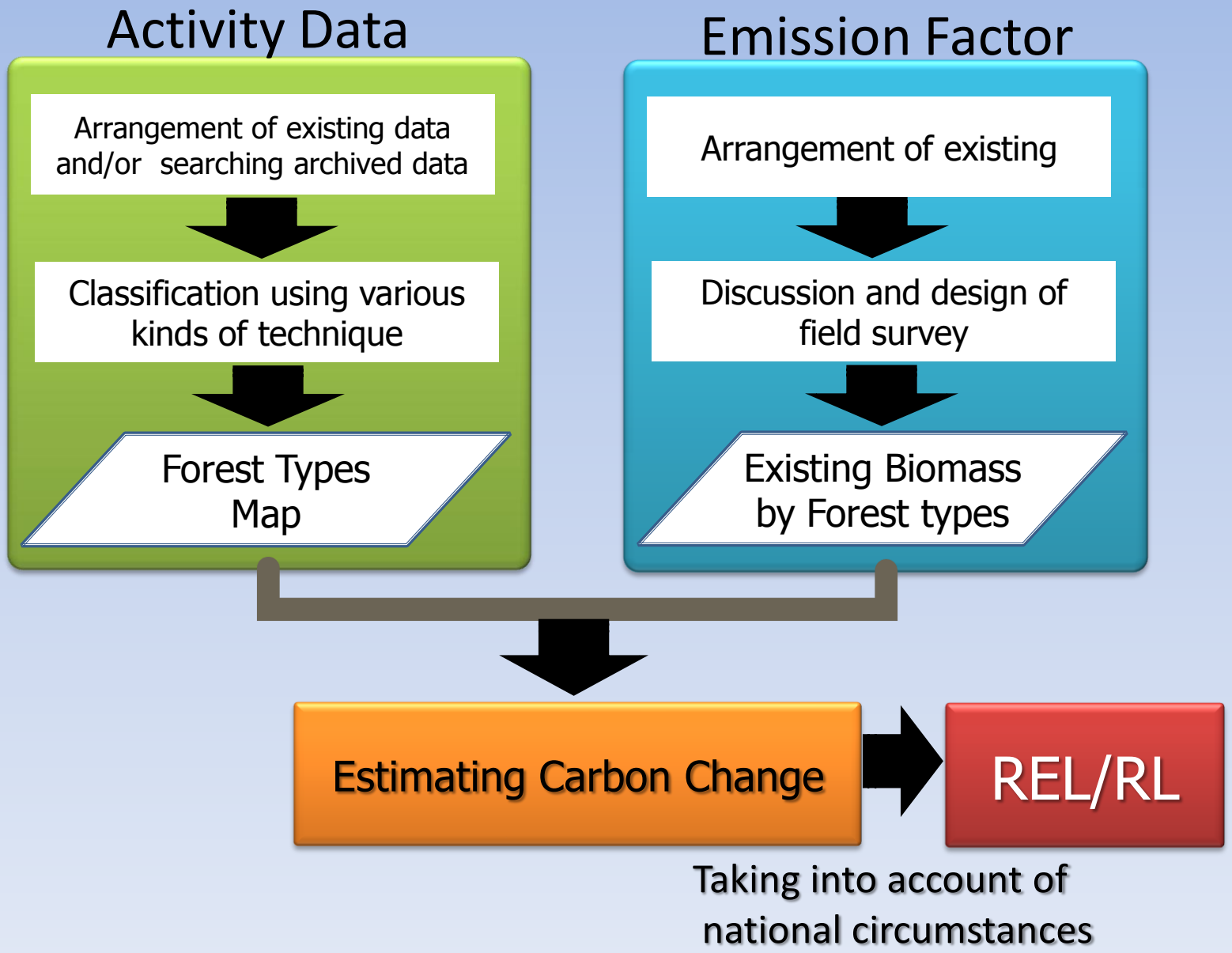
■Duration

From September 2009 to March 2012（two year and 7 months）

Seven (7) Main Components of the Study

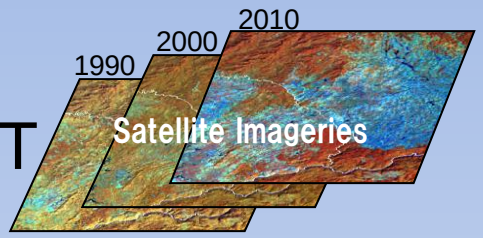
1. Development of Activity Data using RS data
2. Development of Emission Factor using NFI
3. Setting interim RL/RELs for REDD and estimating cost and beneficial effects associated with A/R-CDM and REDD
4. Model land survey
5. Preparation of "the Basic Plan for REDD+ Development in Dien Bien Province"
6. Development of method on monitoring for change of forest carbon
7. Provision of information to potential investors

