Ministry of Agriculture and Rural Development
VIETNAM

Forest Carbon Partnership Facility (FCPF)
Carbon Fund

Emission Reductions Program Document (ER-PD)

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TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS iv

LIST OF TABLES viii

LIST OF FIGURES ix

EXECUTIVE SUMMARY 1

1 ENTITIES RESPONSIBLE FOR THE MANAGEMENT AND IMPLEMENTATION OF THE PROPOSED ER PROGRAM 10

1.1 ER Program Entity that is expected to sign ERPA with the FCPF Carbon Fund 10

1.2 Organization(s) responsible for managing the proposed ER Program 10

1.3 Partner agencies and organizations involved in the ER Program 10

2 STRATEGIC CONTEXT AND RATIONALE FOR THE ER PROGRAM 13

2.1 Current status of the Readiness Package and summary of additional achievements of readiness activities in the country 13

2.2 Ambition and strategic rationale for the ER Program 14

2.3 Political commitment 18

3 ER PROGRAM LOCATION 19

3.1 Accounting Area of the ER Program 19

3.2 Environmental and social conditions in the Accounting Area of the ER Program 20

4 DESCRIPTION OF ACTIONS AND INTERVENTIONS TO BE IMPLEMENTED UNDER THE PROPOSED ER PROGRAM 28

4.1 Analysis of drivers and underlying causes of deforestation and forest degradation, and existing activities that can lead to conservation/enhancement of forest carbon stocks 28

4.2 Assessment of the major barriers to REDD+ 47

4.3 Description and justification of the planned actions and interventions under the ER Program that will lead to emission reductions and/or removals 48

4.4 Assessment of land and resource tenure in the Accounting Area 56

4.5 Analysis of laws, statutes and other regulatory frameworks 61

4.6 Expected lifetime of the proposed ER Program 64

5 STAKEHOLDER CONSULTATION AND PARTICIPATION 65

5.1 Description of stakeholder consultation process 65

5.2 Summary of the comments received and how these views have been taken into account in the design and implementation of the ER Program 68

6 OPERATIONAL AND FINANCIAL PLANNING 70

6.1 Institutional and implementation arrangements 70

6.2 ER-Program budget and financing plan 75

7 CARBON POOLS, SOURCES AND SINKS 80

7.1 Description of Sources and Sinks selected 80

7.2 Description of Carbon Pools and greenhouse gases selected 80

8 REFERENCE LEVEL 82

8.1 Reference Period 82

8.2 Forest definition used in the construction of the Reference Level 82

8.3 Average annual historical emissions over the Reference Period 84

8.4 Estimated Reference Level 91

8.5 Relation between the Reference Level, the development of a FREL/FRL for the UNFCCC and the country's existing or emerging greenhouse gas inventory 92

9 APPROACH FOR MEASUREMENT, MONITORING AND REPORTING 93
9.1 Measurement, monitoring and reporting approach for estimating emissions occurring under the ER Program within the Accounting Area 93
9.2 Organizational structure for measurement, monitoring and reporting 99
9.3 Relation and consistency with the National Forest Monitoring System 103
10 DISPLACEMENT 105
10.1 Identification of risk of Displacement 105
10.2 ER Program design features to prevent and minimize potential Displacement 106
11 REVERSALS 107
11.1 Identification of risk of Reversals and ER Program design features to prevent and mitigate Reversals 107
11.2 Reversal management mechanism 108
11.3 Monitoring and reporting of major emissions that could lead to Reversals of ERs 108
12 UNCERTAINTIES OF THE CALCULATION OF EMISSION REDUCTIONS 109
12.1 Identification and assessment of sources of uncertainty 109
12.2 Quantification of uncertainty in Reference Level setting 112
13 GHG EMISSION REDUCTION ESTIMATES OF ER-PROGRAM 115
13.1 Ex-ante estimation of GHG emissions reductions 115
13.2 Key underlying assumptions 118
13.3 Assumption for estimating emission reductions and carbon stock enhancement 118
13.4 Assumptions for estimating carbon stock enhancement benefits (reforestation and plantation restoration models) 119
14 SAFEGUARDS 124
14.1 Description of how the ER Program meets the World Bank social and environmental safeguards and promotes and supports the safeguards included in UNFCCC guidance related to REDD+ 124
14.2 Description of arrangements to provide information on safeguards during ER Program implementation 130
14.3 Description of the Feedback and Grievance Redress Mechanism (FGRM) in place and possible actions to improve it 133
15 BENEFIT-SHARING ARRANGEMENTS 135
15.1 Description of benefit-sharing arrangements 135
15.2 The Adaptive Collaborative Management Approach and Benefit Sharing 138
15.3 Summary of the process of designing the benefit-sharing arrangements 145
15.4 Description of the legal context of the benefit-sharing arrangements 145
15.5 Participatory design of the benefit sharing mechanism and linking to ACMA 149
16 NON CARBON BENEFITS 154
16.1 Outline of potential Non-Carbon Benefits and identification of Priority Non-Carbon Benefits 154
16.2 Approach for providing information on Priority Non-Carbon Benefits 157
16.3 Benefit Sharing Arrangements for Monetary and Non-Monetary Benefits 157
17 TITLE TO EMISSION REDUCTIONS 159
17.1 Authorization of the ER Program 159
17.2 Transfer of Title to ERs 159
18 DATA MANAGEMENT AND REGISTRY SYSTEMS 160
18.1 Participation under other GHG initiatives 160
18.2 Data management and Registry systems to avoid multiple claims to ERs 161
19 ANNEXES 163

ACRONYMS AND ABBREVIATIONS

ACMA	Adaptive Collaborative Management Approach
AD	Activity Data
ADB	Asian Development Bank
AE	Allometric Equation
AF	Afforestation
AGB	Above Ground Biomass
ASEAN	Association of Southeast Asian Nations
BAU	Business As Usual (scenario)
BCC	Biodiversity Conservation Corridors Project
BGB	Below Ground Biomass
BMEL	German Ministry for Agriculture and Food Security
BOT	Build - Operate - Transfer
BSM	Benefit Sharing Mechanism
BSP	Benefit Sharing Plan
BUR	Biannual Updated Report
CAFPD	Centre for Agriculture and Forestry Planning and Design
CC	Climate Change
CCAP	Climate Change Action Plan
CCD	Climate Change Delivery
CCWG	Climate Change Working Group
CDM	Clean Development Mechanism
CEMA	Committee for Ethnic Minority Affairs
CEPF	Critical Ecosystem Partnership Fund
CER	Certified Emissions Reductions
CF	Carbon Fund
CFM	Community Forest Management
COC	Chain of Custody
CPEIR	Climate Public Expenditure and Investment Review
CPMU	Central Program Management Unit
CSIRO	Australian government national Science Agency
CSO	Civil Society Organisation
DARD	Dept. of Agriculture and Rural Development (at the Province)
DBH	Diameter at Breast Height
DF	Deforestation
DLA	Department of Legal Affairs (of MONRE)
DMHCC	Department of Meteorology, Hydrology and Climate Change (of MONRE)
DOF	Dept. of Finance
DONRE	Dept. of Natural Resources and Environment
DOST	Dept. of Science and Technology
DPC	District People's Committee
DPI	Dept. of Planning and Investment
EB	Executive Board
EBA	Endemic Bird Area
EBF-M	Evergreen broadleaf forest – Medium
EBF-P	Evergreen broadleaf forest – Poor
EBF-R	Evergreen Broadleaf forest – Rich
EF	Emission Factor
EMP	Environmental Management Plan

EMPF	Ethnic minority planning framework
ER	Emission Reduction
ER-P	Emission Reduction Program (area)
ER-PD	Emissions Reduction Program Document
ER-PIN	Emissions Reduction Program Identification Note
ERPA	Emission Reduction Payment Agreement
ERR	Economic Rate of Return
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental Social Management Framework
EU	European Union
EVN	Vietnam Electricity company
FCM	Forest Cover Map
FCPF	Forest Carbon Partnership Facility
FD	Forest Degradation
FE	Forest Enhancement
FGRM	Feedback grievance and reporting mechanism
FIPI	Forest Inventory and Planning Institute
FLA	Forest Land Allocation
FLEGT	Forest Law Enforcement Governance and Trade
FORMIS	Management Information System for the Forestry Sector
FPD	Forest Protection Department
FREC	Forest Resources and Environment Centre
FREL	Forest Reference Emission Level
FSC	Forest Stewardship Council
FSDP	Forest Sector Development Project
FSSP	Forest Sector Support Program
GAP	Gender Action Plan
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GHGI	Greenhouse Gases Inventory
GIZ	Gesellschaft für Internationale Zusammenarbeit
GoV	Government of Vietnam
GSO	General Statistics Office
HCMC	Ho Chi Minh City
HCV	High Conservation Value (forest)
HEP	Hydroelectric power scheme
HHs/hhs	House Holds
HPP	Hydro Power Project
IBA	Important Bird Area
ICR	Implementation Completion Report (for a project)
INDC	Intended Nationally Determined Contribution
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producer
IRR	Internal Rate of Return
JICA	Japan International Cooperation Agency
KBA	Key Biodiversity Areas
KfW	Kreditanstalt für Wiederaufbau (German Development Bank)
KP	Kyoto Protocol
LULUCF	Land Use, Land Use Change and Forestry
LUMP	Land Use Master Plan
LUP	Land Use Plan

LURC	Land Use Right Certificate (“Red Book” in Vietnam)
M&E	Monitoring and Evaluation
MARD	Ministry of Agriculture and Rural Development
MB	Management Board
MBFP	Management Board of Forestry Projects
Meth Frame	[Carbon Fund] Methodological Framework
MMR	Measurement, Monitoring and Reporting
MOF	Ministry of Finance
MOLISA	Ministry of Labour, Invalids and Social Affairs
MONRE	Ministry of Natural Resources and Environment
MOU	Memorandum of Understanding
MPI	Ministry of Planning and Investment
MRV	Measurement, Reporting and Verification
MTR	Mid Term Report
NCB	Non-Carbon Benefits
NCC	North Central Coast i.e. the ER-P region
NCCC	National Climate Change Committee
NCCS	National Climate Change Strategy
NDVI	Normalized Difference Vegetation Index
NFDS	National Forest Development Strategy
NFI	National Forest Inventory
NFIMAP	National Forest Inventory, Monitoring and Assessment Program
NFIS	National Forest Inventory and Statistical Program
NGO	Non-Government Organisation
NP	National Park (a SUF)
NPFPD	National Plan on Forest Protection and Development
NPV	Net Present Value
NR	Nature Reserve (a SUF)
NRAP	National REDD+ Action Plan
NRF	National REDD Fund (of Vietnam)
NTFP	Non-Timber Forest Products
NTP-RCC	National Target Program to Respond to Climate Change
ODA	Overseas Development Assistance
OMP	Operational Management Plan for a SUF MB
OP/ BP	Operational Policy / Bank Policy of the World Bank
PA	Protected Area (SUF in Vietnam)
PDP	Power Development Plan
PFES	Payment Forest Environment Services
PFMB	Protection Forest Management Board
PFPDF	Provincial Forest Protection and Development Fund
PLR	Policy Laws and Regulations
PPC	People’s Provincial Committee
PPMU	Provincial Program Management Unit
PRAP	Provincial REDD+ Action Plan
PRSC	Provincial REDD+ Steering Committee
PSU	Primary Sample Unit
QA/QC	Quality Assurance/ Quality Control
R-PP	Readiness-Preparation Proposal for the FCPF REDD readiness funding
R/S	Root to Shoot ratio
RF	Removal Factors
RL/REL	(Forest) Reference Level/Reference Emission Level

RNA	REDD+ Needs Assessment
RWE	Round-wood Equivalent volume of timber
SD	Standard Deviation
SEDP	Socio-Economic Development Plan
SESA	Strategic Environmental and Social Assessment
SF	Stable Forest
SFC	State Forest Company
SFE	State Forest Enterprise
SFM	Sustainable Forest Management
SNF	Stable Non-Forest
SOC	Soil Organic Carbon
SOE	State Owned Enterprise
SPWP	Secondary Processed (or value-added) Wood Products
SSR	Social Screening Report
STDEV	Standard Deviation
STWG-SG	Sub-technical Working Group-Safeguards
SUF	Special Use Forest (a protected area i.e. a nature reserve or national park)
tC	Tonne of Carbon
TCCRE	Typology of Climate Change Response Expenditure
tCO_2e	Tonne of Carbon dioxide equivalent
TEV	Total Economic Value
TORs	Terms of Reference
TT Hue	Thua Thien Hue (an ER-P province)
TWG	Technical Working Group
UNFCCC	United Nations Framework Convention on Climate Change
UNESCO	The United Nations Educational, Scientific and Cultural Organization
VAFS	Vietnamese Academy of Forest Sciences
VBSP	Vietnam Bank for Social Policies
VCF	Vietnam Conservation Fund
VFD	Vietnam Forest and Delta Program (funded by USAID)
VFU	Vietnam Forestry University
VGGS	Vietnam's/ National Green Growth Strategy
VHLSS	Vietnam Household Living Standards Survey
VIFORES	Vietnam timber and Forest product association
VNFF	Vietnam Forest Protection and Development Fund
VNFOREST	Vietnam Administration of Forestry
VNTLAS	Timber Legality Assurance System of Vietnam
VPA	Voluntary Partnership Agreement
VRO	Vietnam REDD Office
VWU	Vietnam Women's Union
WB	World Bank
WD	Wood Density
	Weights and Measures m = meters; ha = hectares; Mha = million hectares $MtCO_2e$ = million tonne of carbon dioxide equivalent tCO_2e = tonne of carbon dioxide equivalent
	Currency M = million; Currency Unit = US$ Dollar US$1 = VND 22,000 GW = gigawatt; kWh =Kilowatt-hour; TWH= terawatt –hour

LIST OF TABLES

Table 2.1: Options and targets of the INDC for GHG mitigation 17
Table 2.2: Summary of status and progress in the ER-P provinces 18
Table 3.1: Area, population and growth rates of the Accounting Area 19
Table 3.2: Area of forest cover and land use in the NCC (ha) 21
Table 3.3: Average number of tropical cyclones for the NCC region (1961-2008) 22
Table 3.4: Examples of protected biodiversity recently confirmed by SUF Management Boards 23
Table 3.5: Ethnic minority population (habitants) data by group and ER-P Provinces 26
Table 3.6: Correlation between high forest area and ethnic minority populations 27
Table 4.1: Forest cover (ha) in the NCC, 2000, 2005, and 2010 28
Table 4.2: Deforestation and forest degradation (ha) in the NCC, 2000-2010 28
Table 4.3: Ranking of drivers of deforestation and forest degradation 35
Table 4.4: Proposed conversion of forest into other land use purposes 2011 to 2020 by NCC provinces (ha) 36
Table 4.5: ER-P field-based intervention models 54
Table 4.6:Proposed World Bank Coastal Forests Program areas in the NCC 54
Table 4.7: Relationship between the ER Program activities and drivers 55
Table 4.8: Forestland categories in the NCC 56
Table 4.9: Allocation of forest land in the NCC 57
Table 4.10:Summary of policy law and regulation Issues 62
Table 5.1: Summary of consultation visits in the ER-P region 67
Table 5.2: Large Forest Management Boards and SFCs consulted (by Province) 67
Table 5.3: Specific issues raised during different consultations with communes and village communities 69
Table 5.4: Summary of provincial planning issues raised (through central level and provincial workshops which included SUFMBs, Districts, and discussions with the REDD+ Steering Committees) 69
Table 6.1: Main responsibilities of ministries and management entities 70
Table 6.2: Summary of the total ER-Program costs (expected uses of funds) 76
Table 6.3: Expected source of funds and financing needs 79
Table 7.1: Justification of sources and sinks included in the ER program 80
Table 7.2: Carbon pools and gases included in the construction of the FREL/REL 81
Table 7.3: Gases included in the construction of FREL/REL 81
Table 8.1: Stratification of land use types for the NCC 83
Table 8.2: Activity Data for the construction of the reference level 85
Table 8.3: Development of the Emission Factors 86
Table 8.4: Allometric equations used for tree level AGB estimation 87
Table 8.5: Emissions (+) and removals (-) (tCO_2e) for the period 2000 – 2010 by province 90
Table 8.6: Estimation of emissions and removal for the NCC in 2000 – 2010 91
Table 8.7: The estimated ER Program Reference level 91
Table 9.1: Status of provincial FCMs of the six NCC provinces 93
Table 9.2: The number of clusters and plots by provinces 97
Table 9.3: Data and parameters to be measured 98
Table 10.1: Summary of possible displacement risk 105
Table 10.2: ER Program Design Features to Mitigate Displacement Risks 106
Table 11.1: Reversal risks, risk assessment and mitigation strategies 107
Table 12.1: Combination of forest changes 109
Table 12.2: Metadata of Landsat images 110
Table 12.3: Potential causes of uncertainties in EF/RF 111
Table 12.4: Accuracy assessment for forest change, 2000 – 2005 113
Table 12.5: Accuracy assessment for forest change, 2005 – 2010 113
Table 12.6: Uncertainty assessment of forest carbon stock for the NCC 113
Table 12.7: Uncertainty assessment of emissions and removals 114
Table 13.1: Ex-ante GHG emissions reduction and removals of the ER-Program 115
Table 13.2: GHG emissions reduction and C enhancement benefits on ER-P investment areas 117
Table 13.3: Transformation plantation models 120

Table 13.4: Reforestation plantation models 121
Table 13.5: Policy benefit carbon removal benefit in the ER-P accounting area (in tCO_2) 123
Table 14.1: Summary of triggered World Bank Operational Policies 124
Table 16.1: Non-carbon benefits 156

LIST OF FIGURES

Figure 3.1: Location map of the ER-P Accounting Area 20
Figure 3.2: Protected areas and key biodiversity areas of the ER-P region 23
Figure 3.3: Map showing the distribution of the ethnic minorities and poor households in REDD+ potential ER-P communes 25
Figure 4.1: Change in total agricultural area of ER-P region (ha) 29
Figure 4.2: Legal timber production from natural forests 34
Figure 4.3: Recorded forest law violations in the ER-P region, 2007 to Q3 of 2014 34
Figure 4.4: FSC Certification in Vietnam 2009 to 2016 44
Figure 5.1: Map showing the quantitative survey commune sites 66
Figure 6.1: Organizational structure for implementation of the ER-P 72
Figure 8.1: Approach of reference level construction 84
Figure 9.1: Approach for estimation of emissions/ removals 93
Figure 9.2: Approach for generation of the FCM year X from base FCM year X-5 94
Figure 9.3 Shape and distance between clusters sample plots 97
Figure.9.4 Sample plot design 97
Figure 9.5: Responsibility of the relevant Ministries, agencies and localities 100
Figure 13.1 Carbon enhancement accounting approach for rotation forestry models (4-8) 120

EXECUTIVE SUMMARY

The ER Program area is Vietnam's North Central Coast Region (NCC), which contains most of the country's remaining broadleaf evergreen forest, and a number of sites with globally important levels of biodiversity. The NCC has an area of land totalling 5.15 million ha (16% of the total land area of Vietnam), and is administered as six provinces – Thanh Hoa, Nghe An, Ha Tinh, Quang Binh, Quang Tri and Thua Thien Hue – and has a population of about 10.3 million people (12% of the total population of Vietnam). According to the national census, the NCC region is home to 13 ethnic minority groups,[1] which make up some 11.5% of the total population (over 10.29 million in 2013). The ethnic minority groups are mainly found in the largely mountainous districts and in communes that also have higher percentages of land classified as forest. High levels of poverty correlate with generally high ethnic minority populations in the north and upland areas, and overall with more forest cover.

Vietnam is strongly committed to the reduction of GHG emissions and to REDD+, and has demonstrated this commitment over the past decade through the introduction of far-reaching relevant legislation and policies. This commitment is enshrined in the national constitution, it has the support of the communist party and the prime minister, and is mainstreamed into national development plans, and is manifested through action plans and decisions of key ministries. Vietnam is the first country in Asia to implement a national payment for environmental services (PES) program.

Vietnam's policy framework strongly supports improvements in forest management, and policy developments are likely to contribute to the conservation and enhancement of forest carbon stocks in the NCC. Important policy developments that are relevant to the ER Program and directly support REDD+ include:

- The National Target Program to Respond to Climate Change, which was issued in 2008;
- The National Climate Change Strategy (NCCS) issued in 2011;
- In 2012, the Prime Minister announced that by 2020 Vietnam would launch a national carbon emissions trading scheme. For Land Use, Land Use Change and Forestry (LULUCF) the scheme targets the reduction of GHG emissions (compared to 2005 levels) by 20%;
- The National Action Plan on Climate Change (2012–2020) was issued in 2012;
- The National Strategy on Environment Protection to 2020 with Visions to 2030 was approved in 2012, and includes the target to "improve the capability of actively responding to climate change and reduce the increase of GHG emissions";
- The National REDD+ Action Program (NRAP), was approved in 2012. The NRAP provides a general framework for REDD+. It is currently being updated and it is expected that the NRAP Decision will be completed in late 2016 and become law in 2017;
- The commitment to responding to climate change is reflected in Article 63 of Vietnam's Constitution (2013);
- The Communist Party passed a Resolution in 2013 on Active Response to Climate Change, Improvement of Natural Resource Management and Environmental Protection;
- Climate change has been mainstreamed into the National Socio-Economic Development Strategy (2011-2020) and into the Socio-Economic Development Plan (SEDP, 2011-2015);
- Vietnam's Intended Nationally Determined Contribution (INDC), was submitted to the UNFCCC in 2015. It entails an 8% reduction of GHG emissions by 2030 (and 25% with external support); compared to the Business As Usual (BAU) scenario, and an increase of forest cover to 45%
- The economic sector ministries and provinces have developed Climate Change Action Plans (CCAPs) to respond to climate change;
- Vietnam's Green Growth Strategy (VNGGS) stipulates that by 2020, the GHG emission per GDP should be 8%-10% lower than that of 2010. The Strategy prioritizes the implementation of GHG emission reductions through efforts to reduce deforestation, forest degradation and improving livelihoods for communities, and ensuring that land is available for planned sustainable forest development;

- The Ministry of Planning and Investment (MPI) and MONRE are supporting the mainstreaming of a cross-cutting climate change response in the formulation of the five-year Socio-Economic Development Plan (SEDP) for 2016–2020; and
- Further development of PFES scheme is expected.

The ER Program will be the first large scale, region-wide REDD+ program in Vietnam, and will have significant site-level impacts as well as transformative impacts on the management of forested land. The ER Program follows the Provincial REDD+ Action Plans (PRAPs), which operationalize the National REDD+ Action Program (NRAP) at the province level. The Program leverages ongoing projects and policy developments in the forestry sector, and includes site-level interventions and support for policy implementation. By supporting improved collaborative management of forestlands, the Program will address many of the causes of deforestation, including drivers from other sectors, in a way that creates significant co-benefits for local communities. Specific cross-sectoral interventions include support for policy reforms related to land use planning and implementation. The ER Program's activities will contribute to the advancement of REDD+ at the national level; in particular, through the region-wide application of innovative MRV, performance-based payments, benefit sharing mechanisms, and collaborative forest management approaches.

Annual forest cover data indicate that 44% (2.3 million ha) of the proposed ER-P area was forested in 2012; nearly all (95%) of which, was natural forest. Over half (1.7 million ha) of the region's forestland is under the management of the State, and nearly one third (0.9 million ha) has been allocated to individual households or village communities. Natural forest covers 2.1 million ha, which is 41% of the total accounting area. Most of this is evergreen broadleaf forest (EBF). The largest portion of natural forest is poor EBF (1.3 million ha), followed by EBF of medium quality (452,900 ha) and rich EBF which covers only 226,626 ha (4% of the accounting area). Other forest makes up 138,755 ha. Timber plantations cover 637,651 ha, making up 12% of the accounting area.

While the total area of forest in the NCC increased, there was a marked shift toward poorer forests and to plantations. Spatial analysis shows a net increase in natural and planted forest area due to afforestation. Most of the gross loss of natural forests was in the poor evergreen broadleaf forest class. For that class, the spatial analysis shows that 95,649 ha were deforested between 2000 – 2005, while 67,380 ha were deforested between 2005 - 2010. In total this adds up to 163,029 ha over 10 years which is equivalent to 54% of total deforestation in the ER-P area or 88% of the total deforestation in the natural forest land use class.

Forest cover (ha) in the NCC, 2000, 2005, and 2010

Land uses	2000	2005	2010
1. Natural forest	2,007,654	2,041,696	2,133,879
2. Evergreen broadleaf forest - rich	282,046	233,922	226,626
3. Evergreen broadleaf forest - medium	512,245	497,567	452,900
4. Evergreen broadleaf forest - poor	1,053,217	1,160,297	1,315,598
5. Other Forest	160,146	149,910	138,755
6. Plantations	311,411	454,907	637,651
Total Forest Cover	**2,319,065**	**2,496,603**	**2,771,530**

A significant amount of deforestation in the NCC region is related to the expansion of agricultural land, mostly for rubber and cassava. In the period 2010 to 2014, agricultural land increased on average by 6,705 ha per year in the NCC. The largest portion of agricultural expansion was from rubber plantations which increased on average by 4,009 ha per year, but cereals and cassava contributed on average 1,990 ha and 1,092 ha per year respectively. Lesser agricultural drivers include crops such as maize that are generally planted by smallholders; however, there was some notable conversion to large scale agriculture in Thanh

Hoa and Nghe An for sugar cane, pineapple and dairy fodder (Nghe An) and maize (Nghe An). While market prices for latex and cassava are currently low, the two crops are expected continue to be a considerable driver of deforestation in this region.

While it is acknowledged that they reduce the pressure on natural forests, and that they have led to the net increase in forest cover in the NCC, timber plantations have replaced remnants of natural forest and remaining logged over poor natural forest. The area of timber plantations in the accounting area more than doubled between 2000 and 2010, reaching 637,651ha. Data from several provinces also indicate that significant portions of loss of natural forest can be linked to the expansion of timber plantations and spatial analysis indicates that the loss of forest to forest plantation during 2000-2010 was about 21,920 ha. Further expansion of timber plantations is predicted across the NCC as demand for wood continues to be high, however VNFOREST is committed to improving the economic and environmental performance of timber plantations.

Encroachment tends to be low-key and small scale, but has a significant cumulative impact on forest cover and forest quality. Encroachment into forest areas often occurs with a longer term view to convert the forest to some form of agriculture or to timber plantations. Some forest loss is also associated with shifting cultivation, but reports from provinces indicate that only small areas of forest in the NCC are affected. Shifting cultivation is driven by traditional cultural practices of ethnic minority communities, in the absence of viable alternatives or good agricultural land.

Infrastructure projects, and in particular Hydropower Projects (HPPs), are reported in five out of the six ER-P provinces, as having negative impacts on forest cover and in localised areas this can be severe. While the actual land and forest take for hydropower projects is relatively small, the development often occurs in some of the best remaining upland forested areas and the follow-on impact, including edge and multiplier effects, of opening a previously underdeveloped area, on the forest and particularly protected areas can be severe and difficult to control. In addition, indirect impacts linked to encroachment and illegal logging often extend beyond the initial area. The resettlement of project-affected people due to HPPs also results in deforestation and degradation. While much/all of the HPP development has been put on hold, it is possible that some of the projects may be reintroduced during the ER-Program period.

Logging is a key driver of forest degradation in the NCC. Logging in the past has included both 'legal exploitation' of natural forests by government-licensed, large-scale commercial logging operations, and 'informal' logging, usually smaller-scale exploitation that occurs without government permission or licenses and is therefore considered illegal. Thus, forest degradation has been caused by poor management practices by commercial logging operations as well as by timber harvesting by rural households. Since 2014, most commercial logging is banned in Vietnam.

The loss of natural forest cover is largely due to inadequate implementation of policies related to forest protection. Vietnam has policies in place for protecting natural forests, but these are often not properly implemented, leading to unintended deforestation associated with allocation of forest land to various sectors, as well as to households and individuals. Key reasons for inadequate policy implementation are:

- Weaknesses in land use planning processes;
- Inadequate enforcement of forest rules;
- Insufficient financial and technical support; and
- Insufficient information on forest cover and inadequate forest monitoring.

Other underlying causes of deforestation include the following:

- Much of the natural forest area in the NCC is heavily depleted outside of the protected areas, reducing the opportunity cost of forest conversion. Decades of overexploitation, lack of sustainable forest management, population pressure, as well as the lasting impact of the war on vegetation cover have significantly decreased forest quality.

- Inadequate enforcement of forest protection is also due to limited available funding at the site-level. There is insufficient state investment (financially and technically) in the forestry sector for forest protection, biodiversity conservation and forest landscape restoration activities.

- A lack of clear forest ownership is often a barrier to forest protection. Unclear or non-existent rights to land and trees are a disincentive for local people to protect natural forests and these are often viewed as a 'common good' open to anybody on the one hand, and to plant trees on the other.

- Persistent poverty in upland and forest covered areas and a shortage of good/flat agricultural land are some of underlying drivers of deforestation and degradation. Limited alternative income opportunities and a scarcity of agricultural land makes encroachment into forested areas difficult to address.

Increasing the expansion of timber plantations on bare land, and increasing the productivity and rotation length of plantations leads to increased afforestation and improved average carbon sequestration per planted area respectively. However, there are a number of challenges related to changing toward longer rotations and increasing the use of native species in plantations. The carbon sequestration potential of plantations, besides depending on rotation length, also depends on the growth rates, and existing Acacia plantations are below their full potential in some areas.

Many of the underlying drivers of deforestation and forest degradation, also present barriers to REDD+, however, a number of aspects of Vietnam's forest sector present some more specific challenges for REDD+ implementation. Vietnam is considered to be in a late stage of the forest transition curve, as evidenced partly by a net increase in forest cover. A corollary of this, is that there are few "low-hanging fruits" for REDD+. The main causes of deforestation and forest degradation, such as conversion to other land uses and poor policy implementation are difficult to tackle and potential financial incentives from REDD+ are relatively weak. Unlike some other REDD+ countries, Vietnam already has a strong policy framework for protecting natural forests. As noted in the analysis of drivers, the problem often lies in the implementation of the policies. This means that addressing persistent deforestation and forest degradation, will often require site-based approaches that include support in terms of capacity building, forest monitoring, and financing.

The ER Program will reduce deforestation and forest degradation and improve carbon enhancement by supporting and building on key policies related to REDD+. At the province level, the ER Program will support cross-cutting policies related to planning and coordination. At the site-level, the program will promote an Adaptive Collaborative Management Approach (ACMA) with Forest Management Boards and State Forest Companies (SFCs). This will address poverty in forest areas, support forest land allocation, support SFM, and promote the transformation of plantations to longer rotations, as well as enrichment planting of natural forests.

The ER Program's design draws on a number of recent forest programs and on the outputs from the PRAP process. The ER-P has taken examples and lessons learned from recent major forest projects. These notably include the World Bank-supported Forest Sector Development Project (FSDP) and a series of KfW projects, which were implemented in some of the ER-P provinces. Both projects generally worked with and built on work undertaken by the Forest Sector Support Program (FSSP) which supported the National Forest Sector Development Strategy (NFDS, 2006-2020). They included a degree of performance based funding and self-reliance management in the village-based forest protection development funds, which are part of the national PFES program.

Interventions support to support cross-cutting activities and address underlying drivers related to policy planning and implementation include the following:

- Support for the implementation of new laws related to forest management and land and sector and planning;
- Improvement of forest data collection and monitoring for more informed policy development and implementation; and

- Empowerment of Forest Management Boards, SFCs, and local communities.

Poverty reduction, collaborative forest management and benefit sharing

The Adaptive Collaborative Management Approach (ACMA), besides being an effective tool to improve forest management will ensure that activities are inclusive and pro-poor. Vietnam's forestry sector in general, and PES and REDD+ in particular, has the explicitly stated mission of also addressing national poverty reduction and this pro-poor objective is integrated into the ER Program. Livelihood programs will help to address poverty, and will seek to provide alternative sources of income to local households. Through a small grants mechanism, the ER-P will provide key services to smallholders to improve their livelihoods through projects that are compatible with forest protection and biodiversity conservation. Through the ACMAs, the ER-P will support the allocation of Land Use Right Certificates (LURCs) to local households for smallholder plantation development. In addition, the Program will support village, as well as individual, forest protection contracts.

At the site-level, the ER-P will work through ACMA through which MBs and SFCs will work with forest dependent communities and smallholders within their areas of influence. This is a realistic approach as the MBs and SFCs manage a significant portion of the forestland, and provide a suitable entry point for site-level forest management planning and implementation. Within the NCC a total of 47 PFMBs, 17 SUFMBs and 16 SFCs have been identified as potential implementation partners for the ER Program. The ER Program will encourage the forest management entities to develop collaborative forest management plans that incorporate innovative conservation and enhancement activities as well as BSM and performance based approaches.

The ACMA entities will play a central role in benefit sharing. It is proposed that 94% of the funds available will be allocated by the provinces to each of the participating ACMA entity on the condition that it demonstrates a very clear commitment to include all forest users and contributes to sustainable forest management and reduce pressure on Special Use Forest protected areas. The Government of Vietnam hopes that linking benefit sharing with collaborative management will go beyond simply incentivizing individuals and communities to sustainably manage and protect their forests through just providing compensation for their efforts. It wants to narrow the divide between the managers and users of forests and recognize the veracity of both "indigenous" and "technical" knowledge. It recognizes that the management of forests cannot be managed in isolation from land not utilized for forestry purposes and that local forest-dependent persons have livelihoods that include both forest and non-forest based resources and land use. The Government of Vietnam also wants to facilitate the empowerment of local communities in their relationships with managers of forests and biodiversity conservation through the greater participation of ethnic minority women and poor and vulnerable villagers that to date have been largely excluded from meaningful forms of participation.

The program will address investment barriers, including financing constraints, for long rotation and mixed native species plantations. The ER-P will first support plantation transformation with large forest owners, before introducing the models through extension and outgrower schemes to other forest owners. Through these activities, the existing short-rotation Acacia business model can be successively replaced by new silvicultural and forest management approaches focused on producing high-value timber for sawn logs.

Social and environmental concerns and solutions

A number of program safeguards instruments have been prepared or are under preparation. An Environmental and Social Management Framework (ESMF) is in the final process of being prepared. A Feedback and Grievance Redress Mechanism (FGRM) is under preparation in conjunction with UN-REDD II. A Resettlement Policy Framework will be developed to address any potential resettlement that may occur during the program. Safeguard measures in relation the Free, Prior and Informed Consultation (FPIC) of Ethnic Minorities in the ER-P are included in the Ethnic Minority Policy Framework (EMPF). These measures are designed to ensure ethnic minority peoples derive as many benefits from the ER Program as non-ethnic

minority persons. The objective of the Gender Action Plan (GAP) is to promote women's participation in the program and share in the benefits, maximize positive gender equality impacts as well mitigate possible risks and negative impacts.

The NCC lies within four of WWF's 200 Globally Important Eco-regions, and contains five Endemic Bird Areas and 63 Important Bird Areas as identified by Birdlife International. The landscape of the ER-P includes five internationally recognized conservation corridors (ranked 'high' or 'critical' global conservation priorities), and includes 17 protected areas, 19 important international biodiversity areas, the Western Nghe An UNESCO Man and Biosphere Reserve and the Phong Nha-Ke Bang National Park UNESCO World Heritage Site. The region supports significant populations of 14 globally endangered or critically endangered species. However, forest degradation and fragmentation is degrading valuable habitats and putting a large number of already rare vertebrate species at risk of extinction. The ER-Program will support and work with the Special Use Forest (SUF) protected areas and enable and facilitate the ACMA benefit sharing mechanisms process between local communities and the SUF management boards to reduce, for example, encroachment pressure on the SUFs.

An environmental concern is the perceived risk of plantation development leading to the clearing of natural forests. However, this risk is believed to be moderate and will be limited to a small area. The development of new plantations covers only approximately 53,000 ha. The ER Program will work through the ACMA to ensure that plantation establishment follows SFM practices, and does not replace natural forests. This will include support for mapping of remaining forest areas, awareness and capacity building, linking plantation development to FSC certification, and tying benefit sharing to the protection of natural forests. Furthermore, simple codes-of-practice will contribute towards ensuring viable, sustainable and environmentally compatible plantation management among plantation owners. To this end, the ER Program will build on the Environmental Protection Guidelines for Plantation Management that were developed as part of the EIA for the FSDP.

The ER Program's design is the outcome of a comprehensive stakeholder consultation process. Participation methods have included village-level meetings of households, focus group discussions, workshops, participatory forest transects, natural resource assessments, interviews of key informants, and a quantitative survey of over 3,000 households. Consultations have sought to identify local people's views regarding opportunities and constraints arising from forest and land resource access and use, including possible land use conflicts, and the security of their livelihoods at present. In this way, a picture of challenges and opportunity-costs of potential REDD+ activities in the localities was formed. Qualitative data acquired through these processes has been used in the design of the overall program approach and of the BSMs. The implementation of the program is built around adaptive collaborative management approaches, which are participatory.

Emissions and Removals for the Reference Level

Estimates of Emissions and Removals for the Reference Level are based on Vietnam's National Forest Inventory, which was conducted in 2000, 2005, and 2010, plus IPCC default assumptions. The 2010 estimates of biomass/ha used to derive Emission Factors as those are deemed most reliable. The Activity Data come from a series of forest type cover maps which have been improved through various international collaborative projects. Estimates of many components of uncertainty for the Emission Factors and for the Activity Data were calculated using standard methods and combined using a propagation-of-error approach to address uncertainty. Estimates of Activity Data were adjusted for bias following the methods described by Olofsson (2012). Vietnam proposes to continue this system in the future for the Measurement, Monitoring and Reporting (MMR) program, using methods consistent with those used to calculate the Reference Level, repeating the inventory at five year intervals and tracking the time series classification of land parcels in order to improve Activity classification. Additionally, in response to comments from the TAP, Vietnam proposes to improve the current estimates in a stepwise manner by: (1) validating the 2005 forest inventory data in order to be able to estimate change for forest remaining the same; (2) extend the Reference Period to 2015 by generating an updated forest cover map, with accuracy assessment, and calculating the change from 2005; and (3) adjusting the common boundaries in the 2005 and 2010 maps of

forest cover using the 2015 map as a reference, to eliminate the uncertainty associated with differencing independent maps.

The final average annual net emission for 2000 – 2010 for the NCC is -1.5 $MtCO_2e$ (average annual emission is 8.5 $MtCO_2e$ and average annual removal is -10.0 $MtCO_2e$). The approach for estimation of historical emissions and removals is based on Activity Data (AD) and Emission Factors (EF) and Removal factors (RF). AD is generated spatially using remote sensing information. To detect land use change, land use matrices are generated by overlaying land cover maps between the inventory cycles. To develop EF and RF, forest carbon stock is estimated by applying allometric equations and measurement data of National Forest Inventory, Monitoring and Assessment Program (NFIMAP) cycle 4. Based on land use matrices and EF and RF, emissions and removals are accounted for in two inventory cycles (2000-2005 and 2005-2010) for every province and then summed up to regional level. The results of uncertainty assessment for emissions and removals show that overall weighted uncertainty of emissions and removals is less than 30%, ranging from 19-22%

In total, the ER-P is expected to generate 28.2 million tCO2 of emission reduction and removals. The estimated area of the ER-P site-level models is 359,942 ha, which represents 7% of the total land area of the six target provinces and 13% of total forest area in the NCC. Out of this area 131,520 ha are expected to be protected from further degradation and 64,200 ha subject to avoided deforestation activities. Further GHG benefits will occur due to the wider policy interventions that will reach beyond the investment areas. For policy benefit accounting, it is assumed that benefits from policy related interventions will increase the ER Program's impact from 0.36 million to 1.3 million ha, which is 47% of the total remaining 2010 forest area in the ER-P accounting area. Excluding the calculated 4% uncertainty factor and the 18% buffer, the net ex-ante estimated GHG emission reductions amount to 22 million tCO2 over 8 years (2018 – 2015), which excludes 6.2 million tCO2e which are subtracted due to the uncertainty and buffer.