One Methodology for Estimating Carbon Change

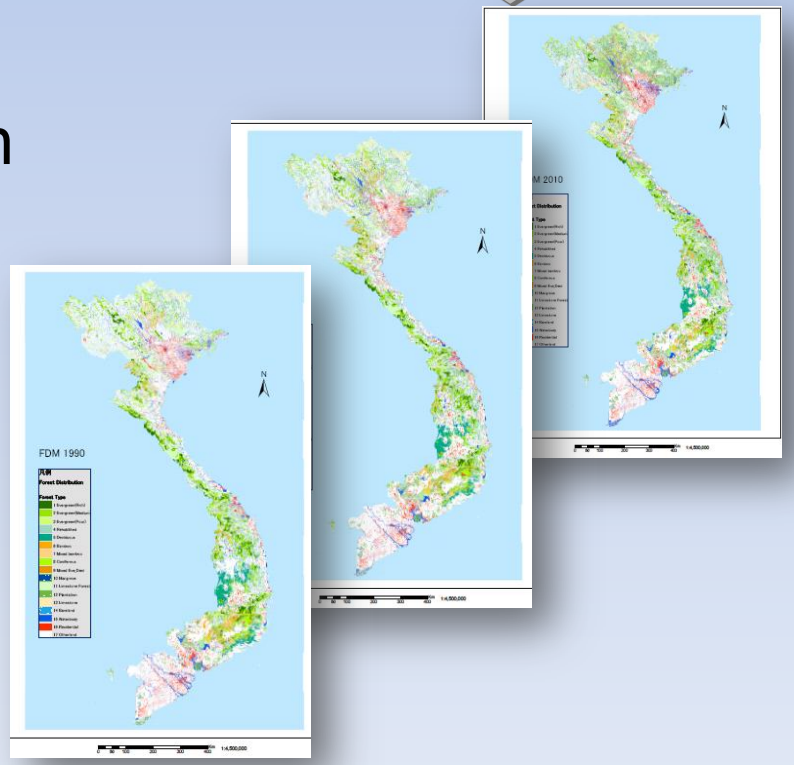


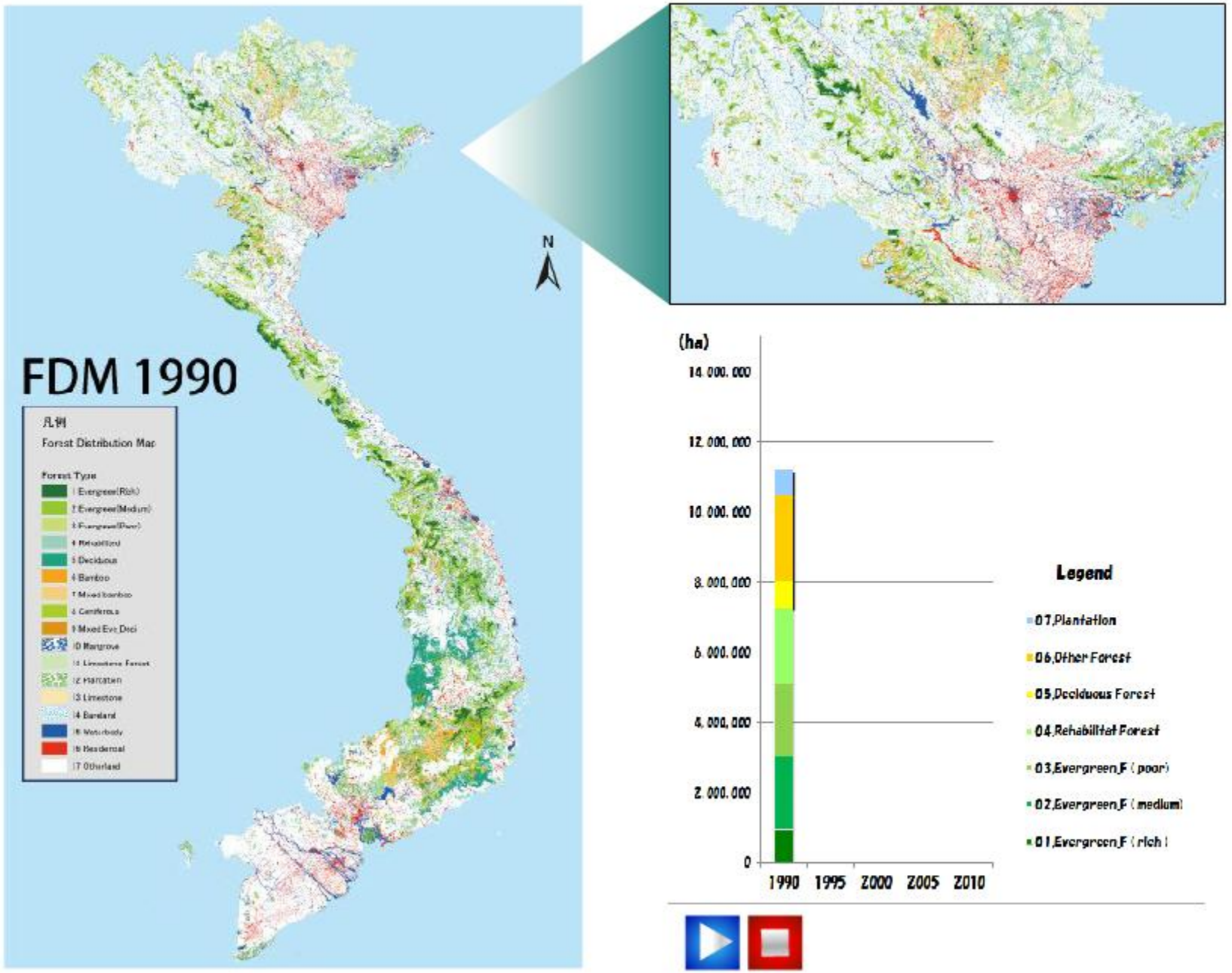
Development of the forest distribution maps
Existing Data

- RS imagery
  - 1st cycle 1991 – 1995: Landsat TM
  - 2nd cycle 1996 – 2000: Landsat TM+SPOT
  - 3rd cycle 2001 – 2005: Landsat ETM+
  - 4th cycle 2006 - 2010: SPOT5
- Visual interpretation and correction through field surveys
- Over 30 detailed LU/LC categories