ER-P field-based intervention models

Interventions	Area targeted (ha)
1. Forest protection of existing natural forest through contracts	61,260
2. Natural assisted regeneration of medium quality forest / avoiding degradation (no planting)	70,260
3. Natural regeneration and enrichment planting of poor natural forest	64,200
4. Afforestation/Reforestation using Acacia long rotation model (12 years)	21,180
5. Afforestation/Reforestation using Acacia with mixed species (20 years; 50% native; 50% Acacia)	21,040
6. Transformation of Acacia short rotation to long-rotation (12 years)	37,040
7. Transformation of Acacia short rotation to long rotation mixed native species (20 years)	40,780
8. Afforestation/Reforestation - Melia azedarach (8-year rotation)	4,000
9. Coastal and mangrove forest protection	26,864
10. Enrichment planting of degraded coastal and mangrove forest	6,474
11. Afforestation and reforestation of coastal and mangrove forest	6,844
Total Indicative Area	**359,942**

The ER Program's MMR system will identify and quantify any natural forest that is converted to plantations across the entire accounting area. A preliminary analysis of the 2000-2010 time series indicated that conversion of natural forest to plantation accounted for only 21,920 ha in the NCC, which is about 1% of the existing total natural forest in 2000. Two-thirds of that conversion was done on poor evergreen forest. The methodology applied for both the Reference Level and the MMR takes a forest inventory approach across the landscape, that will measure all activities at the landscape scale, integrating changes from ER Program projects with all other changes taking place in the landscape. The MMR system will follow the time series of change for each parcel, from the beginning of the reference period, and any change from natural forest to plantation will not be counted as Afforestation or Reforestation, and no credit will be claimed for removals.

There is some risk that the ER Program may lead to international displacement of emissions if illegal logging in the NCC is displaced to Lao or Cambodia, but this risk is expected to decrease over time due to: improvements in forest governance linked to FLEGT, increases in chain of custody certification, MoUs with Lao and Cambodia aimed at improving cooperation to combat illegal logging, and ongoing work with the provinces which have border crossings in the NCC. Also, in the long-run, the ER-Program investments in plantations are expected to increase the domestic timber supply, making up for any reduction in illegal logging.

The total cost of the program over a period of 2018-2025 is estimated as USD 437.91 million and total sources of funds are estimated at USD 548.38 million, including USD 110 million from results-based payments. In total the program current financing gap amounts is USD 15.95 million over 4 years, the negative cash flow turns positive in year 5 as shown below:

Year 1	Year 2	Year 3	Year 4	Year 5
-590.321	-1,689,807	-2,188,595	-11,485,982	9,624,478

This assumes that a small but important 10% advance of ER payments of the total benefits of USD110 million is forthcoming from the Carbon Fund and this would be divided over 2 years. The advance is necessary for institutional confidence building and trust, provincial and local acceptance, and is also seen as a measure of commercial partnership risk sharing. The Government of Vietnam is a willing partner and is committed to a very large and long term investment of the USD 437.91 million for the 8 year program and this will continue. The current funding gap has is very much reduced and it is expected that as the process moves towards the final Emission Reduction Program Agreement (ERPA) that further funding sources will firm up with the imminent prospect of a completed signed ERPA.

The program expects to receive funding from a number of sources:

- The expected contribution from the government budget is USD 38.87 million. It is estimated that the REDD+ related public budget amounts to about USD 20.5 million over the ER-P implementation timeframe for the NCC. Further USD 18.36 million are expected from the PFES program, this assumes that energy sector companies pay the PFES contributions in full and on time.

- State Forest Companies in the NCC region are expected to invest in transformational rotations and continue to improve and be receptive to international markets and contribute around USD 93.8 million over the 8 year program, however, revenues including sale of forest products over the same period is expected to generate USD 241.93 million. Funding is expected from the revenues that SFCs currently generate and from alternative loans.

- Synergies are expected with the proposed World Bank Coastal Forest development and rehabilitation Project (~USD 130 million) which overlaps with the six ER-P provinces. About USD 37 million is assumed as a source for the ER-P.

- Another potential project with which synergy would be expected to be developed is a proposed KfW forestry project that would potentially support forest certification through the development and implementation of a new fund to support forest certification. On an indicative basis, this project may provide a TA grant of about USD 12 million to the government which is accounted as 50% of this volume in the source of funding (USD 6 million). This is expected to be accompanied by approximately a USD 50 million loan to the government of Vietnam. For the ER-PD 30% of this volume is counted as a source – in total USD 15 million over 5 years.

- Additional support may be forthcoming from the several other program currently running or are planned to be implemented in the ER-P accounting area. In total, it is estimated that at least additional USD 5.2 million will come from other programs.

- Based on the ex-ante GHG emission reductions of 22 million tCO2 that will be eligible for results-based payments and a carbon price of USD 5, the expected funding source amounts to USD 109.96 million over 8 years.

1 ENTITIES RESPONSIBLE FOR THE MANAGEMENT AND IMPLEMENTATION OF THE PROPOSED ER PROGRAM

1.1 ER Program Entity that is expected to sign ERPA with the FCPF Carbon Fund

Name of entity	Ministry of Agriculture and Rural Development
Type and description of organization	Government Organisation
Main contact person	H. E. Nguyen Xuan Cuong
Title	Minister
Address	No. 2 Ngoc Ha Street Hanoi Vietnam
Telephone	+844 3734 6993/+844 3846 8161
Email	vp@mard.gov.vn
Website	http://www.mard.gov.vn

1.2 Organization(s) responsible for managing the proposed ER Program

Same entity as ER Program Entity identified in 1.1 above?	Yes
If no, please provide details of the organizations(s) that will be managing the proposed ER Program	
Name of organization	Management Board of Forestry Projects
Type and description of organization	Government organisation
Organizational or contractual relation between the organization and the ER Program Entity identified in 1.1 above	Implementation of forestry projects
Main contact person	Mr Vu Xuan Thon
Title	Director
Address	Management Board of Forestry Projects
Telephone	Tel: 0913211306
Email	vuxuanthon@yahoo.com

1.3 Partner agencies and organizations involved in the ER Program

Name of partner	Contact name, telephone and email	Core capacity and role in the ER Program
Government Agencies		
VNFOREST	H.E. Vice Minister Dr Ha Cong Tuan	Managing entity
Ministry of Natural Resources and Environment	H.E. Tran Hong Ha	Managing entity
Ministry of Planning and Investment	H.E. Nguyen Chi Dung Nguyenchidzung@mpi.gov,vn	Managing entity
Ministry of Finance	H.E. Đinh Tien Dung	Managing entity
Community Ethnic Minority Affair	Ms. Be Thi Hong Van Vice Director of Ethnic Policy Tel: 04 37173181/ 09129047067	
Department of Agriculture and Rural Development of Nghe An	Mr. Nguyen Tien Lam Vice Director Tel: 0913274025 E: lamccln@yahoo.com.vn	Provincial representative
Department of Agriculture and Rural Development of Thanh Hoa	Mr. Le Van Doc Vice Director Tel: 0913293958	Provincial representative
Department of Agriculture and	Mr. Nguyen Huy Loi	Provincial representative

Name of partner	Contact name, telephone and email	Core capacity and role in the ER Program
Rural Development of Ha Tinh	Vice Director Tel: 0913294136 E: huyloihatinh@gmail.com	
Department of Agriculture and Rural Development of Quang Binh	Mr. Pham Hong Thai Vice Director Tel: 0912 037 673 Duythai67@gmail.com	Provincial representative
Department of Agriculture and Rural Development of Quang Tri	Mr. Khong Trung Vice Director Tel: 0913485114 E: trungklqt@yahoo.com.vn	Provincial representative
Department of Agriculture and Rural Development of TTHue	Mr. Vo Van Du E: Vanduvo@gmail.com 0913425191	Provincial representative
Nghe An Department of Natural Resources and Environment	Mr. Vo Duy Viet Director Tel: 0913272376 E: Vietnamvina@gmail.com	Provincial representative
Thanh Hoa Department of Natural Resources and Environment	Mr. Vu Dinh Xinh Director Tel: 0912281567 E: vudinhxinh@gmail.com	Provincial representative
Ha Tinh Department of Natural Resources and Environment	Mr. Vo Ta Dinh	Provincial representative
Quang Binh Department of Natural Resources and Environment	Hoang Quoc Viet Vice Director Tel: 0912256937 E: viethq.stnmt@quangbinh.gov.vn	Provincial representative
Quang Tri Department of Natural Resources and Environment	Nguyen Truong Khoa Vice Director Tel: 0903.519.056 E: nguyentruongkhoa@quangtri.gov.vn	Provincial representative
Hue Department of Natural Resources and Environment	Mr. Phan Van Thong Director E: pvthong.stnmt@thuathienhue.gov.vn	Provincial representative
Nghe An CEMA	Mr. Luong Quang Kinh Director Tel: 0983157545	Support for stakeholder engagement
Thanh Hoa CEMA	Mr. Luong Van Buong	Support for stakeholder engagement
Ha Tinh community ethnic minority office under Ha Tinh PPC	Mr. Le Van Khuong Head of Office Tel: 0912342136	Support for stakeholder engagement
Quang Binh CEMA	Mr. Hoang Duc Thang Vice Director Tel: 0912062518 E: thanghd.bdt@quangbinh.gov.vn	Support for stakeholder engagement
Quang Tri CEMA	Mr. Le Van Quyen Director Tel: 0913400451 E: levanquyen@quangtri.gov.vm	Support for stakeholder engagement
Hue CEMA	Ms. Nguyen Thi Suu Director	Support for stakeholder engagement
Technical partners		
UN-REDD Vietnam Phase II Program	Fabien Monteils Chief Technical Advisor Tel: 01267 165 521 E: fabien.monteils@undp.org	Technical and financial support for the development of technical issues
FCPF project	Christopher Turtle Chief Technical Advisor Tel: 0903443252 E: christopher_turtle@yahoo.com	Technical support for the ER Program; and FCPF readiness project
JICA	Mr. Hiro Miyazono Chief Technical Advisor Tel: 0986683204	Technical and financial support for the development of technical issues

Name of partner	Contact name, telephone and email	Core capacity and role in the ER Program
	E haskimiyazono@gmail.com; Miyazono.Hiroki@jica.go.jp	
FAO	Ms Akiko Inoguchi Akiko.Inoguchi@fao.org	Technical partner and co-chair on MRV
The Forest and Delta Program	Brian Bean Tel: 03 718 2127 bbean@Winrock.org	Program partner, working Thanh Hoa and Nghe An Provinces, technical and financial support for the development of technical issues
Vietnam Academy of Forest Sciences	Dr. Vu Tan Phuong Tel: 0913541480 E: phuong.vt@rcfee.org.vn	Technical support for development of base line and estimation of ER (REL/RL)
Forest Inventory and Planning Institute	Mr. Vu Tien Dien Tel: 01696994569 E: dienfipi@gmail.com	Technical support for development of base line and estimation of ER (REL/RL)
Forest Inventory and Planning Institute	Dr. Nguyen Dinh Hung Tel: 0987542167 E: dinhhung28@yahoo.com	Technical support for development of base line and estimation of ER (MMR/MRV)
DOSTIC – VNFOREST (cum chair of BDS and MRV TWGs)	Dr. Nguyen Phu Hung E: phuhungdostic@gmail.com/ hungfipi@vnn.vn Tel: 0912094190	Technical support for MRV and benefit sharing
Non-government organizations		
Centre of Research and Development in Upland Area (CERDA) (cum co-chair of BDS TWG)	Ms. Vu Thi Hien tranvuhientk@gmail.com	Stakeholder information sharing, consultation, participation, benefit sharing (co-chair)
Centre for sustainable development in mountainous areas (CSDM)	Ms. Luong Thi Truong lt.truong@csdm.vn	Stakeholder information sharing, consultation, participation
SNV	Ms Ly Thi Minh Hai www.snvredd.com	Safeguards (co-chair), local implementation (co-chair)
SRD Centre for Sustainable Rural Development	Mrs. Vu Thi Bich Hop, Executive Director of The Centre for Sustainable Rural Development (SRD), Email: info@srd.org.vn; hop@srd.org.vn Telephone (office): +84 43943 6676 www.srd.org.vn	VNGO-FLEGT network
WWF	WWF Vietnam Landscape Manager for all Carbon and Biodiversity Project (Car-bi) (Vietnam) Quoc.Nguyenanh@wwfgreatermekong.org	The Car-bi project has some overlap in project area in TT Hue Province and Quang Tri
	REDD coordinator Thang.nguyenngoc@wwfgreatermekong.org	
RECOFTC	Mr Nguyen Quang Tan Tan@recoftc.org	Governance (co-chair)
PanNature	Mr Viet Dung Dungnv@nature.org.vn	Governance (co-chair)
Forest Trends	Nguyen Vinh Quang	Private Sector engagement (co-chair)

2 STRATEGIC CONTEXT AND RATIONALE FOR THE ER PROGRAM

2.1 Current status of the Readiness Package and summary of additional achievements of readiness activities in the country

The Readiness Assessment Package was submitted to the Carbon Fund (CF) in September 2016, and shows the overall progress of readiness for REDD+ in Vietnam. As outlined in the Self-Assessment of the Readiness Package[1], the main outcomes in REDD+ readiness preparation include the following:

- The National REDD+ Action Plan (NRAP) was approved in 27June 2012, making Vietnam one of the first countries to introduce a NRAP;
- Ten (10) Provincial REDD+ Action Plans (PRAPs) have been approved;
- The National Reference Emission Level (REL) document was submitted to the UNFCCC in January 2016;
- A National Forest Monitoring System has been established;
- A decision on piloting a REDD+ benefit sharing mechanism has been issued;
- The proposal for a REDD+ Fund has been approved;
- A guideline for FPIC has been drafted;
- A Feedback and Grievance Redress Mechanism for REDD+ has been developed;
- The REDD+ institutional framework includes a national REDD+ office, Provincial REDD+ Steering Committees, and committees set up under the NRAP;
- REDD+ training, and capacity building has been carried out; and
- A REDD+ communication system has been developed.

In spite of this significant progress, the Government of Vietnam (GoV) recognizes that a number of gaps in REDD+ readiness remains to be addressed and has requested additional funding from the FCPF readiness program for this purpose. Key remaining gaps that will be addressed are as follows:

- Multidisciplinary and interdisciplinary coordination mechanisms to support an integrated approach of REDD+ implementation need to be improved;
- Further development of the legal framework related to REDD+ such as land use, forest resource use rights, forest entitlement, carbon rights, and other technical aspects of REDD+ etc.;
- Establishment of a cross-sectoral coordination mechanism to support REDD+;
- Integration of REDD+ action plans with the Forest Protection and Development Plan, and the Socio-Economic Development Plan;
- Establishment of the National REDD+ Fund as part of the Forest Protection and Development Fund;
- Further development and institutionalization of REDD+ safeguards mechanisms such as the grievance redress mechanism, SESA (the regional SESA Phase 1 is complete; a national SESA Phase 2 in due in 2017), ESMF (the final draft is due in 2017), FPIC guidelines, Safeguards Information System (SIS), and capacity strengthening on REDD+ for the community, especially ethnic minorities, vulnerable groups, etc.;
- Governmental approval of a Benefit sharing mechanism in REDD+;

[1] https://www.forestcarbonpartnership.org/sites/fcp/files/2016/Aug/Vietnam%20R-Package%2017Aug16.pdf

- Approval and operationalization of the REDD+ communication strategy, including the establishment of a national REDD+ Portal;
- Revision of the NRAP, including an elaboration of action plans for the period 2016 – 2020 and improved guidance on strategy and implementation;
- Approval of National REL and NCC RL;
- Establishment of an MRV system at all levels.

2.2 Ambition and strategic rationale for the ER Program

The ER Program and REDD+ are consistent with Vietnam's policies and development priorities. The Government has issued a range of policies relating to REDD+, climate change, and commitments to support greenhouse gas mitigation and adaptation measures. A selection of milestones is as follows:

- In 2008, the Government issued the National Target Program to Respond to Climate Change (NTP-RCC)[2]. This aims to assess climate change impacts, and to develop adaptation and mitigation measures. The NTP-RCC also requires the mainstreaming of activities in response to climate change in all other sectors and fields.
- At the domestic level, political will and commitment to responding to climate change is reflected most recently in Article 63 of Vietnam's Constitution (2013), and in the Communist Party's Resolution on Active Response to Climate Change, Improvement of Natural Resource Management and Environmental Protection (2013)[3].
- Climate change was mainstreamed into the National Socio-Economic Development Strategy (2011-2020) and the Socio-Economic Development Plan (SEDP, 2011-2015)[4], and into policies on disaster risk reduction, coastal zone management, and energy supply and use.
- The Ministry of Planning and Investment (MPI) and MONRE are supporting the mainstreaming of a cross-cutting climate change response in the formulation of the five-year Socio-Economic Development Plan (SEDP) for 2016–2020, and the GoV's budget estimate (post-2015 climate change and green growth financing response).[5] The 2016–2020 SEDP will facilitate line ministries, provinces, and cities' planning process to support the prioritization of projects and programs that address Vietnam's key climate challenges and promote greener growth, as well as those that generate climate co-benefits. The SEDP places "response to climate change, natural resources management, and environmental protection" as a prioritized objective and requires that consideration of sustainable development, climate change, and green growth be integrated into the preparation, appraisal, and approval of investment programs that are funded by the state budget. Enhanced integration of climate change and green growth in the context of the 2016–2020 SEDP, sets the climate change and green growth priorities of the government within the official development agenda. It will direct all sectors and provinces to develop their development plans and make budget allocations in the next five years to operationalize these priorities.
- In 2011, the National Climate Change Strategy (NCCS) was issued, outlining the objectives for 2011-2015 and 2016-2050, and priority projects to be implemented in the period of 2011- 2015. The strategy identifies climate change responses that are vital for the development of the country.
- Strategy on green growth (decision no. 1393/QD-TTg of PM dated 25 September 2012) biodiversity (decision No. 1250/QD-TTg of PM, dated 31 July 2013) and intended nationally determined contribution.

[2] Decision No. 158/2008/QĐ-TTg of PM dated on 1 December 2012
[3] Climate change legislation in Vietnam from 2015 Global Legislation Study a Review of Climate Change Legislation in 99 Countries; M Nachmany et al Grantham Research Institute on Climate Change and the Environment October 2015.
[4] Decision No. 432/QĐ-TTg dated 12 April 2012
[5] This process is being supported by the World Bank's Development Policy Loan on Climate Change and Green Development

- Decision 57 on forest protection and development plan 2011 – 2020 (decision No. 57/QĐ-TTg, 9 January 2012. In the period of 2011-2015, total budget is 24,562 billion VND (about 1,116 million USD), of which central budget for NCC is 1,300 billion VND (about 59 million USD); In 2016 the Target Program on SFM 2016-2020 was launched through Resolution No. 73/NQ-CP 26 August 2016 to replace Decision No. 57. This program provides supports for SFM with a total budget of 59,599 billion VND (2.7 billion USD), of which 2,407 billion VND (112 million USD) is allocated NCC from central budget.
- Decision 403/QD-TTg dated 20 March 2014 Action plan on national Green growth period of 2014 – 2020.
- Decision No 819/QD-BNN-KHCN dated 14 March 2016 on action plan for responding to climate change in agriculture and rural development period 2016 – 2020 and vision to 2050;
- Decree 99/2010/ND-CP of the government dated 24 September 2010 on payment for forest environmental services, with annual revenue from 50 – 60 million USD paid by hydro power plants and clean water supply companies.
- National target program on sustainable poverty reduction 2016 - 2020 (Decision no. 1722/QĐ-TTg of PM dated 2 September 2016).
- National target program on New Rural Development Program (Decision 800/QD-TTg of PM, dated on 14 June 2010).
- PM Decision no. 799/QD-TTg, dated 27 June 2012 on National Action Program on Reducing emissions from deforestation, forest degradation, sustainable management of forests, conservation and enhancement of forest carbon stock (REDD+) period 2011 – 2020.
- Vietnam's Intended Nationally Determined Contribution (INDC) entails an 8% reduction of GHG emissions by 2030 (and 25% with external support) compared to the Business As Usual (BAU) scenario, and an increase of forest cover to 45%. The INDC was submitted to the UNFCCC on 30 September 2015.
- Decree No. 75/2015/ND-CP dated 9 September 2015 on mechanism and policies on forest protection and development linking to rapid and sustainable poverty reduction and support to ethnic minorities period 2015 – 2020.
- Decision No. 2242/QG-TTg dated 11 December 2014 on strengthening management of wood harvesting in natural forests for 2014 – 2020); PM notice No. 191/TB-VPCP dated 22 July 2016 of PM on conclusion of PM on measures to restore sustainably forests to respond to climate change 2016 – 2020. Those legal documents emphasize the actions to be taken to ensure not to convert natural forests for other land use purposes, including degraded natural forests to plantations and ban on logging from natural forests.
- Resolution no. 30 -NQ/TW of Political Bureau, dated 12 March 2014 on continued arrangement, renovation and development of agro-forestry companies; Decree no. 118/2014/ND-CP dated 17 December 2014 to implement the above resolution.
- Vietnam has completed negotiations with the EU on implementing VPA/FLEGT, thereby Vietnam is committed to address the legality of wood and timber exports and chain of custody. The agreement between Vietnam and EU is planned to be signed on 18 November 2016. In addition, Vietnam has signed MoU with Lao and Cambodia to combat illegal timber trading.
- The National Action Plan on Climate Change Period 2012–2020 was issued in 2012. This sets out objectives and lists 65 programs, projects and proposals.
- The economic sector ministries and provinces have developed Climate Change Action Plans (CCAPs) to respond to climate change. The action plans are intended to improve adaptation capabilities and ensure the sustainable development of agriculture and rural development.
- In 2008 MARD issued The Action Plan Framework for Adaptation and Mitigation of Climate Change of the Agriculture and Rural Development Sector covering the period 2008–2020. The plan focuses

on the stability of the agricultural production system (most notably food security derived from rice production), the safety of dyke and infrastructure systems, in the context of disaster preparedness. The Action Plan was updated by Decision 819 of MARD.

- The National Strategy on Environment Protection to 2020 with Visions to 2030 was approved in 2012 and includes the target to "improve the capability of actively responding to climate change and reduce the increase of GHG emissions". It sets out actions to: 1) improve public awareness and adaptability to climate change; 2) mainstream the climate change response into strategies, plans, programs and projects and improve the resistance and adaptability of ecosystems against the impacts of climate change and sea level rise; and 3) reduce GHG emissions.
- In 2012, the Prime Minister also announced that by 2020 Vietnam would launch a national carbon emissions trading scheme. The scheme covers the management of emissions of six types of GHGs with the target to reduce GHG emissions (compared to 2005 levels) in the energy and transport sectors by 8%, by 20% in the agricultural sector, by 20% in Land Use, Land Use Change and Forestry (LULUCF), and by 5% in waste management.
- On 23 June 2014, the revised Law on Environmental Protection No 55/2014/QH13 was promulgated by the National Assembly and came into force on 1 January 2015. This requires activities relating to environmental protection to be harmonised with the response to climate change. This Law added a chapter on response to climate change which provides for the integration of climate change with socio-economic development.
- In 2016 the Target Program on SFM 2016-2020 was launched through Resolution 73/NQ-CP dated on 26 August 2016. The program is national, and includes support for SFM in the ER Program region (committed budget is 59,599 billion VND, of which central budget for NCC is 2,407 billion VND).
- The National Forest Development Strategy 2006–2020 (NFDS) and the National Plan on Forest Protection and Development (NPFPD) support payments for ecological services to local forest managers. REDD+ is firmly considered as part of the drive to achieve the objectives of the NFDS.
- The Program on responding to climate change (SP-RCC) as Decision 120/QD-TTg of PM dated 22 January 2015. The total budget required is 5,415 billion VND (234 million USD) for 2014 - 2020. In the 2015, total budget allocated was 910 billion VND (42 million USD), of which 104 billion VND (about 4.7 million USD) was for NCC.
- Vietnam's Green Growth Strategy (VNGGS)[6] stipulates that by 2020, the GHG emission per GDP should be 8%-10% lower than that of 2010. The Strategy prioritizes the implementation of GHG emission reductions through efforts to reduce deforestation, forest degradation and improving livelihoods for communities, and ensuring that land is available for planned sustainable forest development.
- The National REDD+ Action Program (NRAP), was approved in Decision 799/QĐ-TTg dated 27 June 2012. The NRAP provides a general framework for REDD+. It is currently being updated and it is expected that the NRAP Decision will be completed in late 2016 and become law in 2017.
- The Ministry of Natural Resources and Environment (MONRE) prepared options to reduce GHG emission toward 2030 in the forestry sector by 22.84M tCO_2e without international support and by 43.46M tCO_2e with international support which include:

[6] Approved by the Prime Minister in Decision 1393/QĐ-TTg (25th September 2012) and Resolution 24/NQ-TW (3 June 2013) of the Party Central Committee

Table 2.1: Options and targets of the INDC for GHG mitigation

Options	Unconditional 2030 target	Conditional 2030 target
1. Protection of natural forest	1 Mha, 15 $MtCO_2e$	2.3 Mha, 36.35 $MtCO_2e$
2. Coastal forest protection	3.04 $MtCO_2e$	
3. Expansion of coastal forest plantation	10,000 ha, 0.16 $MtCO_2e$	30,000 ha, 0.49 $MtCO_2e$
4. Zoning, tending and re-growing natural forest	200,000 ha, 2.2 4$MtCO_2e$	200,000 ha, 2.24 $MtCO_2e$
5. Support for forest plantation producing saw logs/ large timber	2.4 $MtCO_2e$	
6. Re-generation of natural production forest		400,000 ha, 4.48 $MtCO_2e$

The ER Program's design leverages ongoing efforts in the forestry sector. The Program builds on collaborative management approaches with the various Forest Management Boards and State Forestry Companies (SFCs). Such approaches have been used in over 75 SUFs across the country and there have been several long-term government pilots. Further implementation of collaborative approaches has been carried out by projects, such as the FSDP and VCF. The ER-P will encourage the forest management entities to develop collaborative forest management plans that incorporate innovative conservation and enhancement activities as well as BSM and performance based approaches.

ER Program's activities are scalable and will contribute to the advancement of REDD+ at the national level. The ER Program will be the first region-wide REDD+ program in Vietnam and will provide significant REDD+ lessons and models for national adoption. In particular, through the region-wide application of innovative MRV, performance-based payments, benefit sharing mechanisms and collaborative forest management approaches. For example, while significant investments have been made in establishing a REDD+ compliant MRV system, further work is needed in this area and the ER-P will test approaches for improving the accuracy of the forest inventory data i.e. improved QA, and introducing independent verification procedures. By largely working through SFCs and MBs the Program's lessons will be widely applicable. Also, the Program will introduce approaches for overcoming investment barriers to plantation programs that are expected to become self-sustaining and this should catalyze similar programs in other regions.

On a global scale, the ER Program can provide important lessons on how REDD+ might be implemented in developing countries:

- Vietnam is unusual among the FCPF countries in having a net increase in forest cover. Thus, it can be expected that the Program will provide important lessons for the implementation of REDD+ in other countries that are at a late stage of the forest transition process. For example, while there is a gross loss of natural forest cover in the NCC, and the ER Program will seek to address this, a significant component of the Program will focus on enhancement through plantation transformation and enrichment planting.
- Vietnam is the first country in Asia to implement a national payment for environmental services (PES) program and the ER Program may provide useful lessons on how REDD+ can be integrated into an existing PES program.
- Vietnam's forestry sector in general, and PES and REDD+ in particular, has the explicitly stated mission of also addressing national poverty reduction. In Vietnam REDD+ is seen as a potential source of income that can contribute both to the national payments for environmental services (PES) program and to the national poverty reduction strategy. This pro-poor and social objective is integrated into the ER Program and can potentially point to useful lessons in relation to the social dimension of REDD+.[7]

[7] Pham,T.T., Moeliono, M., Nguyen,T.H., Nguyen, H.T., Vu, T.H. 2012. The context of REDD+ in Vietnam: Drivers, agents and institutions. Occasional Paper 75. CIFOR, Bogor, Indonesia.

- The ER Program will provide lessons for implementing REDD+ in countries with similar land governance frameworks. In Vietnam, as in some other socialist countries, land is owned by the state and land use rights are allocated to various management entities, including MB, SFCs, households and individuals. Within this framework, the ER Program will directly engage on issues of incentives for sustainable forest management, on forest land allocation, and on rights over carbon.

The ER Program is significant in relation to Vietnam's total forest-related emissions and removals. The ER Program area is Vietnam's North Central Coast Region (NCC), which contains most of the country's remaining broadleaf evergreen forest, and a number of sites with globally important levels of biodiversity. The NCC ER-P region is central to Vietnam's REDD+ and green development goals. Vietnam's net forest-related removals were estimated as 22.5 M tCO_2e in 2010 and expected net removals in 2020 are expected to be 50.3 M tCO_2e (MONRE 2014). The ER Program is expected to contribute 20.38 M tCO_2e over an eight-year period corresponding to an annual average of 2.5 M tCO_2e.[8]

2.3 Political commitment

Vietnam's political commitment to the reduction of GHG emissions and to REDD+ is cross-sectoral and across government levels. As described in Section 2.1 above, Vietnam has demonstrated its national commitment over the past decade through the introduction of far-reaching relevant legislation and policies. This commitment is enshrined in the national constitution, it has the support of the communist party and the prime minister, it is mainstreamed into national development plans, and is manifested through action plans and decisions of key ministries. The political commitment of the participating provinces to REDD+, and to the ER Program, is clearly demonstrated through the support of the provincial leadership in enabling the provincial departments and districts to work on the Program by undertaking the development of PRAPs, and setting up PRSCs, which have representation from multiple sectors. Progress at the province level in REDD+ related activities linked to the ER Program is summarized in Table 2.2 below.

Table 2.2: Summary of status and progress in the ER-P provinces

Provinces	Previous and on-going experience of REDD	Provincial REDD Steering Committee[1]	Stakeholder consultations	PRAP	PFMS pilots	Experience of BSMs/ ACMA/ MB work with forest dependent communities[2]	SFC certification/ equitation
Thanh Hoa	Yes	Yes	Yes	Final	June	Yes	
Nghe An	Yes	Yes	Yes	Final	June		
Ha Tinh	Yes	Yes	Yes	Final		Yes	
Quang Binh	Yes	Yes	Yes	Final		Yes	Yes
Quang Tri	Yes	Yes	Yes	Final draft		Yes	Yes
T.T Hue	Minor	Yes	Yes	Final draft	June	Yes	Yes

Notes: [1]Provincial REDD Steering Committees (PRSCs); [2]ACMA – Adaptive collaborative management approach; MB – a forest Management Board i.e. a PFMB or SUF; BSM – benefit sharing mechanism.

The Government of Vietnam designed the ER Program to support existing policies relevant to REDD+ in the program area. As described in Section 4, the ER Program is closely aligned with and supportive of ongoing national policies in the forestry sector, including policies related to SFM, plantation transformation, PFES, forest restructuring and cross-cutting policies.

[8] A detailed description of the estimation of the ERs expected from the ER Program is included in Section 13.

3 ER PROGRAM LOCATION

3.1 Accounting Area of the ER Program

3.1.1 Overview of Vietnam

The political and economic reforms (Doi Moi) launched in Vietnam in 1986 have transformed the country from one of the poorest in the world, with per capita income around US $100, to lower middle income status within a quarter of a century with per capita income of around US$2,100 by the end of 2015. Vietnam's per capita GDP growth since 1990 has been among the fastest in the world, averaging 5.5% a year since 1990, and 6.4% per year in the 2000s. Vietnam's economy has weathered recent turbulence in the external environment, reflecting resilient domestic demand and robust performance of export-oriented manufacturing. Growth accelerated to 6.5% (year-on-year) in the first three quarters of 2015 (after coming in at 6% 2014[9]). Low inflation and strengthening consumer confidence supported expansion in private consumption while investment was lifted by robust foreign direct investment, rising government capital expenditures, and a recovery of credit growth. Exports of the foreign-invested manufacturing sector also accelerated, but this was offset by a slowdown of commodity exports and an increase in imports of capital and intermediate goods, reflecting stronger investment and the high import content of manufacturing exports. Social outcomes have improved dramatically across the board. Using the US$1.90 2011 purchasing power parity line, the fraction of people living in extreme poverty dropped from more than 50% in the early 1990s to 3% today. Concerns about poverty are now focused on the 15% of the population who are members of ethnic minority groups, but account for more than half the poor. The population of Vietnam is 90.73 M (2014) and the Gross Domestic Product (GDP) is US$186.2 billion (2014).

3.1.2 The ER-P Accounting Area

The proposed ER-P Accounting Area (Figure 3.1) encompasses the entirety of the North-Central Agro-Ecological Region, an area of land totaling 5.15 million ha (16% of the total land area of Vietnam), of which 80% is hills and mountains and the remaining is coastal plains with agricultural land, accounting for 14% of the natural area. The region has a tropical monsoonal climate.

The region is administered as six provinces – Thanh Hoa, Nghe An, Ha Tinh, Quang Binh, Quang Tri and Thua Thien Hue – and has a population of about 10.3 million people (12% of the total population of Vietnam) living in 1,820 communes,[10] as shown in Table 3.1.

Table 3.1: Area, population and growth rates of the Accounting Area

ER Province	Area (ha)	% of area	Population 2013	% of population	Average annual growth rate %
1. Thanh Hoa	1,113,050	21.6	3,476,600	33.8	0.33
2. Nghe An	1,649,270	32.1	2,978,700	28.9	0.38
3. Ha Tinh	599,730	11.1	1,242,400	12.1	0.12
4. Quang Binh	806,530	15.7	863,400	8.4	0.39
5. Quang Tri	473,980	9.2	612,500	5.9	0.44
6. Thua Thien Hue	503,320	9.8	1,123,800	10.9	0.59
Total	**5,145,880**		**10,297,700**		**0.36**

Source: General Statistics Office (GSO) 2013

[9] Taking stock: An update on Vietnam's recent economic development; World Bank, December 2015.
[10] 2013, the ER-P initially targeted 321+ communes in the midland and upland forested areas, this has since been widened to include some sample areas of natural coastal forest and mangroves, however, the area of mangroves in the NCC region is very small > 1,500ha.

Figure 3.1: Location map of the ER-P Accounting Area

The region is bordered to the north by the North West and Red River Delta Agro-Ecological regions, and by the Southern Coastal Agro-Ecological Region to the South. The NCC region comprises the mountainous hinterland of the Northern Annamites, separating Vietnam from Lao to the West, and a narrow coastal plain along the margins of the East Sea. The ER-P area is mostly settled in the eastern coastal plain and with more sparely populated and forested areas in the mountains of the Northern Annamites.

3.2 Environmental and social conditions in the Accounting Area of the ER Program

3.2.1 Existing vegetation types

Natural forest covers 2.1 million ha, which is 41% of the total accounting area. Most of this is evergreen broadleaf forest (EBF). The largest portion of natural forest is poor EBF (1.3 Mha), followed by EBF of medium quality (452,900 ha) and rich EBF which covers only 226,626 ha (4% of the accounting area). Other forest makes up 138,755 ha. This includes bamboo forests and mangrove forests which cover only about 1,500 to 2,000 ha. Plantations cover 637,651 ha, making up 12% of the accounting area. Most plantations are monocultures of *Acacia* (various species) with some pine and eucalypt plantations.

Table 3.2: Area of forest cover and land use in the NCC (ha)

Land uses	Area (ha)	% of NCC Area
Natural Forest	***2,133,879***	***41%***
Evergreen broadleaf forest - rich	226,626	4%
Evergreen broadleaf forest – medium	452,900	9%
Evergreen broadleaf forest - poor	1,315,598	26%
Other Forest	138,755	3%
Plantations	***637,651***	***12%***
Non-forest land	***2,372,977***	***46%***
Total	**5,144,508**	**100%**

3.2.2 Climatic conditions

The NCC region has a monsoonal climate and the annual average temperature is about 24-25^{0}C. Average rainfall is about 2,500 mm with two seasons a year: the main rainy season from June to December with tropical depressions and typhoons, and 85% of the rain falls from September to November; and the drier season from January to May. Parts of the region can also be subjected to hot dry foehn winds particularly in May and June in Thanh Hoa and Nghe An; and all provinces from Ha Tinh to Thua Thien Hue have a high probabilities of tropical depressions or typhoons. Rainfall anomalies also occur, with cases of extreme rainfall (or droughts occurring) and they are expected to double compared to current records. Since 1960, average temperatures have risen by approximately 0.5 to 0.7°C and sea levels have increased by 20 cm around Vietnam (MONRE, 2009, 2012[11]). According to climate change scenarios[12], by 2020 the annual mean temperature is projected to increase by 0.5^0 C relative to the 1980-1999 level and the average minimum and maximum temperatures will increase by 2.2-3°C and by 2050. The annual mean temperatures may rise by 1.4-1.5^0 C.

The tropical cyclone season runs from May to December; the average number of tropical cyclones is shown Table 3.3. Long term analysis of tropical cyclones show variance over different decades, but with no clear long term trends[13]. A separate detailed analysis of long term tropical cyclone rainfall[14] identified four tropical cyclone sub-regions and noted that there was little significant trend detected in the central region (Thanh Hoa to Quang Binh), but that a significant increase in tropical cyclone rainfall from Quang Tri to Khanh Hoa) was apparent.

According to the Climate Change Vulnerability Index (CCVI), Vietnam is ranked 23rd of 193 countries, and is one of 30 “extreme risk” countries. The CCVI evaluates 42 social, economic and environmental factors to assess national vulnerabilities across three core areas, including (1) exposure to climate-related natural disasters and sea-level rise; (2) human sensitivity, in terms of population patterns, development, natural resources, agricultural dependency and conflicts; and (3) future vulnerability considering the adaptive capacity of a country’s government and infrastructure to address climate change effects. The countries most at risk are characterized by high levels of poverty, dense populations, exposure to climate-related events; and their reliance on flood and drought prone agriculture.

[11]MONRE, 2012: Climate change and sea level rise scenarios for Vietnam
[12] Climate change, sea-level rise scenarios for Vietnam, 2009.
[13] IPCC Regional Impacts of Climate Change; Recent Climate Trends and Variability. www.ipcc.ch/ipccreports/sres/rgional
[14] Long-term trends in tropical cyclone rainfall in Vietnam; Hoang Anh Nguyen Thi, Jun Matsumoto, Thanh Ngo Duc, and Nobuhiko Endo J. Agrofor. Environ. 6 (2) 89-92 2012; The paper identifies 4 regions: REG1= above 20^{0}N; REG2 = 17^{0}N to 20^{0}N; REG3 = 12^{0}N to 17^{0}N and REG below 12^{0}N. As with the WB analysis the four regions do not exactly fit the NCC region, REG2 is more or less equivalent to the NCC with some overlap into REG1 (a small part of Thanh Hoa) and REG3 (most of Quang Tri and all TT Hue). Notably REG3 is comparably larger with respect to REG2. A significant increase in tropical cyclone rainfall was found in REG3 due to tropical cyclones (both annual tropical cyclone rainfall amount (mm) and number of days with tropical cyclone daily rainfall ≥50mm) a significant increase in tropical cyclone rainfall was found in REG3 in the 1990s.