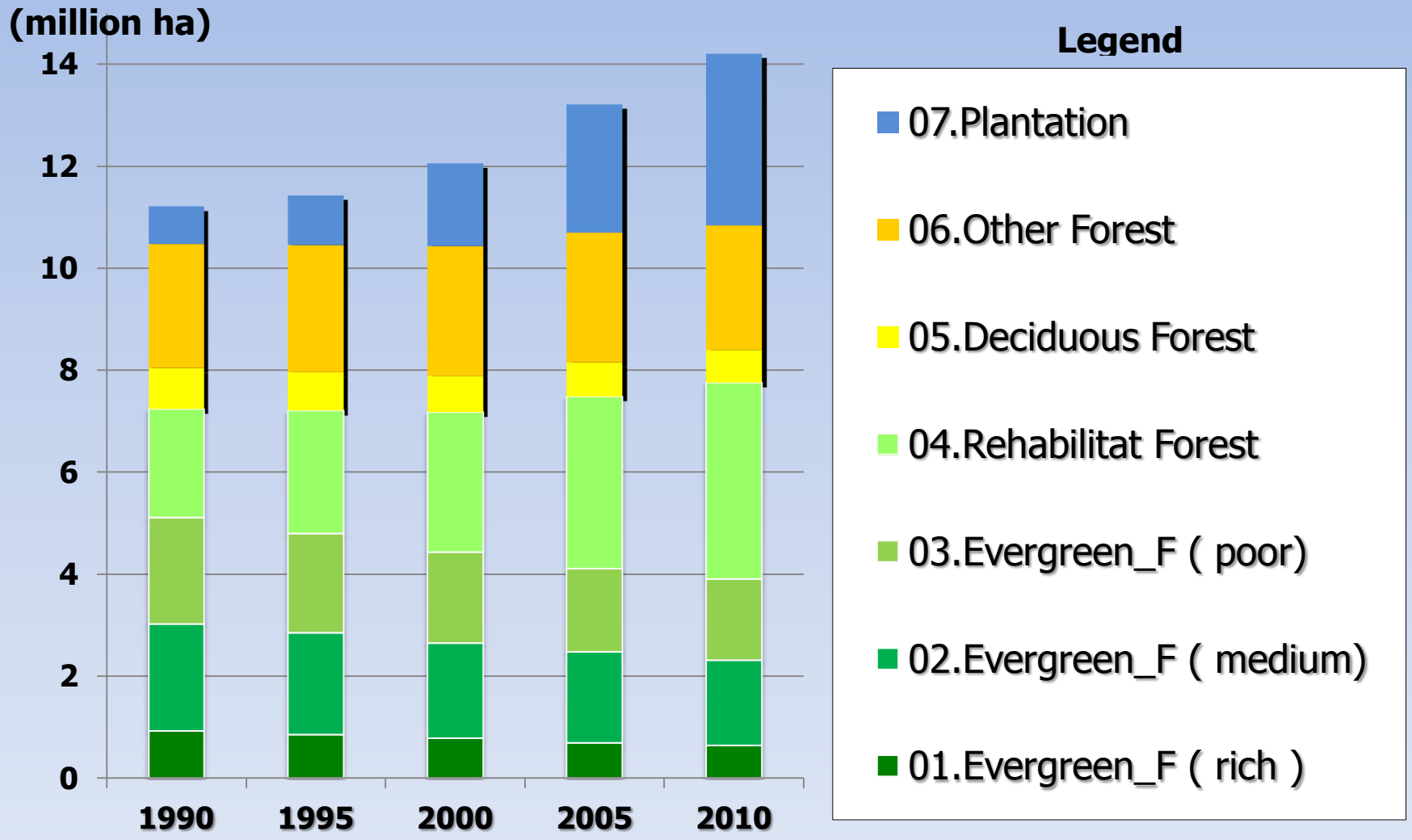


Classification



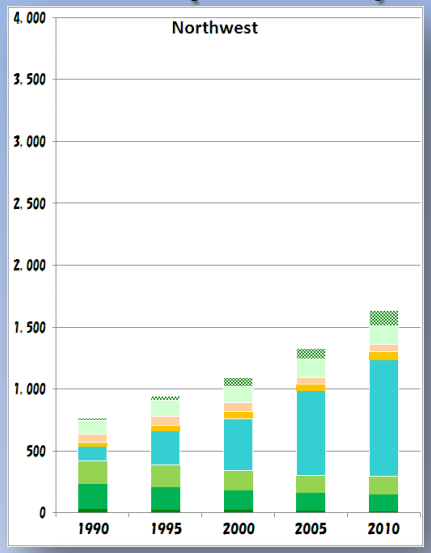

FDM 1990
凡例
Forest Distribution Map
Forest Type
1 Evergreen(Rich)
2 Evergreen(Medium)
3 Evergreen(Poor)
4 Rehabilitat
5 Deciduous
6 Bamboo
7 Mixed bamboo
8 Coniferous
9 Mixed Evr. Dec
10 Mangrove
11 Limestone Forest
12 Plantation
13 Limestone
14 Bareland
15 Waterbody
16 Residential
17 Otherland
N
(ha)
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
1990
1995
2000
2005
2010
Legend
07,Plantation
06,Other Forest
05,Deciduous Forest
04,Rehabilitat Forest
03,Evergreen,F (poor)
02,Evergreen,F (medium)
01,Evergreen,F (rich)

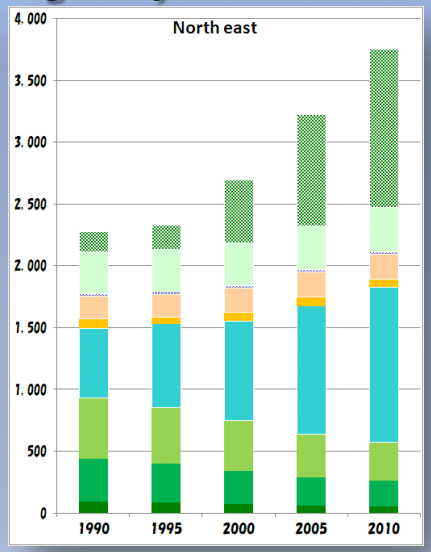
Development of the forest distribution maps
Results (National Scale)

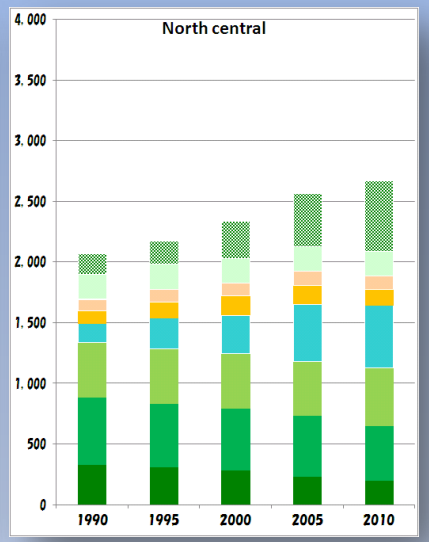


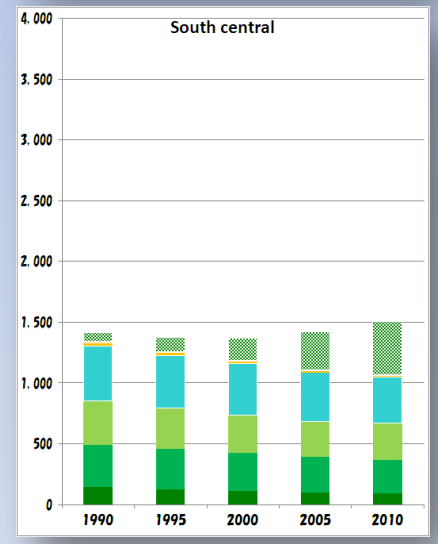
National scale forest type area changes from 1990 in Viet Nam

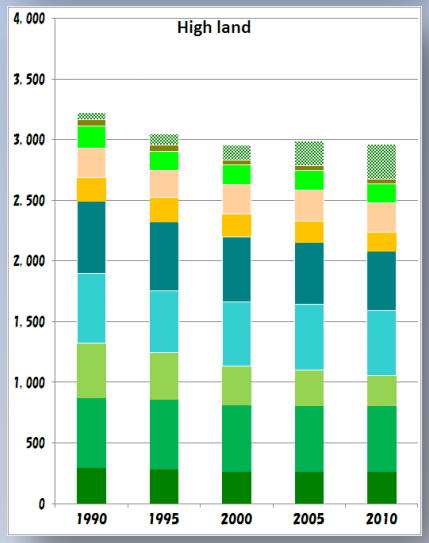
Results-3 (summary in regions)

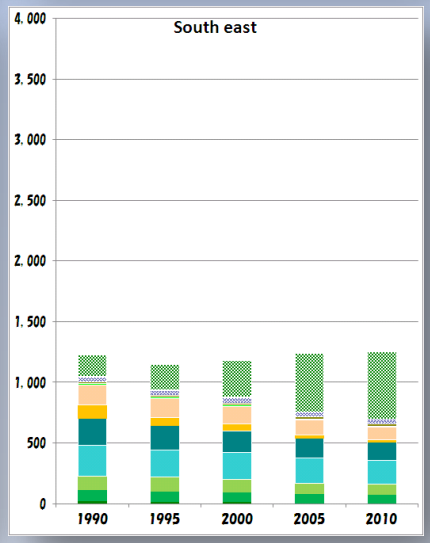


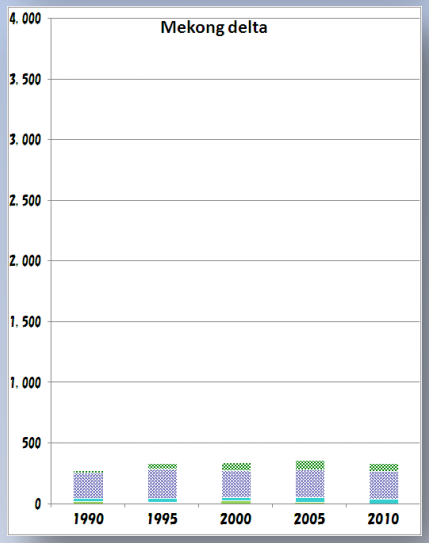


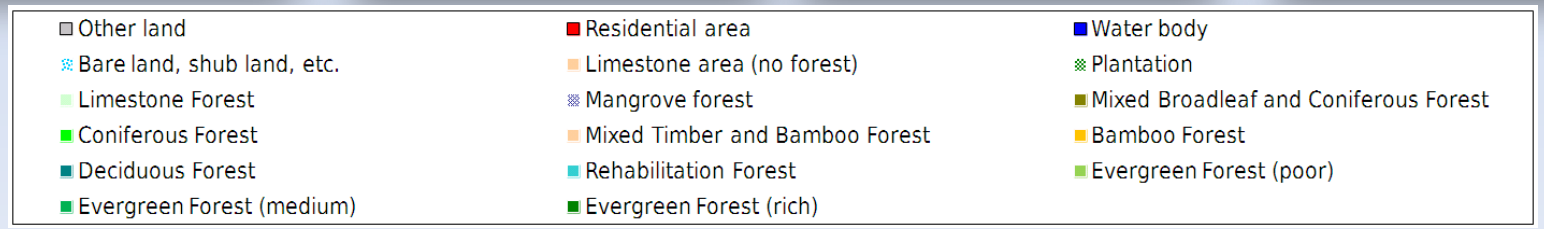






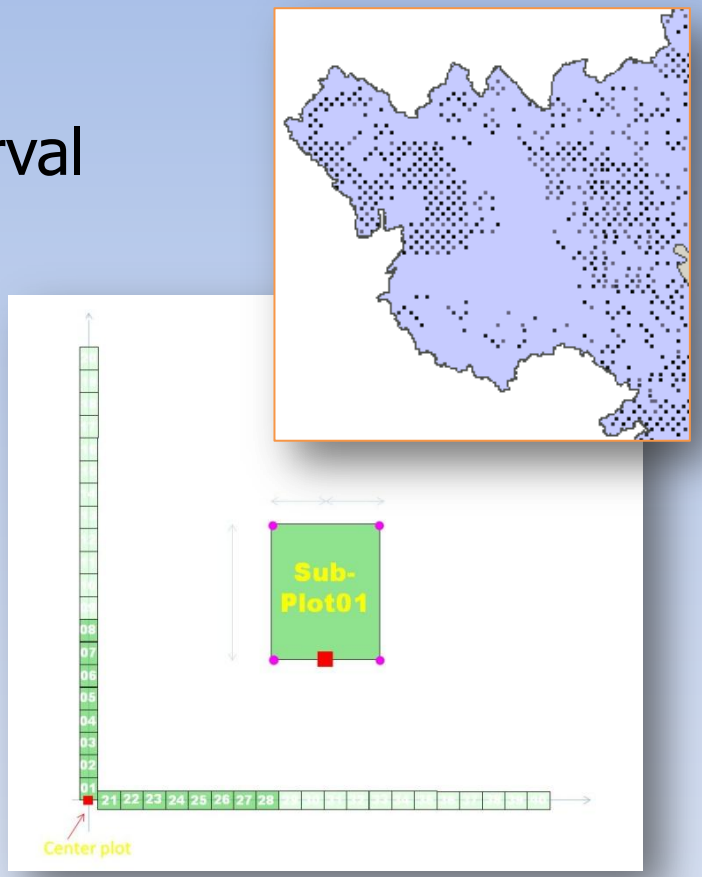






Arrangement of the national forest inventory data
Existing Data

- A sample plot system
- 4 cycles from 1991 with 5 years interval
  - 1st cycle 1991 – 1995: 3,000 Plots
  - 2nd cycle 1996 – 2000: 3,800 Plots
  - 3rd cycle 2001 – 2005: 4,200 Plots
  - 4th cycle 2006 - 2010: 2,100 Plots
- 8km systematic sampling
- 1 plot consisting with 40sub-plots
- Sub-Plot size=20m × 25m Rectangle



Arrangement of the national forest inventory data Results (Mean AGB+BGB par Regions and F.Types

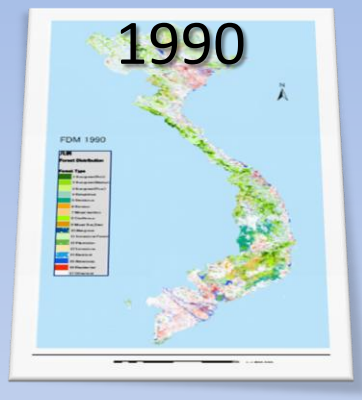
(CO_2t/ha)

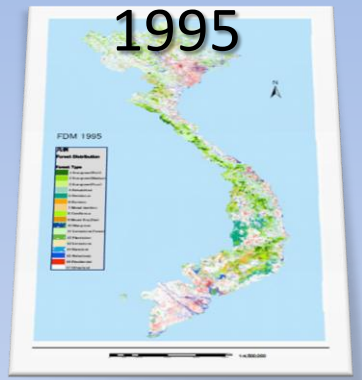
※1 \ ※2	1	2	3	4	5	6	7	8	9	10	11	12
1			181	157								75
2	604	282	144	157	178		279					
3										115		104
4	798	299										
5	508	275	158	131		78	219	92				67
6	516	272	135	94		66	118				165	103
7	417	272	171	116		82	181	146				70
8												
9		271	110	115		86	122		105	4		85
10	465	282	158	148	196	138	249					94
11	502	291	162	135	153	91	199	253	292			163
12	511	280	120	128	189	104	240		271			106
14												102

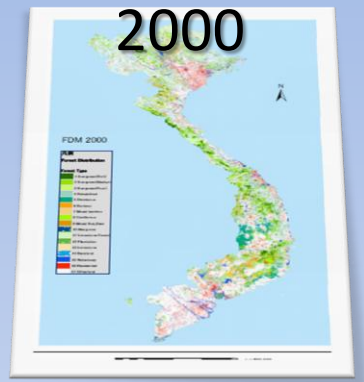
※1 (Bio-ecoregions);1=Cardamom Mountains rain forests, 2=Central Indochina dry forests, 3=Indochina mangroves, 4=Luang Prabang montane rain forests, 5=Northern Annamites rain forests, 6=Northern Indochina subtropical forests, 7=Northern Vietnam lowland rain forests, 8=Red River freshwater swamp forests, 9=South China-Vietnam subtropical evergreen forests, 10=Southeastern Indochina dry evergreen forests
11=Southern Annamites montane rain forests, 12=Southern Vietnam lowland dry forests, 14=Tonle Sap-Mekong peat swamp forests

※2 (Forest types) ; 1=Evergreen broadleaf forest(rich forest), 2=Evergreen broadleaf forest(medium forest), 3=Evergreen broadleaf forest(poor forest), 4=Evergreen broadleaf forest(rehabilitationr forest), 5=Deciduous forest, 6=Bamboo forest, 7=Mixed timber and bamboo forest, 8=Coniferous forest, 9=Mixed broadleaf and coniferous forest, 10=Mangrove forest, 11=Limestone forest, 12=Plantation

Arrangement of the national forest inventory data
Existing Data







90'～95'

	1	2	3	4	5	6	7	8	9	10	11	12
1												
2	646	283	157	110	228		297					
3												
4	959											
5	606	283	143	140			329					121
6	560	272	124	98		106	191	5			209	78
7	471	258	141	107			193	83				77
8			113	97								
9	518	261	117	74		25	173	96				77
10	477	283	127	148	224	189	240					121
11	546	276	154	121	185	119	205	203	200			123
12	529	279	131	135	219		316	298				120
13												

95'～00'

	1	2	3	4	5	6	7	8	9	10	11	12
1			149	142						64		
2	489	274	107	144	241		258					
3										68		
4	660	295	187				330					
5	561	274	139	93		87	256					77
6	587	271	115	83		119	151				116	86
7	457	268	147	99			195	98				90
8												
9		260	104	65		96	99	90				88
10	446	276	124	141	237	126	181		94			87
11	459	278	142	141	255	85	172	127	233			84
12	465	277	129	126	183		184	223	363		20	64
13												

00'～05'

	1	2	3	4	5	6	7	8	9	10	11	12
1		319	163	157						99		
2	434	271	112	148	214		236					
3										99		
4	472	300	130				249					
5	519	268	142	101		83	181	82				116
6	505	270	119	75		283	114	29			116	83
7	428	285	153	109		107	151	87				60
8												
9		250	118	68		75	95	86				77
10	435	280	143	146	226	121	202	340				88
11	448	280	143	134	257	75	154	166	268		150	195
12	449	277	134	140	180		190	96	169		78	201
13										89		124

00'～10'