Table 3.3: Average number of tropical cyclones for the NCC region (1961-2008)

Area north to south[1]	No. of storm events	Average no of storms per year	No. of storms scale 10 and above	Average no. of storms 10+ per year
Nghe An to Quang Binh	**41**	**0.9**	**17**	**0.4**
Quang Tri to Quang Ngai	**44**	**0.9**	**10**	**0.2**
Total	**86**	**1.8**	**27**	**0.6**

Notes: Best fit to the ER-P area WB analysis of NHMS tropical cyclone data

3.2.3 Soils and topography

The soil characteristics of the NCC are divided for mountains, low hills and delta. The main soil groups in the mountains are yellow-red, with humus soil. The main soil group of the low hills is yellow-red soil on sedimentary rocks. In the Delta, the soils are alluvial coastal soil and coastal sand soil. The soils tend to be very fragile and the highly erodible soil combined with the steep topography, sometimes very steep slopes, in very short narrow steep catchments, can lead to rapid spate events. Where forest cover has been reduced, or removed, these events can be very destructive and catchment management can be problematic. The upland areas are prone to erosion and experience frequent landslides even where forest cover has been maintained, where the protective forest cover is removed the erosion can rapidly develop.

3.2.4 Biodiversity

The region contains some of Vietnam's most notable forests with high biodiversity value. The NCC lies within four of WWF's 200 Globally Important Eco-regions, and contains five Endemic Bird Areas (EBA) and 63 Important Bird Areas (IBA) as identified by Birdlife International. The capacity of these forests to provide various environmental services continues to decline. Forest degradation and fragmentation is destroying valuable habitats and putting a large number of already rare vertebrate species at risk of extinction. The landscape of the ER-P includes five internationally recognized conservation corridors (ranked 'high' or 'critical' global conservation priorities see Figure 3.2 and 3.3), and includes 17 protected areas, 19 important international biodiversity areas, the Western Nghe An UNESCO Man and Biosphere Reserve and the Phong Nha-Ke Bang National Park UNESCO World Heritage Site. The region supports significant populations of 14 globally endangered or critically endangered species (Critical Ecosystems Partnership Fund (CEPF) 2012; IUCN 2013).

In addition to the protected areas, the NCC includes: (1) the Annamese Lowlands Endemic Bird Area, one of five in Vietnam, which covers the lowlands and foothills of north-central Vietnam (southern Ninh Binh, Thanh Hoa, Nghe Anh, Ha Tinh, Quang Binh, Quang Tri and Thua Thien Hue provinces) and part of adjacent central Lao; (2) about 14 Important Bird Area (IBA) sites out of 59 in Vietnam; and (3) a number of Key Biodiversity Areas (KBA).

Figure 3.2: Protected areas and key biodiversity areas of the ER-P region

Table 3.4: Examples of protected biodiversity recently confirmed by SUF Management Boards

ID	Key Species	Status	Name of SUF confirming a species presence ER-P
I. Flora			
1	*Aquilaria crassna*	CR	Xuan Lien NR
2	*Castanopsis hystrix*	NA	Pu Hu NR
3	*Dalbergia tonkinensis*	VN	Ke Go NR
4	*Disporopsis longifolia*	NA	Phong Quang NR
5	*Dalbergia bariensis*	EN	Bach Ma
6	*Madhuca pasquieri*	VU	Vu Quang NP
7	*Podocarpus neriifolius*	LC	Vu Quang NP
8	*Sindora tonkinensis*	VU	Ke Go NR; Xuan Lien NR; Vu Quang NP
9	*Coscinium fenestratum*	VU	Bach Ma
10	*Ardisia silvestris*	VU	Bach Ma
11	*Smilax glabra*	VU	Bach Ma
12	*Hopea pierrei*	EN	Bach Ma
13	*Nageia fleuryi*	NT	Pu Hu
II. Mammals			
1	Asiatic Black Bear	EN	Pu Hu NR; Pu Luong NR
2	Golden Cat	NR	Vu Quang NP
3	Owston's Civet	VU	Ke Go NR

ID	Key Species	Status	Name of SUF confirming a species presence ER-P
4	Clouded Leopard	VU	Ke Go NR
5	Leopard	EN	Ke Go NR
6	Delacour's Langur	CR	Pu Luong
7	Northern Yellow Cheeked Gibbon	NA	Dak Rong; Phong Dien; TTHue Sao La reserve; Bach Ma
8	Northern White Cheeked Gibbon	CR	Pu Mat; Pu Hu; Xuan Lien; Pu Hoat; Vu Quang; Ke Go
9	Southern White Cheeked Gibbon	VU	Ke Go NR; Vu Quang NP; PNKB, Bac Huong Hoa
10	Sambar Deer	VU	Vu Quang NP
11	Sika Deer	VU?	Vu Quang NP
12	Large-antlered Muntjac	EN	Ke Go NR
13	Chinese Serow	NT	Pu Luong NR
14	Sao La	CR	Phong Nha Ka Bang; TTHue Sao La reserve
15	Grey shanked douc langur	EN	TTHue Sao La reserve
16	Annam black muntjac	EN	Khe Nuoc Trong Forest
17	Annamite striped rabbit	EN	As above
III. Birds			
1	Germain's Peacock Pheasant	NT	Bach Ma
2	Crested Argus	NT	TTHue; Sao La reserve
3	Green Peacock	EN	Vu Quang NP
4	White-rumped Shama	LC	Vu Quang MP
5	Edward's pheasant	CR	Ke Go, Khe Nuoc Trong Forest
6	Silver Pheasant	LC	Bach Ma
7	Short-tailed Scimitar Babbler	NT	Bach Ma, Ke Go, Vu Quang
IV. Reptiles			
1	Bourret's Box Turtle	CR	Khe Nuoc Trong Forest
2	Bow fingered gecko	NT	Khe Nuoc Trong Forest
3	Square headed cat snake	NT	Khe Nuoc Trong Forest
4	Spiny frog	NT	Khe Nuoc Trong Forest
V. Insects			
1	Lepidoptera	2=EN, 4=VU	There are 12 threatened and rare species in Bach Ma National Park

3.2.5 Population and forest dependency

According to the national census, the NCC region is home to 13 ethnic minority groups[15] which make up some 11.5% of the total population (over 10.29 million in 2013). The largest ethnic minority populations (88% of the total) are found in the two northern provinces of Thanh Hoa and Nghe An[16]. The predominant groups in all six provinces, ordered by population, are Thai (45%), Muong (29%), Bru-Van Kieu (6%), Tho (6%), H'mong (4%), Ta Oi (4%) and Kho Mu (3%). The other groups present in the area (Co Tu and Chut in the South, Dao and O'Du in the North) have a still smaller share of the ethnic minority population. Only the Thai and Muong have populations over 100,000 persons.

[15] In the course of its investigations the SESA team found several groups not listed in the Census: Dan Lai, Pa Co and Pa Hy.

[16] A new census of ethnic minority populations was carried out in 2015, but the official results are not yet available. In Nghe An there are, additionally, very small groups such as Phong and Dan Lai that have not been recognised in the 2009 Census. There is a group called Pa Co in the South (TT Hue and Quang Tri) that also does not have separate recognition and is generally classified under Ta Oi.

Figure 3.3: Map showing the distribution of the ethnic minorities and poor households in REDD+ potential ER-P communes

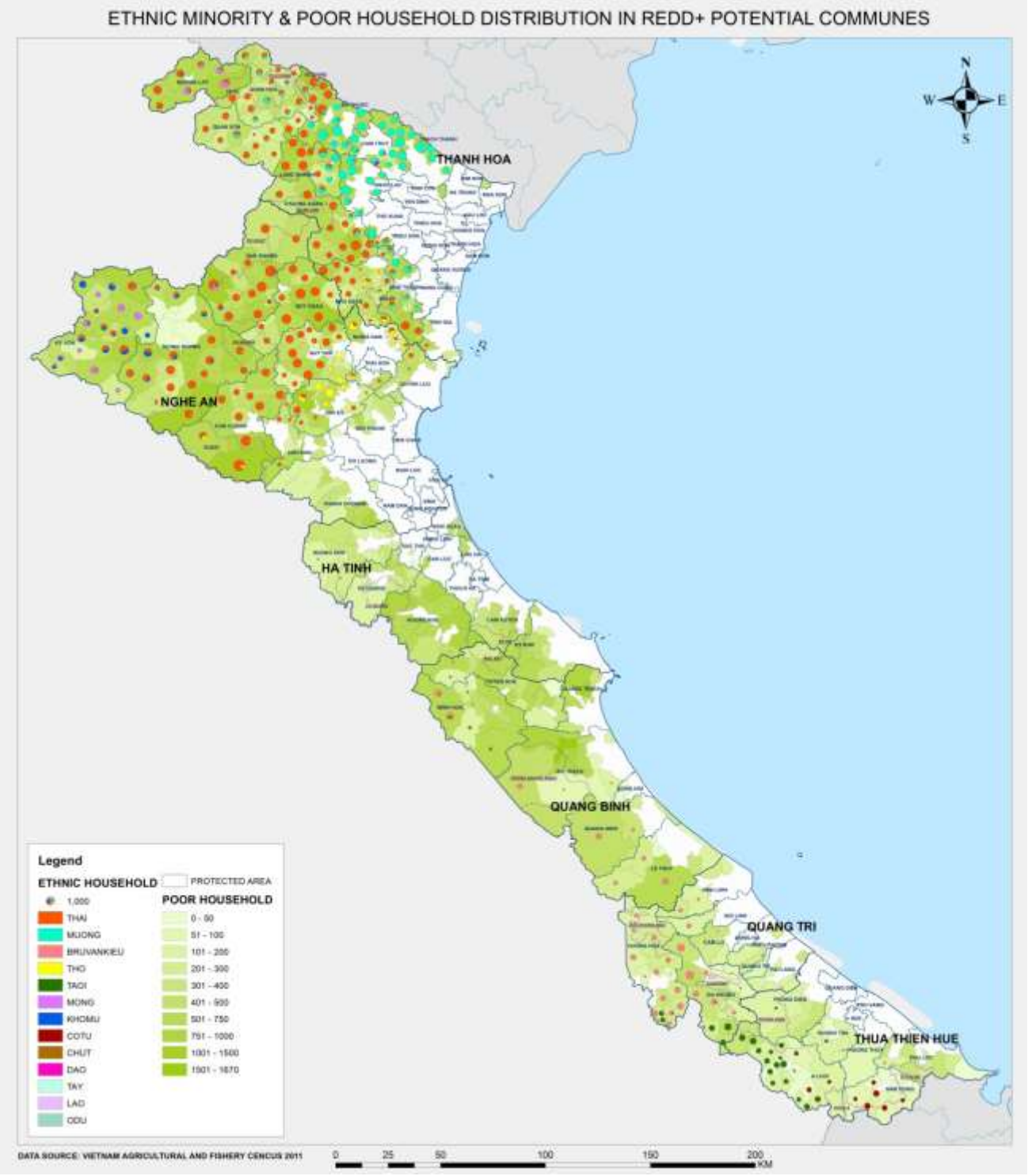


Table 3.5: Ethnic minority population (habitants) data by group and ER-P Provinces

Ethnic Group	Province						Total
	Thanh Hoa	Nghe An	Ha Tinh	Quang Binh	Quang Tri	TT Hue	
Thai	225,336	295,132	500	0	0	0	**520,968**
Muong	341,359		549				**341,908**
Bru-Van Kieu				14,631	55,079	720	**70,430**
Tho	9,652	59,579				0	**69,231**
Hmong	14,799	28,992				0	**43,791**
Ta Oi					13,961[a]	33,385[b]	**0**
Kho Mu	781	35,670				0	**36,451**
Co Tu						13,812	**13,812**
Dao	5,465					0	**5,465**
Chut				5,095		0	**5,095**
Tay	795					0	**795**
Lao			433			0	**433**
O'Du		340				0	**340**
Other						651[C]	**0**
Total EM Population	**598,187**	**419,713**	**1,482**	**19,726**	**55,079**	**14,532**	**1,108,719**
Total Population	**3,400,595**	**2,912,041**	**1,227,038**	**844,893**	**598,324**	**1,115,523**	**10,098,414**
% EM to Total Population by Province	**17.6**	**14.4**	**0.1**	**2.3**	**9.2**	**1.3**	**11.0**

Notes: Source is GSO Census Data 2009 for all provinces except TT Hue where the data are from the provincial CEMA, 2015 [a]The Ta-Oi in Quang Tri are almost all Pa Co according to CEMA.[b]Ta-Oi in TT Hue includes Pa Co (21,138); [C]Pa Hy, another group not recognised by the Census 2009. According to CEMA Quang Tri, the ethnic minority population there has gone up to 76,951 Van Kieu and Pa Co people, but the total population of the province was not given.

There is a clear relationship between poverty, the presence of ethnic minorities, remoteness, and reliance on forest areas. There is quite a marked difference in distribution of the different ethnic minorities over the ER-P area (Figure 3.3). The Thai, Muong and H'mong are found mainly in the north in Thanh Hoa and Nghe An, a few minorities, mainly Chut and Lao, are found in the central area of the NCC, and the Van Kieu, Ta Oi, O'Du and others are found in the southern part of the NCC. High levels of poverty correlate with generally high ethnic minority populations in the north, and overall with high forest cover (Table 3.6).

In the NCC, the ethnic minority groups are found in the largely mountainous districts and in communes that also have higher %ages of land classified as forest (Table 3.6). The partial exception to this is Thanh Hoa Province where, with its large Muong and Thai populations (essentially paddy cultivators often occupying the midlands rather than highlands); the ethnic minority people are not highly concentrated in a few districts. In the four provinces where there are few ethnic minority people compared to the total provincial population, they tend to concentrated in the two to three districts per province with the highest forest cover. Despite their overall low to very low populations in the four southern provinces of the NCC (Ha Tinh especially), ethnic minorities still form a majority of the population in several target districts, and are represented to a greater degree in several districts which have higher levels of forest cover compared to the province as a whole.

Table 3.6: Correlation between high forest area and ethnic minority populations

Province	20 Districts with the greatest forest cover in the ER-P provinces	Total HHs	Total Kinh HHs	Total EM HHs	EM HHs to total District	EM HHs as % of total EM HHs in the province
		Number	Number	Number	Population	
					%	
Thanh Hoa	Quan Hoa/30a	10,000	800	9,200	92	20%
	Quan Son/30a	7,373	392	6,981	95	
	Thuong Xuan/30a	19,075	7,504	11,571	61	
Nghe An	Tuong Duong/ 30a	17,246	1,679	15,567	90	63%
	Con Cuong	17,406	4,351	13,054	75	
	Que Phong/30a	15,321	1,662	13,659	89	
	Ky Son/30a	15,200	765	14,435	95	
	Quy Chau	14,309	3,596	10,713	75	
Ha Tinh	Huong Khe	25,033	24,813	220	1	64%
	Huong Son	30,006	29,882	124	0.4	
	Ky Anh	46,807	46,766	41	0.1	
Quang Binh	Bo Trach	38,620	38,071	549	1	80%
	Minh Hoa/30a	9,940	8,073	1,867	19	
	Le Thuy	33,495	32,389	1,106	3	
Quang Tri	Dak Rong/30a	9,023	2,195	6,828	76	97%
	Huong Hoa	13,462	3,484	9,978	74	
	Vinh Linh	17,957	17,361	596	3	
TT. Hue	A Luoi	11,888	2,783	9,105	77	96%
	Phong Dien	25,565	25,414	151	1	
	Nam Dong	6,015	3,459	2,556	42	
Grand total		**383,741**	**255,439**	**128,301**	**33**	
Total without Ha Tinh		**281,895**	**153,978**	**127,916**	**45**	

Notes: This table has multiple sources for the data, and so is indicative of trends only. District forest areas to determine districts with most forestland were taken from the Provincial Statistical Yearbooks 2014. Population data are either from the provinces visited in 2015, or from the Agricultural Census (2011) commune level database[17].

[17] For the sake of consistency these data are taken from the six provincial Statistical Yearbooks 2014. The area is only that defined as "forest land," without any implication of actual forest cover or its quality.

4 DESCRIPTION OF ACTIONS AND INTERVENTIONS TO BE IMPLEMENTED UNDER THE PROPOSED ER PROGRAM

4.1 Analysis of drivers and underlying causes of deforestation and forest degradation, and existing activities that can lead to conservation or enhancement of forest carbon stocks

4.1.1 Analysis of drivers of deforestations and forest degradation

While the total area of forest in the NCC increased, there was a marked shift toward poorer forests and to plantations. Spatial analysis shows a net increase in natural and planted forest area due to afforestation. Gross deforestation, between 2000 and 2010, across all 6 provinces was 301,950 ha and this was offset by afforestation of 749,816 ha. Thus, the net change in forest area (including both natural forests and plantations) was positive, and the total increase was 447,866 ha. The total area of natural forest increased by around 126,226 over the period. Of the three Evergreen Broadleaf Forest classes, only the poor forest class increased, growing by 262,382 ha, while both rich and medium quality forests decreased- by 55,418 ha and 59,346 ha respectively. A significant part of the recorded afforestation was from timber plantations which more than doubled during the period, increasing the area of forests by 326,241 ha. Forest degradation occurred on 272,825 ha, and was only partially offset by forest enhancement of 140,490 ha, leaving net degradation at 132,335 ha. Only in Nghe An province was forest enhancement slightly greater than degradation.

Most of the gross loss of natural forests was in the poor evergreen broadleaf forest class. For that class, the spatial analysis shows that 95,649 ha were deforested between 2000 – 2005, while 67,380 ha were deforested between 2005 - 2010. In total this adds up to 163,029 ha over 10 years which is equivalent to 54% of total deforestation in the ER-P area or 88% of the total deforestation in the natural forest land use class.

Table 4.1: Forest cover (ha) in the NCC, 2000, 2005, and 2010

Land uses	2000	2005	2010
Natural forest	***2,007,654***	***2,041,696***	***2,133,879***
Evergreen broadleaf forest - rich	282,046	233,922	226,626
Evergreen broadleaf forest - medium	512,245	497,567	452,900
Evergreen broadleaf forest - poor	1,053,217	1,160,297	1,315,598
Other Forest	160,146	149,910	138,755
Plantations	***311,411***	***454,907***	***637,651***
Total Forest Cover (ha)	**2,319,065**	**2,496,603**	**2,771,530**

Table 4.2: Deforestation and forest degradation (ha) in the NCC, 2000-2010

Province	Deforestation	Afforestation	Net Change in Forest Area	Degradation	Enhancement	Net Degradation
1. Thanh Hoa	95,490	160,971	65,481	41,344	32,660	8,684
2. Nghe An	69,300	194,833	125,533	49,687	53,808	-4,121
3. Ha Tinh	24,029	97,479	73,450	25,002	5,183	19,819
4. Quang Binh	26,326	94,242	67,916	80,118	16,569	63,549
5. Quang Tri	39,642	98,320	58,678	42,928	16,742	26,186
6. TT Hue	47,163	103,971	56,808	33,746	15,528	18,218
Total region	**301,950**	**749,816**	**447,866**	**272,825**	**140,490**	**132,335**

The analysis of drivers of deforestation and forest degradation relies on the work carried out for the PRAPs and is supplemented with additional data. The PRAPs used a combination of available secondary data, stakeholder consultations, and field visits to identify and analyze the main drivers and underlying causes of deforestation in the respective provinces. The objective was to identify the nature and extent of major drivers and underlying causes of deforestation, forest degradation and forest cover change in each of the provinces to allow for the identification of province-specific REDD+ activities. For the purpose of this document, and for the design of the ER-Program, this source was supplemented with additional reports on drivers, with data from government reports at the national and provincial levels, and with outcomes of consultations conducted in the last two years at all levels in the six provinces. Thus, in spite of the fact that at the time of submission of the ER-PD, one of the provinces (Quang Tri) had not yet completed its PRAP, the analysis is robust enough to meet the requirements set out by the Carbon Fund. It should also be noted that additional work on local drivers will be done during the planned REDD+ Needs Assessments (and supported by a social screening report which requires work with the local communities using the forests etc.), which will identify local hotspots and provide inputs to revised management plans.