	1	2	3	4	5	6	7	8	9	10	11	12
1			181	157								75
2	604	282	144	157	178		279					
3										115		104
4	798	299										
5	508	275	158	131		78	219	92				67
6	516	272	135	94		66	118				165	103
7	417	272	171	116		82	181	146				70
8												
9		271	110	115		86	122		105	4		85
10	465	282	158	148	196	138	249					94
11	502	291	162	135	153	91	199	253	292			163
12	511	280	120	128	189	104	240		271			106
13												102

How to cook these basic information to identify carbon changes

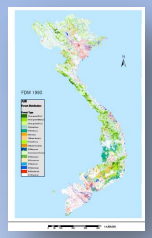
Discussion through SBSTA expert meeting about understanding of REL/RL

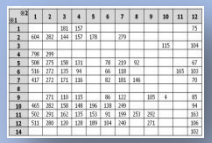
- What is/are the difference(s) between RL and REL and the associated methodological differences?
  - Recommend guidance
- Can a Party propose REL/RLs for a subset of REDD+ activity types?
  - If yes, under what conditions? (e.g. must include Deforestation)
- When is it appropriate to adjust extrapolated historical trends or estimates?
  - To address national circumstances, on a case by case basis
  - What type of information is needed to support adjustment?
- What information should be provided and in what form for the determination of REL/RL?
- What aspects of the construction of RL/RELs should allow for comparability among countries?
- How can we avoid perverse incentives through the exclusion of pools or activities?

Technical Option when Estimation of Carbon Change

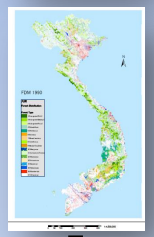
Item to be considered	Option 1	Option 2
Method of calculation	Integrating Emission and Removal	Separating Emission and Removal
Units of Aggregation	National Scale	Regional Scale by Administrative Units

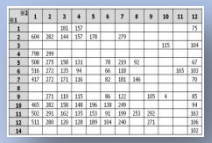
Technical Option when Estimation of Carbon Change Method of Calculation





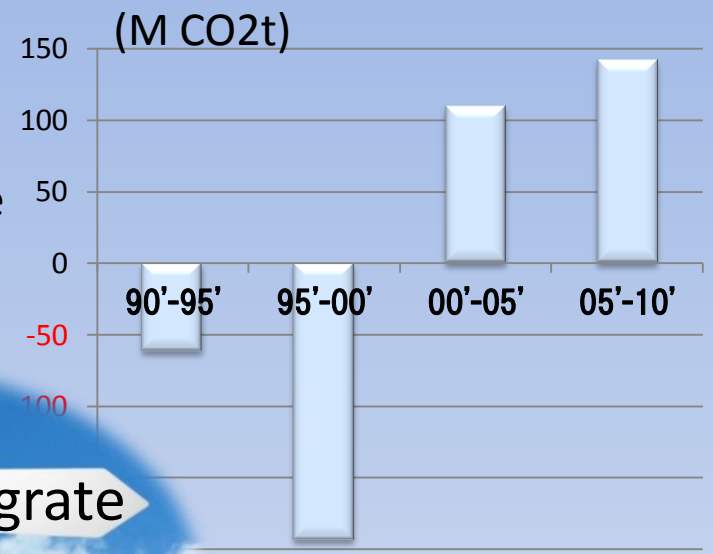
C Stock in 1990 (Ct)

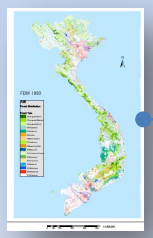


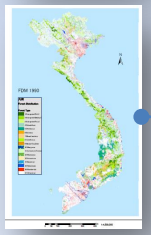


C Stock in 1995 (Ct)

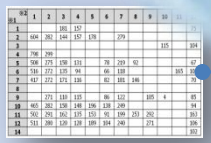
C Stock Change 1990 to 1995

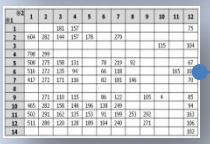




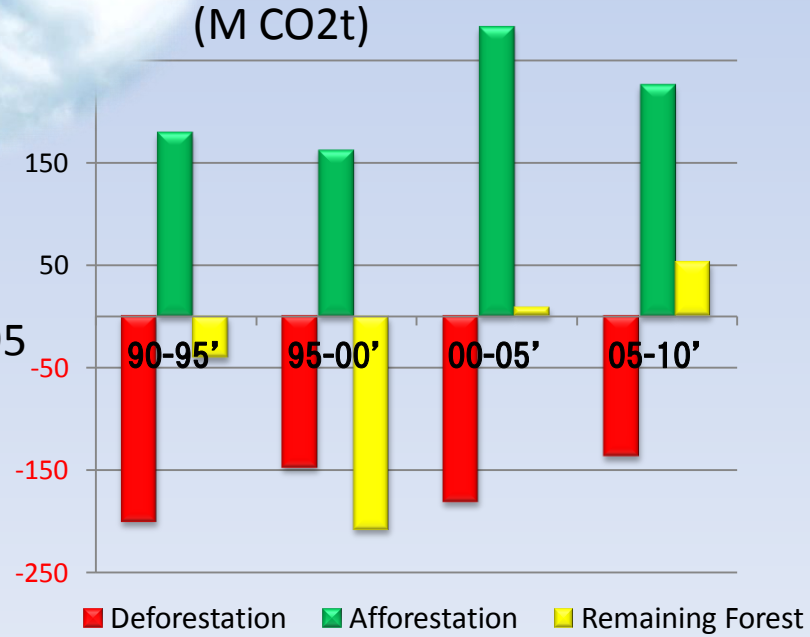


F.Type area Change 1990 to 1995 (ha)