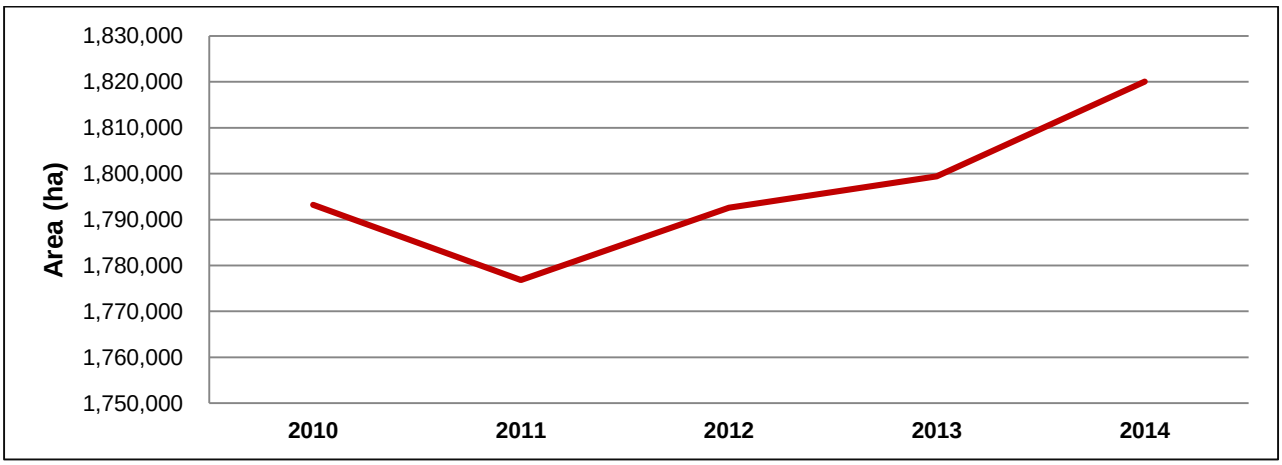
The main identified drivers of deforestation and forest degradation in the NCC are:

- Planned conversion of mainly poor natural forests to rubber and other agricultural land uses;
- Planned conversion of mostly poor natural forests to timber plantations;
- Unplanned conversion of forests due to encroachment;
- Impacts from hydropower and infrastructure development, including downstream impacts from the expansion of residential and resettlement areas;
- Illegal and legal logging; and
- Other minor causes.

Planned conversion of poor natural forests to agriculture

A significant amount of deforestation in the NCC region is related to the expansion of agricultural land, mostly for rubber and cassava. Agricultural land is defined as land that is used for perennial, annual, and cereal crops, and includes land cultivated by smallholders, as well as large rubber plantations established by private and state companies. Detailed data on agricultural expansion are available from province-level statistical yearbooks beginning in 2010. In the period 2010 to 2014, agricultural land increased on average by 6,705 ha per year in the NCC. The largest portion of agricultural expansion was from rubber plantations which increased on average by 4,009 ha per year, but cereals and cassava contributed on average 1,990 ha and 1,092 ha per year respectively. The total cassava area in the NCC increased from around 36,000 ha in 2001 to 63,000 ha in 2014 (an average increase of 2,077 ha per year). Lesser agricultural drivers include crops such as maize that are generally planted by smallholders; however, there was some notable conversion to large scale agriculture in Thanh Hoa and Nghe An for sugar cane, pineapple and dairy fodder (Nghe An) and maize (Nghe An).

Figure 4.1: Change in total agricultural area of ER-P region (ha)



Vietnam is a major producer of rubber and in 2015 was the third largest exporter of natural rubber with exports valued at US$ 1 billion.[18] The 2009 national strategy for rubber development indicates that by 2020 the value of exports should reach US$ 2 billion, twice that of 2015. Several policies were launched to promote this goal, including allowing the conversion of 150,000 ha of poor forest to rubber plantations.[19]

In spite of currently low latex prices, rubber is expected continue to be a considerable driver of deforestation in this region. The total area under rubber in the NCC has grown from around 30,000 ha in 2001 to 79,000 ha in 2014 (Figure 6.9 in Annex 3). According to the Provincial Statistical Yearbooks, in the period 2010 to 2014, rubber plantations increased by 3,769 ha per year. The growth rate in Nghe An, Ha Tinh, and TT Hue has been particularly high. High latex prices (VND 60 million/tonne in 2011, equivalent to US$2,850/tonne) prevailed for some time, encouraging expansion. Falling yields from cassava have also contributed to the expansion of rubber in the NCC region. Much of this growth has occurred on land that was previously production forest land, but that may have been heavily depleted. In Ha Tinh, for example, conversion of forestland into rubber plantations during 2005-2014 was estimated at 4,465 ha.[20] Prices for rubber latex in 2016 are at a low, which may in the short-term stall further investment in the crop; however, the overall trend and growth forecast remains relatively high as provinces continue to plan for further rubber expansion. Across the NCC, an additional 4,954 ha are planned by 2020. As rubber trees take about six years to produce latex, it is expected that farmers and rubber companies will continue to plant rubber trees with the expectation of future higher prices.[21]

Most of the rubber plantations are large scale, and are supported by government plans. Most of the rubber plantations are large scale (over 100 ha) and are established by rubber companies (both private and SOEs) that receive land from SFCs. In Ha Tinh for example, of 10,720 ha of rubber plantations, only 931 ha are smallholder plantations (Ha Tinh PRAP). The conversion of degraded forest to rubber plantations is aligned with official policies, including decisions by the provincial authorities. About 86% of planned rubber plantations between 2012 and 2015 were to be situated on production forest land.

Expansion of cassava plantations is the second largest agricultural driver of deforestation. The total cassava area in the NCC increased from around 36,000 ha in 2001 to 63,000 ha in 2014. Cassava is an important source of income for poor farmers due to easy cultivation, undemanding soil requirement and low investment costs. The main demand is for starch production and more recently biofuel feedstock. It is widely grown in communes, and in smaller amounts in shifting cultivation areas. Expansion of cassava area was particularly high in Thanh Hoa and Quang Tri where a new cassava processing factory has been established. In Quang Tri, cassava even replaced acacia plantations in some areas. While the market price has since fallen, cassava is expected to remain as an important driver of deforestation during the ER-P period, though expansion rates will be highly dependent on the commodity price (See cassava Annex 6 Figure 6.12).

There is also conversion of forests other agricultural crops, though at a smaller scale. Perennial cash crops contributing to planned conversion of forest in the area include limited amounts of coffee, tea and pepper. Mangroves, which make up only a small fraction of the region's forests, are threatened by aquaculture (shrimp farms), which has increased extensively since the 1990s.

Planned conversion of poor natural forests to timber plantations

In the NCC the conversion of highly degraded natural forest areas to forest plantation occurred at a rate of 235 ha/year (in the south) to 5,000 ha/year (in the north) depending on the province. There appears to be a mixture of private investment and government supported and run projects. Binh Dinh, which is a traditional center for wood industry through trade and export of timber and wood products from central Vietnam and Lao, receives much of the current output from the region, which has seen rapid development of forest plantation agriculture and there have been some major investments from Japanese companies for joint

[18] http://www.worldstopexports.com/natural-rubber-exports-country/
[19] Workshop on Conversion of Forestlands to Rubber Plantations: Opportunities and Challenges. September 27, 2013. VAFS, Forest Trends, Tropenbos International
[20] UN-REDD report at Ha Tinh workshop, Oct. 2015.
[21] The price of fresh latex was down from VND 40,000/kg to 9,000/kg on 16 Oct. 2015 http://thitruongcaosu.net /2015/10/16/gia-cao-su-trong-nuoc-ngay-16102015/

ventures. In addition, the province has also seen the development and expansion of a number of smaller companies involved in plantation forestry; this expansion was particularly noticeable during periods of cheap credit up to around 2008/09.

Timber plantations have played a crucial role in Vietnam´s forest transition. The relatively rapid expansion of the *Acacia* hybrid plantation estate began in the late 1990s, when superior clones were first approved by the Government. Nationally, there are over 1.1 million ha of acacia plantations for wood production, managed on 5-10 year rotation cycles. The area of timber plantations in the accounting area more than doubled between 2000 and 2010, reaching 637,651ha. In Thanh Hoa the area of timber plantations increased from 87,100 ha in 2001 to 180,300 ha in 2014. In 2014, timber plantations, mainly based on different Acacia species, covered around 637,561 ha (12%) of the NCC region. Acacia plantations have emerged as an important resource for supporting the rural economy and national export revenue.

A significant area of timber plantations is managed by smallholders. Acacias are easy to grow and manage, even with the limited financial and technical resources available to small growers. In Thanh Hoa significant area of plantation forests, mainly acacia, have been planted by local households on their abandoned swidden lands or in nearby degraded forests. Nationally, nearly 50% of the resource is managed by small growers holding 1-5 ha woodlots. Some small companies were reported to have secured limited rented land deals with local farmers to grow plantation forest on their land. In some cases, it was reported that these arrangements were terminated prematurely as the farmers decided to grow their own trees. In many districts the arrival of a forest plantation company has stimulated interest and investment in smallholder plantations. Often the landholdings of the small to medium companies are quite small as it continues to be quite difficult for a company to secure a large land area and long lease to grow plantations and at least some companies have seen the importance of encouraging local small farmers to act as “out growers” for the main plantation and thereby increase the overall area of the plantation. In some of the project provinces it was reported that there have also been some changes to land tenure with the previous state forest enterprise (SFE) being converted into private companies and the land and forest area held by the company rationalized (e.g. TT Hue); and in some areas, part of the land has been made over to communes for smallholder plantations.

Most of the timber plantations in Vietnam are species of acacia, with some native species planted regionally. Clones of *Acacia* hybrid, the natural hybrid between *Acacia auriculiformis* and *A. mangium*, are the most widely established plantation species. Acacias were introduced from their natural habitats in northern Australia and Papua New Guinea to southern Vietnam in the 1960s and to northern Vietnam in the early 1980s. Trials demonstrated good growth rates on a range of sites including on shallow, stony soils. By 2013, 51% of total plantation area was planted with acacia: *Acacia mangium* (600,000 ha), clonal *A. mangium* x *auriculiformis* hybrid (400,000 ha), *A. auriculiformis* (90,000 ha) and *A. crassicarpa* (5,000 ha). However, in some areas native species are planted. For example, in upland areas of Nghe An and Thanh Hoa[22] where *Melia sp.* continues due to strong local prices, and in Thanh Hoa where a bamboo system still largely dominates in upland areas (but increasing areas of Acacia are now apparent).

While it is acknowledged that they reduce the pressure on natural forests, and that they have led to the net increase in forest cover in the NCC, timber plantations have replaced remnants of natural forest and remaining logged over poor natural forest. According to spatial analysis of the ER-P region, the conversion of all types of forest to forest plantation during 2000-2010 was about 21,920 ha. Data from several provinces also indicate that significant portions of loss of natural forest can be linked to the expansion of timber plantations. For example, the Nghe An PPC states that more than 10,000 ha of natural forest were replaced by plantation forest and other land uses during the period of 2009 to 2013 (Nghe An PPC reports, 2013, 2014). The area of natural forest lost due to timber plantations in Ha Tinh is estimated at 9,658 ha from 1995 to 2010 and as 10,370 ha in the period 2010 to 2014 (Ha Tinh PRAP).

Expansion of timber plantations is likely to continue. Further expansion of timber plantations is predicted across the NCC as demand for wood continues to be high. Continues to penetrate into the upland areas of the NCC region. Mono-culture Acacia plantations are a poor replacement for natural forest in terms of

[22] In Thanh Hoa, poor natural forest was converted into *Dendrocalamus membranaceus* forest (Lang Chanh district), *Melia azedarach* forest (Muong Lat district).

biodiversity, and VNFOREST is committed to improving the economic and environmental performance of Acacia plantations (see section on policies below).

Unplanned forest conversion due to encroachment and shifting cultivation

Encroachment tends to be low-key and small scale, but has a significant cumulative impact on forest cover and forest quality. Encroachment into forest areas often occurs with a longer-term view to convert the forest to some form of agriculture or to timber plantations. This issue has been recorded as a serious problem for most SUFs[23] (including those in the NCC region), and areas of protection forest for many years. A negotiated outcome is often that the community is allowed to harvest the crop(s) already planted and then must withdraw, or if the encroachment is more widespread and long term, part of the SUF or PFMB is eventually excised for the local community and many SUFs, including Dak Rong Nature Reserve in Quang Tri, have constantly had to adjust and then re-adjust the boundaries. Forest degradation from encroachment is often difficult to spot, particularly if village communities are located inside the SUF or PFMB, as it can take place some distance inside a forest or on the leeward side of a hill. The issue can also be difficult to resolve as households or even communities will often claim a lack agreed boundaries. If forest cover is generally maintained, decreases in the quality of forests are often overlooked.

Some forest loss is also associated with shifting cultivation, but reports from provinces indicate that only small areas of forest in the NCC are affected. Shifting cultivation is variable in extent over the region, but is largely limited to the upland and mountainous western parts of the region. Little or no swidden is officially recorded in the central part of the landscape (Thanh Hoa, Ha Tinh and Quang Binh provinces), but up to 12,800 ha is recorded in the north (Nghe An province) and 14,500 ha in the south (Quang Tri and Thua Thien-Hue provinces) of the landscape (FPD 2011). Shifting cultivation is driven by traditional cultural practices of ethnic minority communities, in the absence of viable alternatives or good agricultural land (particularly for young couples).

Hydropower and transport infrastructure

Infrastructure projects, and in particular Hydropower Projects (HPPs), are reported in five out of the six ER-P provinces, as having serious negative impacts on forest cover. About 14 hydroelectric and multipurpose irrigation and hydroelectric plants have been built during the reference period of 2000-2010 with at least two more starting the initial construction phase at the end of the reference period (2010). Forest conversion as a result of hydropower in the region was estimated[24] to be in the range of 13,600-21,700 ha.

The direct impact on forests from infrastructure development, such as clearing for construction and reservoir establishment, can be severe at the local level. While the actual land and forest take for hydropower projects is relatively small, the development often occurs in some of the best remaining upland forested areas and the follow-on impact, including edge and multiplier effects, of opening a previously underdeveloped area, on the forest and particularly protected areas can be severe and difficult to control. In addition, indirect impacts linked to encroachment and illegal logging often extend beyond the initial area. The initial development can bring longer term economic development activities which are associated with a process of forest degradation followed by conversion.

In the NCC region, the largest infrastructure impact related to HPPs is in Thanh Hoa Province, where a cascade of four medium sized HPP schemes is under construction on the Ma River. While the current level of deforestation is not large, the longer-term impact, and in particular the continued and difficult to control forest degradation, resulting from large influxes of economic followers and much increased local economic activity, can be expected to have a much longer lasting and wider impacts. The impacts of the cascade on the two nature reserves Pu Hu and Pu Luong, which both have high levels of biodiversity are particularly severe.

[23] VCF Conservation Needs Assessment reports, which include threat analysis and METT reports and social assessment reports from 2007 to 2013 and most identify encroachment as a serious priority issue.
[24] Based on an estimate of 10-16 ha natural forest cleared per MW for a HEP scheme; ICEM figures quote a 10km zone of influence in Strategic Environmental Assessment in the Hydropower Sub-sector, ICEM, 2007 Vietnam

The resettlement of project-affected people due to HPPs also results in deforestation and degradation. For example, it was reported[25] in Nghe An, that people were relocated to unsuitable areas and with not enough suitable land, which can be expected to result in encroachment of forested areas. Reservoir formation caused the resettlement of thousands of households to the new areas primarily located on forestry land. For example, the Ban Ve hydropower project caused resettlement of more than 2,100 families from Thanh Chuong district to newly established districts of Hanh Lam and Thanh Chuong. This led to the conversion of 5,000 ha of forest and forestland of the Thanh Chuong forest management board to provide land for the relocated people.

While much/all of the HPP development has been put on hold, it is possible that some of the projects will be reintroduced during the ER-program period. Following concerns over the environmental and social impacts during and after construction and poor safety, including sudden release of water, the Ministry of Industry and Trade reviewed all pending hydropower projects in the national Hydropower Master Plan which is part of the National Plan for Power Development,[26] and this resulted in the cancelation of 424 projects nationwide.[27] Currently, only the Prime Minister can approve new hydropower projects;[28] however many proposed project still have PPC approval. As an example, in 2013[29] Ha Tinh had ten small hydropower plants planned, two have been constructed (Huong Son and Ho Ho) and the total forest area directly lost due to the construction of these two plants was 477.3 ha (Huong Son: 93.3 ha and Ho Ho: 384 ha), and the remaining eight could be re-introduced. According to the socio-economic development plan of Western Nghe An, up to 2020 (Prime Minister, 2013), seven new hydropower plants will be built in this area. According to the Nghe An PRAP, this is expected to lead to the loss of 5,000-6,000 ha of forests by 2020.

Investment in transport infrastructure has been significant during the reference period. Between 1999 and 2005, passenger and goods transport increased by 70% and 100% respectively. The GoV, with the support of numerous donors has made significant investments to expand and improve the road network, and the estimated cost of the 2006-2010 rural roads program was VND 47.6 trillion (US$ 3 billion). This investment includes improvements to the road network capacity and quality and efforts to provide road access to all communes. There are significant remaining gaps in the provincial road networks between rural and national road systems that need greater attention in the future.

A number of major roads have been built in the program area in the reference period. These include the HCMC Highway 14, which went through areas of natural forest including some protected areas and resulted in significant ribbon development taking place.[30] In Nghe An, where the development of road and transport systems is considered a major direct drivers of deforestation, future highway development includes a number of four lane express ways including: Thanh Hoa to Vinh (underway 170km), Dong Ha to Lao Bao (55km), and eventually Hanoi to Da Nang (approximately 368km total length). An important relatively new impact has been the construction of new border access roads; while these are only small feeder type roads, they tend to be put through some of the best remaining forest that are close to the border with Lao.

Forest degradation from unsustainable forest management and illegal logging

Logging is a key driver of forest degradation in the NCC. Logging in the past has included both 'legal exploitation' of natural forests by government-licensed, large-scale commercial logging operations, and 'informal' logging, usually smaller-scale exploitation that occurs without government permission or licenses

[25] VFD Technical Reports 35 and 36 Assessment of Drivers of Deforestation in Thanh Hoa and Nghe An and is also reported as a problem in Truong Son HPP and is likely to be a problem in Hoi Xuan HPP downstream.

[26] Decision 1208/QD-TTg of 21 Jul. 2011 on Approval of the National Master Plan for Power Development for the 2011-2020 period with vision to 2030.

[27] The projects that are currently cancelled are mainly small hydro scheme, however, small hydro forms an important contribution to the national master plan for power development.

[28] Resolution No. 11/NQ-CP of Government, February 18th 2014 on the Action Program of Government to Implement Resolution No. 62/2013 of the National Assembly (on strengthening the management of planning of Hydropower projects).

[29] DOIT Ha Tinh's report, 2014.

[30] The impact of HW14 on Cuc Phuong NP, although initially relatively minor in terms of actual direct forest, loss, was to isolate one small part, however, over time further deforestation and forest degradation has taken place as a direct result of radically improved opportunities for economic activities along the road including additional feeder roads, restaurants, improved access to markets leading to more cultivation, and the arrival of economic migrants etc.

and is therefore considered illegal. Thus, forest degradation has been caused by poor management practices by commercial logging operations as well as by timber harvesting by rural households. Since 2014, most commercial logging is banned in Vietnam. Small scale logging and NTFP harvesting is often for subsistence purposes. Local people rely on timber for construction of wooden houses, for making furniture and for firewood for cooking. NTFPs are used for food, and for additional cash generation.

Up to 2014, there were legal timber harvests from natural forests in the NCC, which often did not follow sustainable forest management practices. While the majority of legal timber in the region comes from plantations, in 2010, the volume from natural forests was 62,656 m3, decreasing to 47,864 m3 in 2014 (Figure 4.2). In 2014, concerns over forest quality led the GoV to introduce a policy banning logging in natural production forests by companies not certified to an international SFM standard. In the ER-P area, currently only part of the Long Dai SFC (the Truong Son division) in Quang Binh is eligible to log natural forest.[31] The total SFM certified area in Vietnam is only 157,317 ha; equivalent to just ca. 2.2% of the 7 million hectares of production forests (Source: FSC 2016). Nearly half of the certified area is *natural* production forest (68,780 ha) operated by just 3 state forest companies (SFCs, two of these were supported by the GIZ). The rest of the area is composed of timber and rubber plantations owned by SFCs (38 certificates) and household groups (1,392 ha in Quang Tri). SFM is generally not applied outside of certified areas.

Illegal activity is likely to have been a major factor in forest degradation and deforestation. Types of forest crimes in Vietnam include illegal logging, illegal land conversion, and wildlife trade. Recent recorded forest law violation in the NCC range from 4,700 to 6,500 per year (FPD 2016), but it is likely that far more violations go undetected and unrecorded (World Bank 2010). The decline in primary natural forests in the NCC has occurred in spite of laws protecting them, including tight restrictions on logging in natural forests, and illegal organized selective logging operations are known to occur in SUFs and PFMBs in the NCC region. These are consistently difficult to identify and halt, and often rely on local Kinh and ethnic minority households to undertake the work in the forest. Illegal hunting and trade of wildlife have depleted wildlife populations in Vietnam's natural forests to the extent that most species of high value to wildlife trade are endangered. The ban on legal harvest is expected to create conditions for a resurgence in illegal logging, if protection and law enforcement measures are not suitably strengthened.

Figure 4.2: Legal timber production from natural forests in the NCC 2010 to 2014

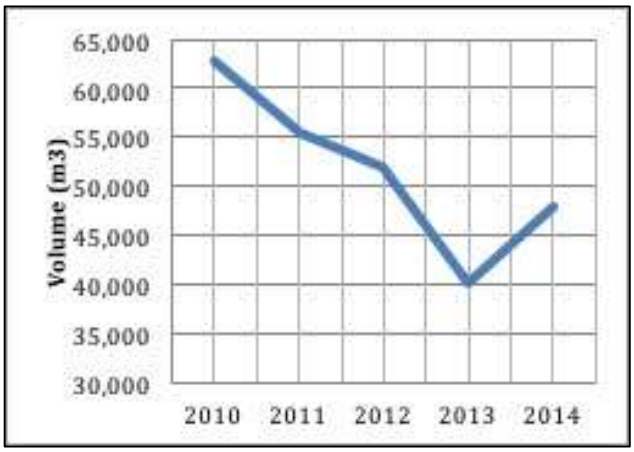
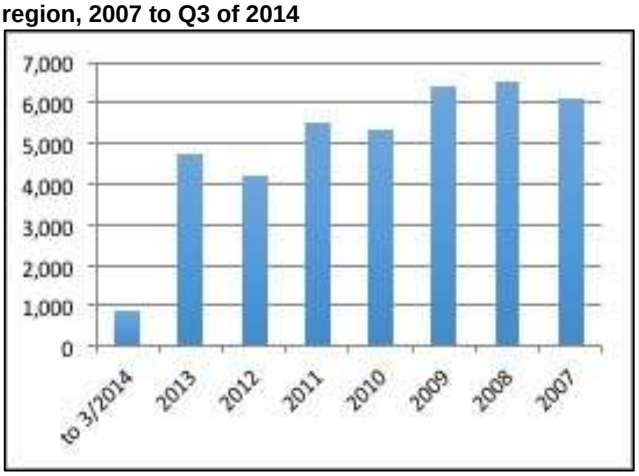


Figure 4.3: Recorded forest law violations in the ER-P region, 2007 to Q3 of 2014



Sources: Extracted from FPD website http://www.kiemlam.org.vn/Desktop.aspx/List/Hanh-vi-vi-pham-Luat-BV-va-PT-rung/

Other causes of deforestation and forest degradation

The NCC region is a typhoon prone region, but no increase in typhoon activity is expected. The program area is subject to intense heavy rain from tropical depressions and typhoons. Many of the inland upland areas have very fragile and highly erodible soil on steep slopes, in very short narrow steep catchments,

[31] Decision No. 2242/QD-TTg of 11 Dec. 2014.

which leads to rapid spate events. Where forest cover has been reduced, or removed, these events can be very destructive and catchment management can be problematic. The upland areas are prone to erosion and experience frequent landslides even with forest cover, and where the protective forest cover is removed the erosion can rapidly develop. The losses resulting from typhoons are not easy to quantify, but young plantations are noted to be particularly vulnerable to typhoons and monsoon events.

Other reported causes of forest degradation include unsustainable harvesting of NTFPs, forest fire, mining, and pests and disease. However, there is little data on these causes, and their impact is minor and highly localized compared to the major drivers discussed above.

Ranking of the drivers of deforestation and forest degradation

At the province level, there is broad consistency concerning the main drivers in the NCC. For the five provinces where the PRAPs ranked the main drivers, three drivers were consistently in the top three spots for both deforestation and forest degradation: the expansion of plantations (rubber and acacia), the expansion of agriculture, and the development of hydropower. Illegal logging is perceived as the main driver of forest degradation in Thua Thien Hue, and shares the second place with the expansion of agriculture and forest fire in Nghe An.

However, a key finding from the PRAPs is that there is variation of the main drivers both across and within provinces. Several of the PRAPs provide district-level analyses of the various drivers and reveal differences across regions that are probably linked to local economic and forest resource conditions. For the design of the ER Program's activities it will be important to respond to local conditions and for this reason further work on local drivers will be carried out at the site-level through REDD+ Needs Assessments, as discussed in Section 4.4 below.

Table 4.3: Ranking of drivers of deforestation and forest degradation

Main drivers	Deforestation driver ranking					Rank for the NCC	Degradation driver ranking					Rank for the NCC
Province	TH	NA	HT	QB	TTH		TH	NA	HT	QB	TTH	
Expansion of Rubber and Acacia	1	1	1	2	2	**1**	1	1	1	1	2	**1**
Expansion of Agriculture	2	2	2	1	3	**2**	2	2		2	1	**2**
Hydropower (+water supply, irrigation)	3	3	4	3	1	**3**	1	1		3	3	**3**
Road Development		4		3						3		
Illegal Logging	6	7	3	3	4		6	2		4	1	**4**
Forest Fire	7	8		5	5		7	2		5		
Mining	5	6			6		5					
Resettlement	4	5					4					

Source: PRAPs for the individual provinces. Note, the data for QT were not available for the analysis. Where more than one driver shares the same rank in a given province, they are tied for that rank. The rankings are indicative only and based mainly on qualitative data including stakeholder perceptions.

4.1.2 Underlying drivers of deforestation and forest degradation and barriers to afforestation and forest enhancement

Conversion of depleted forest land to higher-value land uses

Much of the gross loss of poor natural forest in the NCC results from the expansion of sectors that are supported by national economic planning. The development of hydropower is in line with Vietnam's energy targets, while high-value land uses are supported by national commodity development planning. In particular, a large share of the expansion of the rubber and timber plantations in the NCC is in line with policies of the Ministry of Industry and MARD respectively. A significant portion of timber and rubber plantation

development is laid out in land use and commodity plans at different levels of government. Both crops make significant contributions to national export revenue and GDP, and they provide important development benefits in rural areas in terms of jobs, livelihoods, and multiplier effects. Timber plantations, as noted above, also can provide significant environmental benefits through soil improvement and soil stabilization as well as by reducing pressure on natural forests.

A significant share of the conversion of forestland to other land uses is aligned with provincial land use planning. Land use plans prepared by the provincial Departments of Natural Resources and Environment (DONRE) aim for significant conversion of forested land to non-forest land and a larger conversion of barren land to forest land, resulting in a net increase of 223,429 ha in forested land in the period 2011 to 2020. In total 100,434 ha of forested land is expected to be converted into non-forested land and of this, 47,101 ha is planned for non-agriculture land use, and 53,333 ha for agriculture. The largest conversion of forest land is planned in Nghe An and Quang Tri provinces, with 38,302 ha and 30,592 ha respectively. The planned conversion of barren land to forest is 323,863 ha. Most of this afforestation (67.3%) is planned in Nghe An.

Table 4.4: Proposed conversion of forest into other land use purposes 2011 to 2020 by NCC provinces (ha)

Province	Thanh Hoa	Nghe An	Ha Tinh	Quang Binh	Quang Tri	TT Hue	Total
A. Conversion of forest land into non-agriculture land in which land would be taken from:	**3,957**	**11,908**	**4,198**	**13,627**	**6,049**	**7,362**	**47,101**
Special use forest	20	58	455	0	70	142	745
Protection forest	11	3,075	767	448	2,167	1,051	7,519
Production forest	3,926	8,775	2,976	13,179	3,812	6,169	38,837
B. Conversion of forest land into agriculture land in which land was taken from:	**799**	**26,394**	**980**	**617**	**24,543**	**0**	**53,333**
Special use forest	0		0		324		324
Protection forest	0	879	0	557	2,878		4,314
Production forest	799	25,515	980	60	21,341		48,695
Total area of converted forest into other land use purposes (A+B)	4,756	38,302	5,178	14,244	30,592	7,362	100,434
C. Conversion of barren land into forest land in which land would be taken from:	**21,200**	**211,754**	**16,114**	**20,766**	**35,029**	**19,000**	**323,863**
Special use forest	20	768	384	675	0	8,847	10,694
Protection forest	0	90,438	4,008	2,900	0	3,006	100,352
Production forest	21,180	120,548	11,722	17,191	35,029	7,147	212,817
Summary of differences (C-(A+B))	**16,444**	**173,452**	**10,936**	**6,522**	**4,437**	**11,638**	**223,429**

Source: Figures extracted from the land use plans, prepared by provincial Dept. of Natural Resources and Environment of the six ER-P provinces.

Much of the natural forest area in the NCC that is not within SUFs is heavily depleted, reducing the opportunity cost of forest conversion. Decades of overexploitation, lack of sustainable forest management, population pressure, as well as the lasting impact of the war on vegetation cover have significantly decreased forest quality. Of the natural forests, only 5% are categorized as 'rich' (225,000 ha) and 17% as 'medium' in quality (650,000 ha); 73% are 'poor' (3.2M ha) (MARD 2014). Most forests have provided very limited economic benefits from timber in recent decades and there is a need for active management measures to rehabilitate these forests and protect them from conversion and agricultural encroachment.

The general poor state of some of the protection forests has also limited the success of forest protection contracts; however, where communities have received a mix of significant financial and technical support experiences with forest protection contracts have been more positive.

The forest allocated to households is often poorer quality than that managed by state entities (MARD 2011) and many households lack the technical and financial resources to benefit from the FLA, making it difficult for them to derive benefits from the land and forest allocated to them. Where there has been a more integrated approach to FLA, such as in the KfW projects (which focus on areas of locally better quality forest) and include village forest protection and development funds, including village protection patrols with collaborative management approaches. FSDP followed a mix of FLA and collaborative management approaches with management boards linked to forest use rights in return for local communities taking more responsibility for local forest governance in combination with forest rangers i.e. they perceived more local ownership over forest. However, generally at the provincial level, finance has been sporadic for FLA, which has hampered the wide scale introduction of FLA.

Lack of incentives for SFM

The reduced economic benefits from much of the natural forest area reduces incentives for SFM and forest protection. Most of the production forest area is too depleted for profitable forest management and any remaining 'rich' or 'medium' quality natural forests are generally located in areas that are difficult to access, including steep slopes. The costs related to road construction and transportation under such conditions are high (Pham et al 2013). SFM requirements, including the prevention of environmental damages, worker health and safety, and resolution of conflicts over tenure, would bring additional costs. As a result, most SFCs do not apply SFM in natural forests, and rarely invest in the protection and rehabilitation of degraded natural forests. Instead they have progressively scaled down activities in natural forests, and moved towards bankruptcy or focused on their plantations -- if available.

Ineffective protection is also a disincentive for practicing SFM. Any SFM plan would be challenged by the unknown amount of illegal logging in the forests; the illegally harvested timber volume might be well above the annual allowable cut. If the forest companies' resources are not secure, and land and resource conflicts with local communities persist, then SFCs are unlikely to invest in sustainable forest management. The main mechanisms for forest protection -- including forest rangers and protection contracts with communities -- have arguably not been effective at protecting natural forests. The national logging ban for natural forest was a reaction by the government to the forest protection problems in the Central Highlands.

The low level of adoption of SFM and certification by SFCs is also due to corporate governance issues. Currently SFCs are required to operate in accordance with enterprise laws, but at the same time they are subject to a strong corset of bureaucratic procedures. SFCs require permission from provincial authorities to implement most operation-related measures; there is only a limited degree of freedom regarding operational decisions about harvesting, replanting, tree species, and reinvestment of timber revenues. In addition, the current practice of operating SFCs within 5-year planning-cycles (rather than 20 harvesting cycles for plantations / 35 year sustainable management plans for natural forests) -- and the fact that SFC managers seldom stay in the same position longer than 5 years -- does not contribute to a long-term business and investment-oriented management approach (Pham et al, 2013).

Most SFCs and households also lack technical and managerial capacities for SFM. The technical and managerial capacities for SFM within the SFCs are very limited in most companies – partly because the focus has traditionally been on exploitation based on the quota systems and reforestation. Similarly, households manage their small plantations or natural forests (often of poor quality) and have limited capacities and resources to apply SFM techniques. Communities and households also generally lack the expertise and financial resources to implement SFM. Pilot group SFM certification models have been implemented in a number of projects and have received finance, technical assistance from the projects including advice on farmer group formation and management for involving households.

Inadequate implementation of policies to protect natural forests

The loss of natural forest cover, is largely due to inadequate implementation of policies related to forest protection. Vietnam has policies in place for protecting natural forests, but these are often not properly implemented, leading to unintended deforestation associated with allocation of forest land to various sectors, as well as to households and individuals. Key reasons for inadequate policy implementation are:

- Weaknesses in land use planning processes;
- Inadequate enforcement of forest rules;
- Insufficient financial and technical support; and
- Insufficient information on forest cover and inadequate forest monitoring.

Sector development at the local level including land use and planning is not always as consistent as expected with national policies. As indicated by the list of drivers of deforestation and degradation in the NCC, the successful implementation of forest planning and development depends on a number of sectors, including the forestry, agriculture, energy (hydropower), and infrastructure sectors. However, the responsibilities of the individual sectors in relation to forest protection are poorly defined, and coordination between sectors is limited. Further, provincial investment and socio-economic policy is set in the provincial SEDPs (these are supported by sectoral, commodity and land use plans), but in many provinces, the priorities are for the development of manufacturing, service industries infrastructure or focus on a limited number of agricultural products. For example, the SEDPs of Thanh Hoa and Nghe An do not take account of the value of maintaining forest cover. While the legal framework for conversion of natural forests is somewhat inconsistent, in practice highly degraded forests that are on production forestry land are sometimes converted to other land uses. Criteria for degraded forests that are eligible for conversion are not clearly defined and conversion projects are not properly monitored.

Many provincial land use plans tend to involve top down planning with no local stakeholder engagement. Land use (and sector) plans tends to be compartmentalized, orientated towards one sector (or even one or two commodities e.g. industrial crops have tended to dominate national/provincial agricultural expansion policies and plans) planning approaches, and discourages co-operation between forest and other land-use sectors and relevant government and provincial departments (MONRE, MOLISA, MPI) necessary for integrated socio-economic development planning in the complex forest-agricultural mosaic landscape found in the NCC. There are many good examples of participatory land use planning, however, full compliance with good guidelines can become a budgetary issue. During actual implementation in the field, overlapping mandates of relevant authorities and insufficient state budget often hamper a full compliance with respective guidelines with especially elements of participatory decision-making processes often only complied with under ODA project supported implementation.

Many provincial planning decisions issued by the Provincial People's Committees do not follow the provincial land use plans (LUPs) as approved by the national Government.[32] For example, in Ha Tinh provincial planned rubber development for 2010-2020 is about four times higher than the total allowable converted forestland in the nationally approved provincial land use plan. In Nghe An, within two years from 2009 to 2011, the Provincial People's Committee issued five decisions on rubber development planning, allowing the adjustment and expansion of rubber plantation areas (two Decisions in 2009 and three Decisions in 2011).

While there are rules that require developers of infrastructure projects to replace forest that they have cleared, these are not always fully implemented. All infrastructure projects including hydropower and mining projects that result in deforestation must replant the same area of forest lost. However, due to lack of funds and/or available land for reforestation, most developers prefer to compensate the province by compensation payments, and thereby avoid the extra work of identifying and then managing potentially challenging small reforestation programs. For example, in Nghe An, developers pay VND15 million per ha of forest cleared, and the Nghe An DARD uses this money for the general improvement of the province's forestry sector, but this is not directly tied to an increase in natural forest area.

Inadequate enforcement of forest protection is also due to limited available funding at the site-level. There is insufficient state investment (financially and technically) in the forestry sector for forest protection, biodiversity conservation and forest landscape restoration activities. While Vietnam devotes substantial

[32] Decision 1708/QĐ-UBND.NN of 29/4/2009, decision 5990/QĐ-UBND.NN of 11/11/2009, decision 1866/QĐ-UBND of 27/5/2011, decision 4865/QĐ-UBND of 10/11/2011, and decision 5334/QĐ-UBND of 06/12/2011.

resources to forest protection and enforcement efforts across the country, a number of PRAPs report that there are not enough funds allocated from the center for the protection of SUFs and protected forest.

Implementation of forest policies has been hampered by a lack of information on forest cover and boundaries. Unlike many other countries worldwide, Vietnam only recently began to routinely monitor forest resource change using spatial technologies such as aerial and satellite methods. This has limited the ability to understand changes in the forest or to motivate policy and regulatory responses to illegal or unsustainable activities. There is significant potential for adopting and integrating modern systems for forest monitoring and surveillance into enforcement planning, such as systematic aerial surveys and use of radar and satellite imagery (World Bank 2010). According to the Nghe An PRAP, for example, boundaries are sometimes not clearly defined leading to overlapping boundaries and conflict between forest owners. The forest resources on the land may not be properly appraised before allocation. There is also insufficient coordination in managing and monitoring forests. A survey carried out as part of the Nghe An PRAP, showed poor coordination among stakeholders, especially between SFCs and local communities, households, and individuals to whom forests had been allocated.

A lack of clear forest ownership is often a barrier to forest protection. Unclear or nonexistent rights to land and trees are a disincentive for local people to protect natural forests and these are often viewed as a 'common good' open to anybody on the one hand, and to plant trees on the other. While households can receive LURCs, which provide a clear legal right, on forest land for forest purposes, in practice this is often time consuming and costly. Household and community forest land tenure, and generally land tenure, have long been seen as a critical element in most forest projects and rural livelihood improvement projects (see section on tenure below).

Persistent poverty and land pressure

Persistent poverty in upland and forest covered areas and a shortage of agricultural land mixed with a rational response of dynamic smallholder famers being able to adapt to market demands are some of underlying drivers of deforestation and degradation. Although rural per capita incomes have increased in recent years, income per capita in the NCC region remains one of the lowest in Vietnam – VND 900,000/month (US$ 43/month). Poor households can face shortages of capital and may lack access to credit, resulting in low levels of investment in forests, including plantation forest. Limited alternative income opportunities and a scarcity of agricultural land makes encroachment into forested areas difficult to address.

According to the National Assembly's evaluation, some 300,000 households lack sufficient land, and this is the leading cause of high poverty rates in the northern mountainous areas. Land pressure due to economic migrants, is a clear issue in some parts of Vietnam, such as the central highlands and this has been the case for the past decade; however, the recent MDRi socio-economic survey (2016) of the NCC shows that rural communities increasingly show a net outflow of migrants as at least part of the households, often younger better educated people move elsewhere in search of more sustainable forms of income generation i.e. non-agricultural based wage labour.