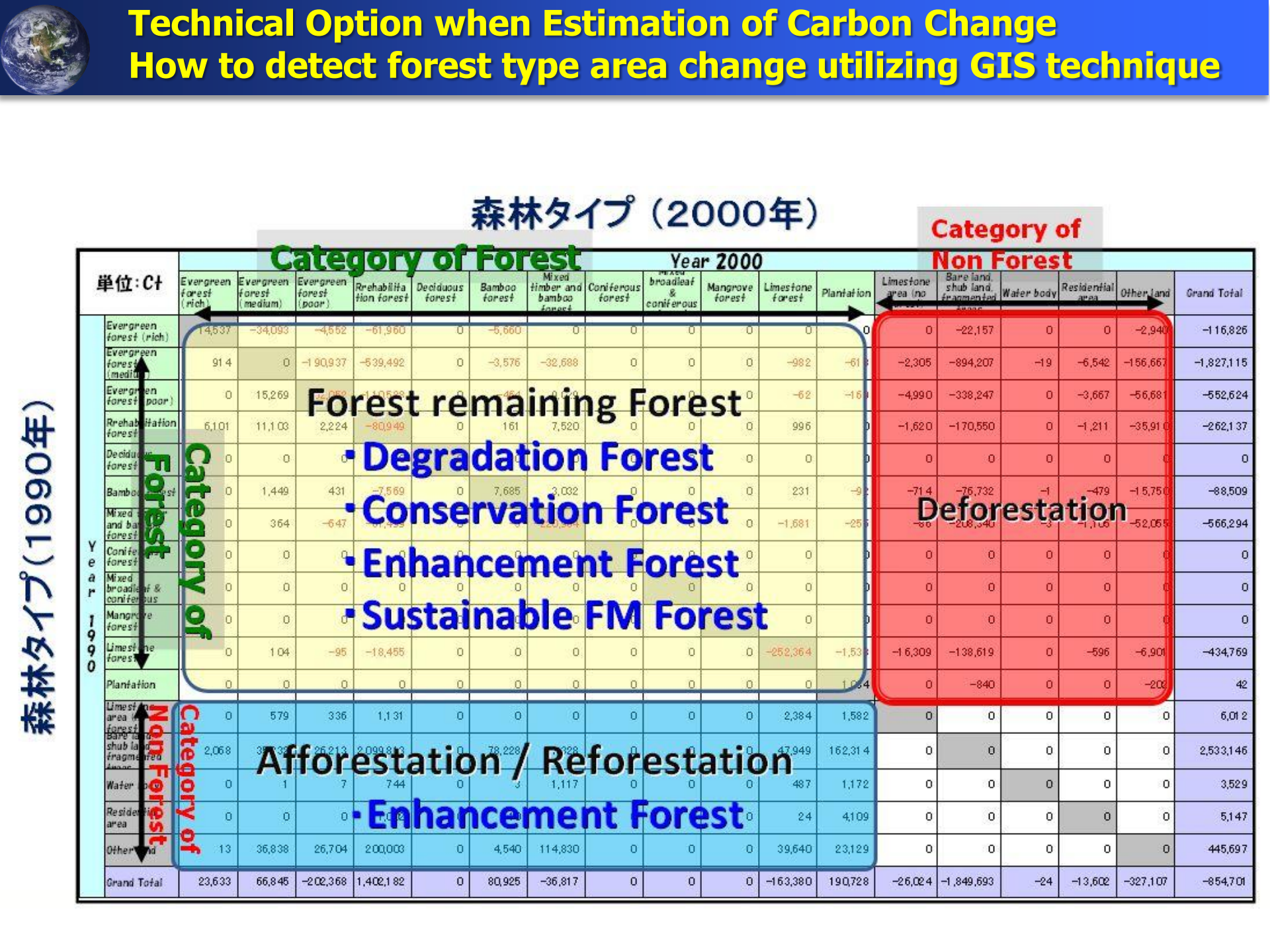




Emission Factor Change 1990 to 1995 (Ct/ha)

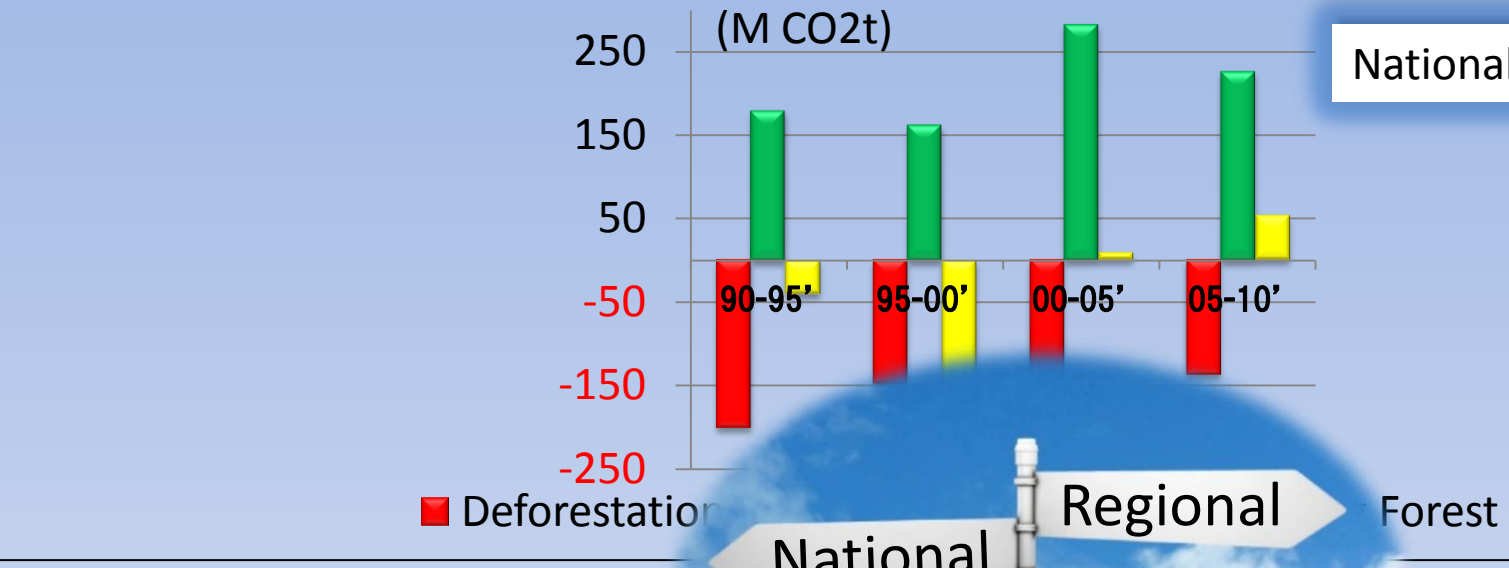


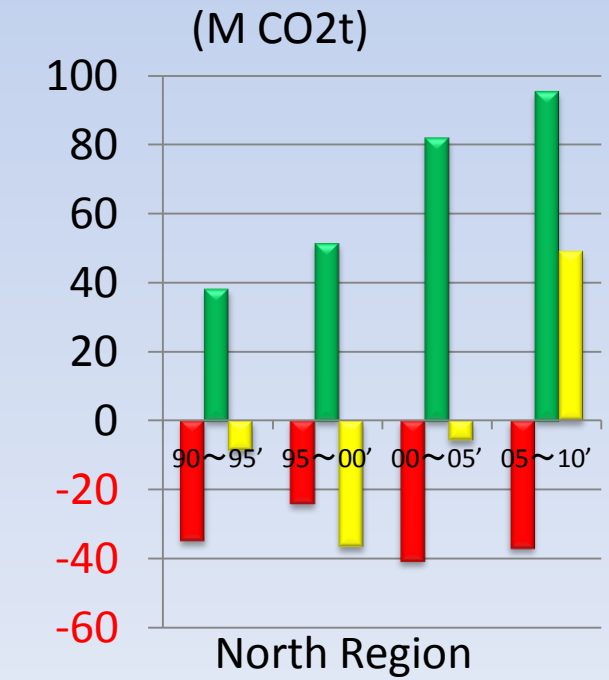
Technical Option when Estimation of Carbon Change
How to detect forest type area change utilizing GIS technique

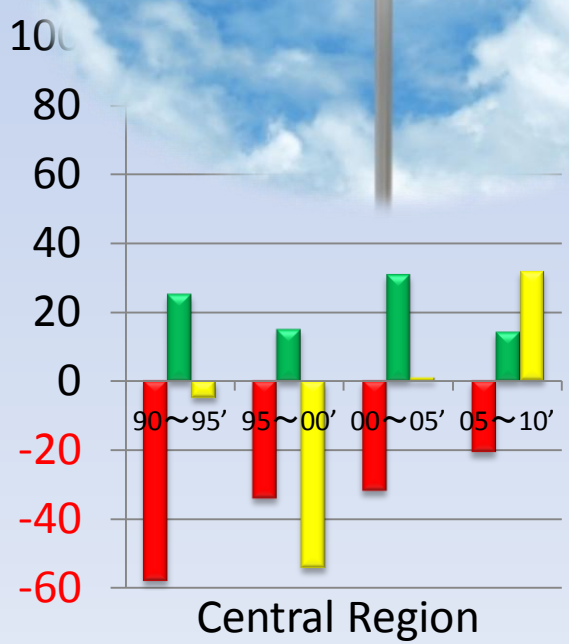


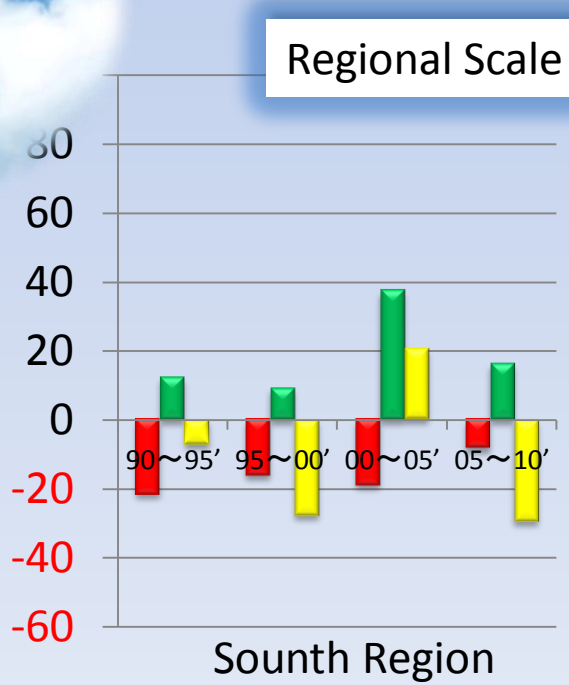
単位：Ct	Evergreen forest (rich)	Evergreen forest (medium)	Evergreen forest (poor)	Rrehabilitation forest	Deciduous forest	Bamboo forest	Mixed timber and bamboo forest	Coniferous forest	Mixed broadleaf & coniferous	Mangrove forest	Limestone forest	Plantation	Limestone area (no	Bare land, shub land, fragmented	Water body	Residential area	Other land	Grand Total
Evergreen forest (rich)	14,537	-34,093	-4,552	-61,960	0	-5,660	0	0	0	0	0	0	0	-22,157	0	0	-2,940	-116,826
Evergreen forest (medium)	914	0	-190,937	-539,492	0	-3,576	-32,688	0	0	0	-982	-61	-2,305	-894,207	-19	-6,542	-156,667	-1,827,115
Evergreen forest (poor)	0	15,269	[illegible]	[illegible]	0	[illegible]	[illegible]	0	0	0	-62	-164	-4,990	-338,247	0	-3,667	-56,681	-552,624
Rrehabilitation forest	6,101	11,103	2,224	-80,949	0	161	7,520	0	0	0	995	0	-1,620	-170,550	0	-1,211	-35,910	-262,137
Deciduous forest	0	0	0	[illegible]	0	[illegible]	[illegible]	0	0	0	0	0	0	0	0	0	0	0
Bamboo forest	0	1,449	431	-7,569	0	7,685	3,032	0	0	0	231	-92	-714	-76,732	-1	-479	-15,750	-88,509
Mixed timber and bamboo forest	0	364	-647	[illegible]	0	[illegible]	[illegible]	0	0	0	-1,681	-255	-86	-208,340	-3	-1,105	-52,055	-566,294
Coniferous forest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mixed broadleaf & coniferous	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mangrove forest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Limestone forest	0	104	-95	-18,455	0	0	0	0	0	0	-252,364	-1,534	-16,309	-138,619	0	-596	-6,901	-434,769
Plantation	0	0	0	0	0	0	0	0	0	0	0	1,084	0	-840	0	0	-202	42
Limestone area (no forest)	0	579	336	1,131	0	0	0	0	0	0	2,384	1,582	0	0	0	0	0	6,012
Bare land, shub land, fragmented area	2,068	[illegible]	26,213	2,099,812	0	78,228	[illegible]	0	0	0	47,949	162,314	0	0	0	0	0	2,533,146
Water body	0	1	7	744	0	3	1,117	0	0	0	487	1,172	0	0	0	0	0	3,529
Residential area	0	0	0	[illegible]	0	[illegible]	[illegible]	0	0	0	24	4,109	0	0	0	0	0	5,147
Other land	13	36,838	26,704	200,003	0	4,540	114,830	0	0	0	39,640	23,129	0	0	0	0	0	445,697
Grand Total	23,633	66,845	-202,368	1,402,182	0	80,925	-36,817	0	0	0	-163,380	190,728	-26,024	-1,849,693	-24	-13,602	-327,107	-854,701

Technical Option when Estimation of Carbon Change Units of Aggregation



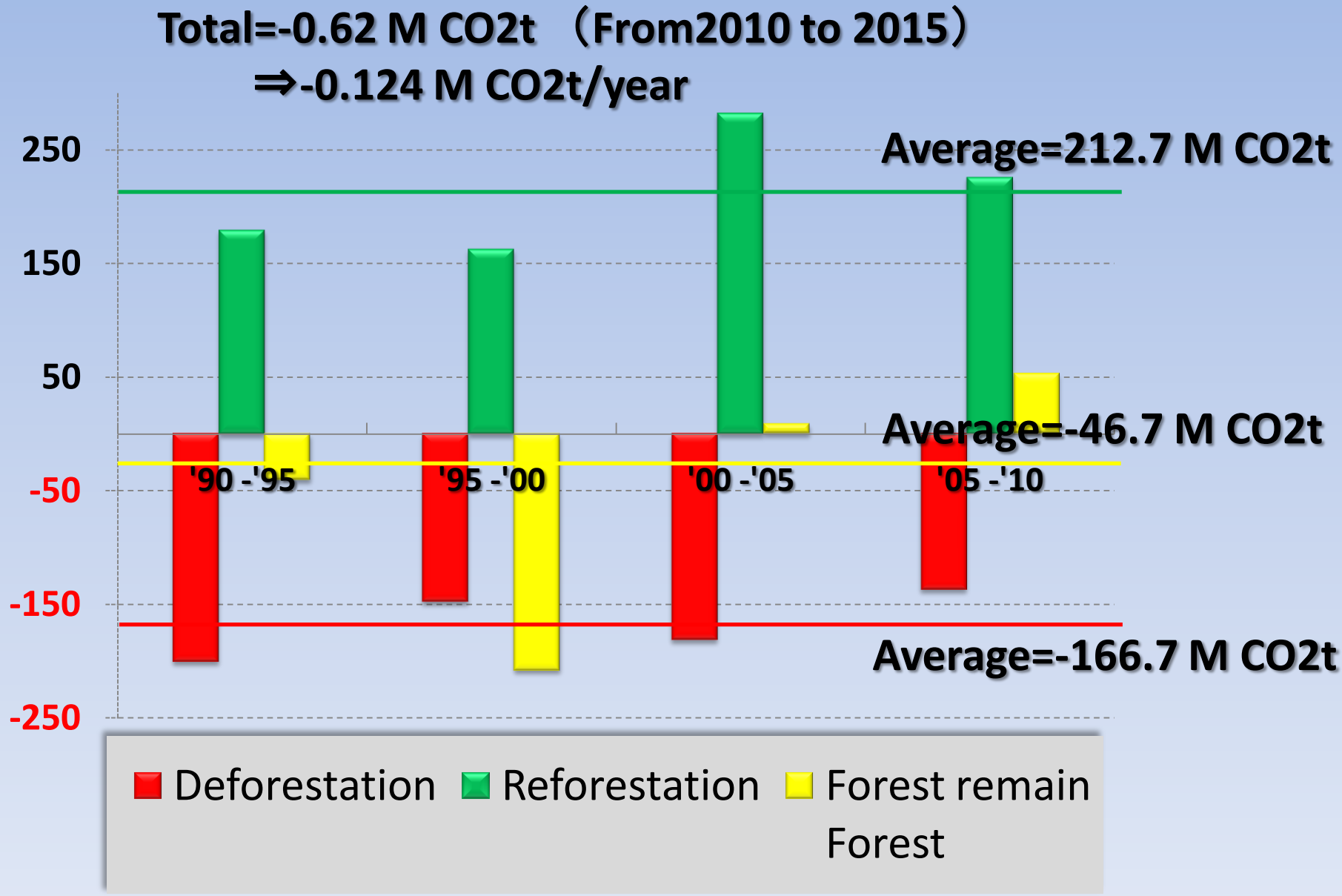






Regional Scale

Summary of Interim REL/RL based on BAU



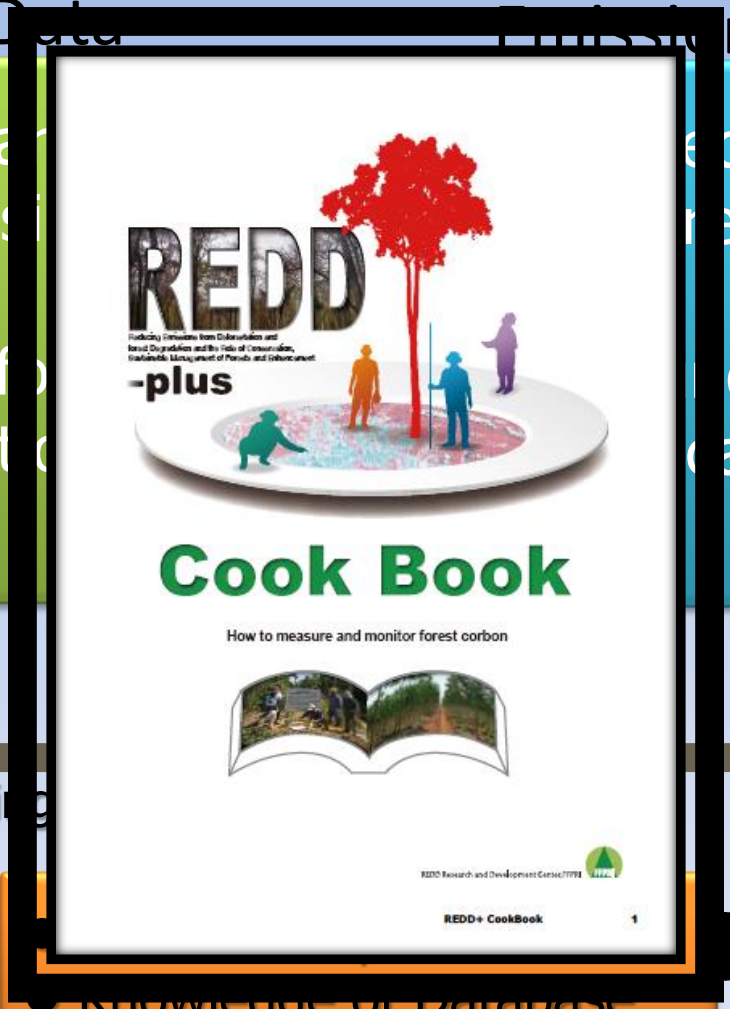
Required skills

Activity Data

- Basic understa… of remote sens…
- Technique of f… type classificat…

…n Factor

- …dge of ecosystem …est types
- …derstanding of …al approach



Estimati… Change

- …Knowledge of Database

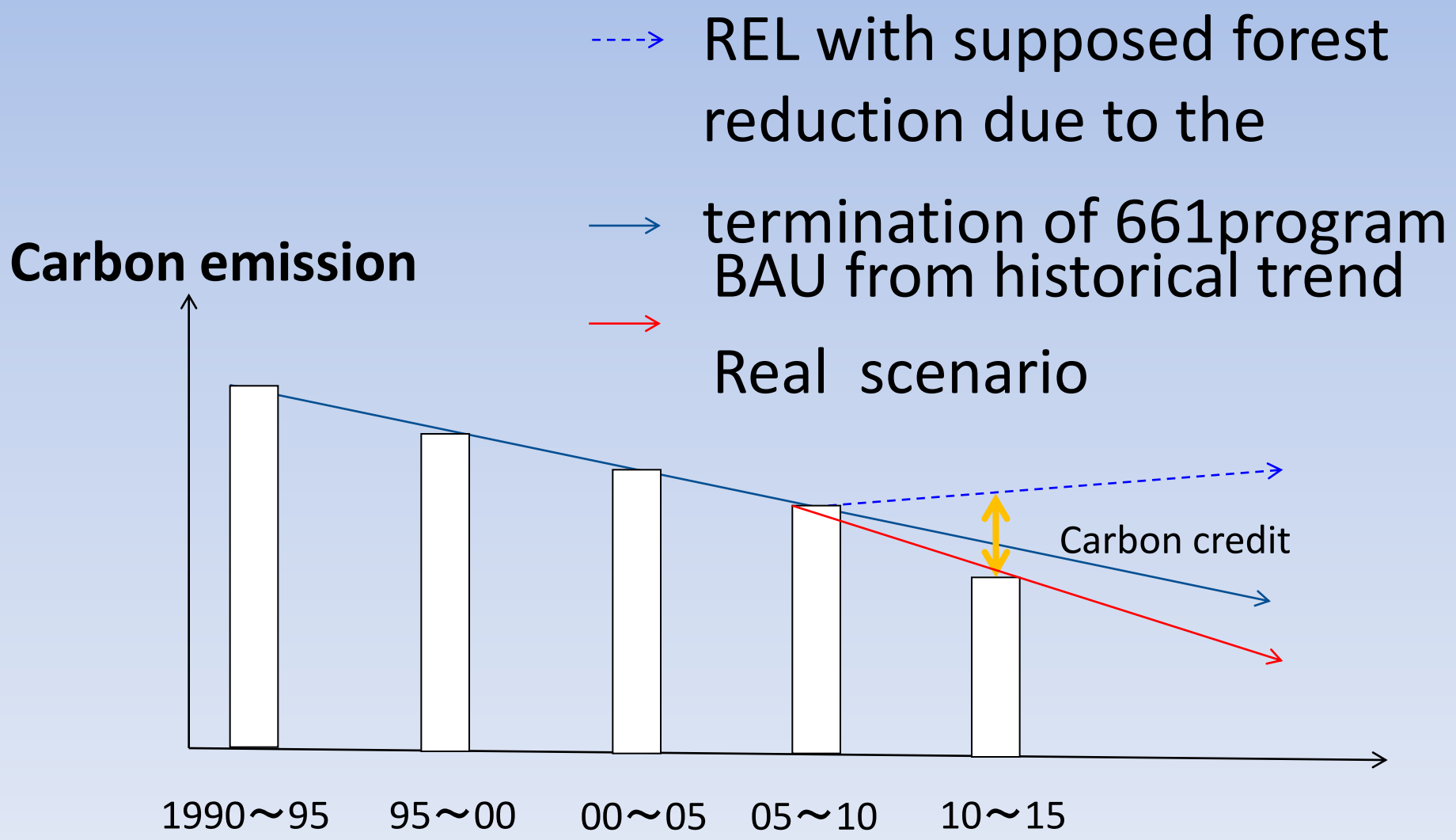
REL/RL

- Modeling
- Socio economic knowledge

Taking into account of national circumstances

Further issues to be discussed
How to interpret national circumstances

Model figure in the case of setting REL to be a loss of forests by 661 due to the termination of 661 program




Thank you for attention
(Nghe An Province May,2005, Nobumitsu MIYAZAKI)