Localized economic migration can be a considerable problem in some areas. This takes many forms, including large numbers of economic followers arriving at large construction sites, for example, even at the relatively small Truong Son HEP site in Thanh Hoa Province, the project anticipates at least 2-3,000 economic followers into a rural setting with very basic services.

Barriers to maximizing the carbon enhancement benefits from tree planting

While there are policies in place that would improve the carbon and other environmental benefits of plantations, the implementation of these policies faces a number of challenges. Increasing the expansion of timber plantations on bare land, and increasing the productivity and rotation length of plantations leads to increased afforestation and improved average carbon sequestration per planted area respectively. However, there are a number of barriers to shifting toward longer rotations and increasing the use of native species in plantations.

The main challenges for and concerns of large forest owners are:

- Insufficient technical and managerial capacities for introducing (appropriate nurseries and high quality seedlings of high value native species) and properly managing them (planting, weeding, thinning, pruning, harvesting);
- Lack of visible proof-of concept, in particular for properly managed native tree species;
- Significant investment needs and coping with liquidity gaps as a consequence of longer rotation periods;
- Significant bureaucratic hurdles – SFC have to gain approval for every deviation in their business, e.g. they have to ask for approval by the provincial governments PPCs and integrate all measures in annual and 5-year plans; and
- Lacking incentives for leaders of SFCs and PFMBs: the leaders are usually only appointed for a 5-year term. As a consequence, few leaders of forest companies are motivated to initialize this shift, which is arduous and will deliver the main benefits when they are no longer responsible.

While overall the financial returns can be greater, plantation owners are reluctant to shift to longer-term rotations for a number of reasons. Firstly, as the rotation length increases, so do the perceived risks of damage from pests, diseases and storms. This is especially the case for Acacia hybrids, and growers sometimes shorten the rotation length to five years, to avoid the perceived risk of damage from typhoons. However, it should be noted that a wish to repay debt early and peer pressure also play a role in shortening rotations, as communities and groups will often plan harvesting operations as a group. Secondly, longer-term rotations increase the liquidity gap that owners face up to harvest, and plantation owners often depend on the income to meet living costs. Currently, the credit lines that are commonly available to planters are not optimal for servicing their financing requirements when investing in longer-term rotations. Thirdly, longer rotations are more treatment intensive, and require advanced management and better seedling material than the commonly used clones. Planters currently lack experience with forest management beyond short-rotation Acacia planting and clear-cut harvesting.

The adoption of native species for timber plantations also faces a number of underlying barriers. Acacia tends to grow much more quickly than most native species, especially on marginal sites. Due to their low nutrient requirements and adaptation to growing on open sites, Acacias tend to grow faster on degraded soils than many native species. In addition to requiring much longer rotation periods (at least 20 to 40 years), they also require more management inputs. Also, quality seedlings of native timber species are more difficult and costly to produce, and are not as widely available as Acacia seedlings. Many growers still have limited experience with planting native species. Experience with large scale reforestation and forest enhancement with native species is still limited in Vietnam, and research is still evolving.

The carbon sequestration potential of plantations, besides depending on rotation length, also depends on the growth rates, and existing Acacia plantations are below their full potential in some areas. Forestlands are mostly degraded with poor soil conditions, and lands with more fertile soils are reserved for agricultural production, resulting in low productivity of plantations in Vietnam. For example, while well-managed plantations can be expected to reach growth rates exceeding 25 m^3/ha/year, in Ha Tinh the average is only 10-12 m^3 per ha per year. Low productivities are generally found in plantations managed by households and individuals and may be due to lack of access to finance or silvicultural inputs including good planting material. Also, forestlands are mostly designated to be on degraded land with poor soil conditions or sloping land, (land with more fertile soils are reserved for agricultural production) and this can result in low productivity of plantations.

4.1.3 Policy developments that could contribute to the conservation and enhancement of carbon stocks

Vietnam's policy framework strongly supports improvements in forest management, and policy developments are likely to contribute to the conservation and enhancement of forest carbon stocks in the NCC. The Government of Vietnam has made important efforts to strengthen the contribution of forestry to rural growth and poverty reduction and to improve performance in the sector. This has contributed to a rapidly expanded

forest plantation area, a steep increase in the production and export of secondary wood products, and a rise in exports of plantation-based chips for pulp. As discussed below, important policy developments that are relevant to the ER Program include:

- Policy developments related to land and governance;
- Support for the transformation of plantations;
- Policies to promote sustainable forest management and forest certification;
- Forest Restructuring and Forest Land Allocation;
- Further development of the PFES scheme; and
- Other policies related to poverty alleviation.

Policy developments related to land and governance

- The new "Guidelines on sustainable forest management planning" Circular 38 No. 38/ 2014 / TT-BNN are aimed at improving participation in community forest planning and introduce requirements for innovative cross sector planning of sustainable forest management including, plantations, NTFP, agroforestry, afforestation, high conservation value forest, forest business etc. and through requirements to link planning to DONRE land use plans and infrastructure planning. The management plan and supporting documents provide: management objectives, status of the forest resources, environmental limitations, land use and ownership status, socio-economic conditions, land use plan, and environmental services planning (for PFES related to hydropower, tourism and waters supply).
- Development planning is currently undergoing a major improvement with a new planning law expected in January 2017. Under the revised law, environmental protection is one of key principles of planning-related activities and all national sectoral plans will be required to take account of environmental protection, biodiversity conservation and climate change adaptation. This will create the basis for incorporating environmental services into planning measures of all sectors and administrative levels.
- Forest sector funding linked to the Support Program to Respond to Climate Change (as part of the NTP-RCC) includes funding for strengthened cooperation on law enforcement. The Provincial REDD+ Steering Committees (PRSC) which will be supported by the ER Program, and that form a key step in the implementation of the NRAP, have representation from multiple sectors which will improve coordination on land use planning between the forestry sector and the other sectors that have a role in forest protection.
- Cross-cutting elements are being integrated into other key laws and policies: There are proposals that both the Law on Forest Protection and Development and the Law on Biodiversity will be updated in 2017 to include more cross-cutting elements. The National Plan of Forest Protection and Development (NPFPD) has cross-cutting elements, as does the new Law on Environmental Protection, and the National Forest Sector Development Strategy (NFDS). Also, Decree 99 that deals with PFES is in the process of being updated and will be more cross-cutting.

Policies to promote the transformation of plantations

Plantation policies are increasingly geared toward longer rotation plantations and to plantations using native species. Combined with efforts to increase plantation growth rates, these policies should increase the carbon enhancement potential of plantations. Combined with efforts to promote sustainable forest management, as discussed in the next section, these policies should significantly improve the environmental performance of plantations and promote afforestation, while reducing gross deforestation. Key policies include:

- Decision No. 1565/QD-BNN-TCLN dated on 8 July 2013 on restructuring forestry sector. This focuses on improving productivity and economic value from forests, particularly plantations. It also

provides incentives to shift from short-term rotation to long-term rotation for sawn logs supply to meet increasing domestic demand from the wood industry.

- Decision No. 774/QD-BNN-TCLN dated on 18 April 2014 on approving the action plan for enhancing productivity, quality and economic return of commercial plantations. This policy encourages the growing of large-timber plantations for the furniture industry.
- Decision No.147/2007/QD-TTg of PM, dated on 10 September 2007 on policies on commercial forest development period 2007 – 2015 and Decision No. 66/2011/QD-TTg dated on 9 December 2011 to amend several articles of the Decision No. 147. These supports sawn log plantation development for the period 2007 – 2015. From 2016 onward, Decision No. 38/2016/QD-TTg of PM, dated on 14 September 2016 on policies on forest protection and development and infrastructure investment and allocation of public tasks to agro-forestry companies. This policy provides cash incentives for growing long rotation plantations and supports 70% of costs related to forest certification.

Activities linked to Vietnam's long-standing policy to reduce the reliance on timber imports and to encourage national value-added processing of timber, are likely to improve conditions for timber plantation establishment. One of the main objectives of the Forest Sector Restructuring Scheme, which was adopted in 2013[33], is to increase the national timber supply to meet the demand from domestic and export markets. The Scheme includes a number of strategies to fulfill this objective. For example, there is a goal of establishing 1.2 million ha of concentrated large plantation areas by 2020. Policies for increasing the value-added of forest products include developing the timber processing industry and improving chain of custody control. Opening the forest sector to more private investment through the restructuring of SFCs and the promotion of partnerships between the state and private entities in managing and commercializing forests. In December 2014 Vietnam put in place a temporary suspension on re-exporting unprocessed logs from Cambodia and Lao, and it is possible that an export tariff or other policies which aim to promote value-added processing may be put in place.

Specifically, the Action Plan on Improving the Productivity, Quality, and Value of Planted Production Forests for the period 2014-2020 sets targets for timber plantations with rotations of 8 to 15 years. The plan targets an increase in the proportion of sawlogs produced (versus chipwood) from the current 30 to 40% to 50-60% by 2020, and over 60% from 2020 onwards. The Plan targets raising plantation yields to 15-20 m^3/ha/year for new or replanted plantations. For the NCC 58,281 ha of plantations is proposed to be converted from short to longer rotations. In addition, there are targets for 37,817 ha of new long rotation plantations and 76,543 ha of replanted forest.

The action plan includes the provision of concessionary finance and a number of other incentives and support for transforming plantations. The GoV is establishing a number of new credit lines that are specifically tailored to supporting the shift from short to long rotation in plantations of fast growing species with rotations of 8 to 15 years. The total credit package to be made available is VND 6,950 billion (USD 319 million) between 2014 and 2020. These credit lines will provide attractive terms with interest rates well below market rates and repayment periods aligned with investments in longer rotations. Other financial incentives include, exemptions from land rents and taxes. The Plan also includes a research package on moving toward large timber production and preparation of an insurance scheme for timber plantations, and funding of pilots in several provinces, including Quang Tri and Thanh Hoa.

Favorable policies, combined with market demand, are creating interest among progressive SFCs to move beyond pulpwood production and to diversify their forest products. Such policies include efforts to reform and partly privatize SFCs (decree 118), the policies to enhance the economic performance of the entire forest sector, and specific regulation requiring a shift towards sawn log production. Of particular importance is decision No. 5115/QD-BNN-TCLN of December 2014 which formulates as objective for the "period of 2016 – 2020: using 40% or lower of wood materials logged from cultivated forest to produce woodchips. Concentrating on development of products having competitive advantage and high added value such as interior and exterior wooden furniture or fine art furniture. Increasing the added value by 54% over 1 m^3 of

[33] Decision No. 1565/QD-BNN-DOF dated 8 July 2013.

wood materials in comparison with the added value in 2013." Many SFCs and also Protection Forest Management Boards (PFMBs) which own and manage production forests (as well as other large forest enterprises) increasingly realize that the wood chip production business model is losing its attractiveness due to the rapidly increasing labor prices and also as government support decreases.

Policies to promote sustainable forest management and forest certification

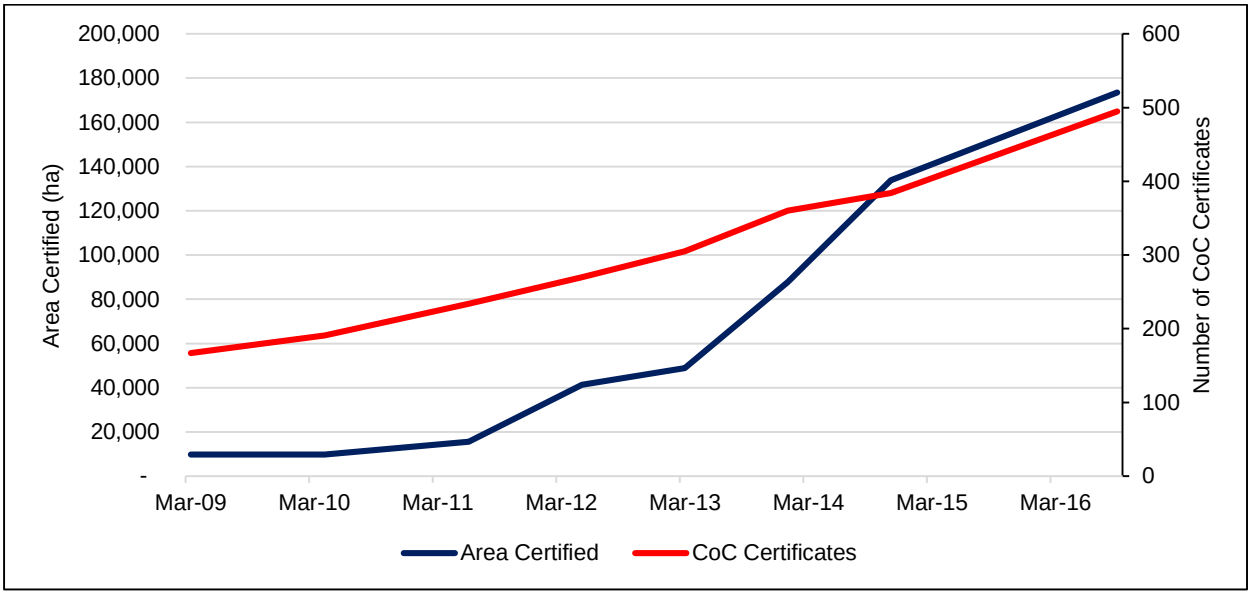
The Vietnam Forestry Development Strategy 2006-2020, stipulates that by 2020 at least 30% of the production forests should be certified for Sustainable Forest Management (SFM). Although the total area certified is low, certification has increased in the last few years as a result of market forces and recent policy initiatives, as well as increasing awareness and local capacities. Additional measures integrated as part of the ERPD would contribute to further enable the trend towards SFM and certification.

Vietnam has finalized negotiating a comprehensive bilateral Voluntary Partnership Agreement (VPA) with the EU, which is expected to be signed by the end of 2016. Vietnam's forestry sector has been integrating into global markets, and major importers of Vietnam's wood products include the EU and the USA, both of which are implementing initiatives that seek to prevent illegal timber products from entering their markets. Under the Forest Law Enforcement Governance and Trade (FLEGT) framework initiated by the European Union (EU), the Government of Vietnam has been negotiating with the EU towards signing a Voluntary Partnership Agreement (VPA). The aim of the VPA is to exclude illegal timber from the EU market. The VPA will create a framework for state oversight of logging that will comply with EU timber legality requirements. VPA negotiations will provide comprehensive definitions of timber legality and promote a Timber Legality Assurance System (TLAS).

Government policy and concerns about access to environmentally sensitive markets are encouraging third-party sustainable forest management and chain of custody certification. To reduce business risks and meet market requirements in the EU and the USA, companies in Vietnam's forestry sector have been pursuing in particular Forest Stewardship Council (FSC) certification for SFM and Chain of Custody (CoC). In September 2016, the area with FSC SFM certificates totaled 173,507 ha, showing a steep increase from only 9,782 ha in 2009. Similarly, the total number of CoC certificates increased from 191 in 2009 to 495 in 2016, making Vietnam the country with the highest number of FSC Chain of Custody certificates in the ASEAN region. VNFOREST has completed a harmonization of principles and criteria for FSC certification in Vietnam and it is likely that the development of Vietnam's TLAS will provide further incentives for third-party certification. In 2004, the GoV has put in place strict limits on harvesting timber from natural forests that do not meet requirements for sustainable forest management.[34] Since 2014, most harvesting of natural forests is banned. The only exceptions are areas that have approved forest management plans and international certificates for sustainable management, and salvage harvesting in production forests allocated to households, individuals and village communities.

[34] Notification No.456/TB-VPCP

Figure 4.4: FSC Certification in Vietnam 2009 to 2016



Source: various FSC Fact Sheets

There are a number of recent government initiatives that will contribute to increased SFM certification, both nationally and within the ER-P region:

- *The National SFM Action Plan 2016 - 2020*[35]*:* The objective of the SFM Plan approved by MARD is that at least an additional 500,000 ha of forests shall be certified by 2020 (comprised of 350,000 ha plantations, and 150,000 ha natural forests); equivalent to about 7% of production forests nationally. The SFM Action Plan lists a number of actions with a focus on capacity development.
- *The Vietnam SFM and Certification Scheme for 2016-2020*[36]*:* This MARD Decision creates the basis for the development of a national certification scheme, which is expected to be recognized by PEFC. The Vietnam Academy of Forest Sciences (VAFS) is mandated to develop the scheme. The Decision also proposes capacity development measures for SFM.

The SFM Standard Development Group (SDG): This multi-party group chaired by VNFOREST and supported by development partners (notably SNV and GIZ) has set-out to develop a national SFM standard based on the FSC international generic indicators (IGIs). It is expected that the SDG will submit a standard for FSC endorsement by the end of 2016. This standard will provide more clarity to forest owners on the SFM requirements for FSC certification in Vietnam.

Forest Restructuring and Forest Land Allocation

Vietnam is in the midst of implementing a paradigm shift in the management of production forests: in the past production forests were under the control of forest companies with production targets set by the state authorities; today a variety of actors (including households) have user rights to production forests and are expected to manage these sustainably. This paradigm shift is anchored in the Forest Protection and Development Law ("Forest Law", 2004) and is a core component of economic reforms of the Forest Master Plan. The government has attempted since the 1980s to make SFCs more profitable and sustainable, and new policies in 2014 and 2015 helped to clarify the framework for reform. As part of the GoV's policy of economic reform, state-owned enterprises (SOEs), including SFCs, are being converted into more commercially oriented businesses through a process known as equitization. Within the forestry sector, reforms aim to develop joint ventures with the private sector to transform some of the country's best

[35] Decision 2810/QD-BNN-TCLN dated 16 July 2015
[36] Decision 83 in 2016, Approving the Scheme of implementation of SFM and forest certification in the period 2016-2020

production plantations, presently operated by the state as SFCs, into semi-autonomous businesses.[37] Recently Resolution 30 of the Political Bureau, issued in March 2014, stresses the need to improve the performance of the state forest companies. The Resolution includes targets for allocating land to specific owners, and actions include dissolving forest companies suffering continual losses.

The government has been actively restructuring the forest sector to enhance the effectiveness of land use and forest protection, and ongoing efforts to restructure the forestry sector may impact forest management practices during the ER-Program period. A master plan for restructuring the forest sector was approved in July 2013, and the Plan's objectives are to "achieve sustainable development of economy, society, and environment, and [to] gradually promote growth for better quality, effectiveness, and competitiveness." The Plan includes re-organizing forest designations, strengthening competitiveness, adjusting the economic components of the forest sector, effectively mobilizing investment, and promoting development according to forestry economic and ecological regions. The Plan has three main goals:

- Improving the added value of environmental products and services; and increasing the average production value by 4-4.5%;
- Meeting domestic demand for timber and forest products and promoting exports; and
- Contributing to hunger eradication and poverty reduction, livelihood improvement, and ecological protection for sustainable development.

Vietnam has a long-standing policy of allocating forest lands to households to address declining forest quality, rural poverty, and unsustainable land use practices. Starting in the early 1980s cooperatives began contracting land, including forest land, to individual households. In 1993 the GoV passed the land law which stipulates the rights on land given to land recipients, which are valid for 50 years on forest land, provided recipients comply with the regulations in using the land (see section on tenure below). The land distributed to households was mostly production forest land, although in practice the land was mostly barren, or with low forest value.[38] FLA continues to be supported by recent policies, including Decree 135 in 2005, and Decree 23 in 2006 and the 2013 Master Plan for re-structuring the forestry sector. An updating of the Law on Forest Protection and Development is scheduled which should improve coordination with the Land Law 2013 and contribute to further improvements to FLA.

Forest land allocation has a major role to play in this restructuring, and is expected to bring about increased forest cover, improved forest quality, and also contribute to hunger eradication and poverty reduction in impoverished upland areas. Vietnam's government has increasingly sought to decentralize forest management by allocating forest land to households and individuals to improve livelihoods and increase forest cover. The MARD master plan and Decree 30 have created a new opportunity for "renovation, restructuring, and boosting performance effectiveness" that aims to deal with the current constraints of state-run forest-management. Forest land has been allocated to state groups (i.e. state forest companies) and to non-state groups (i.e. households and communities). Decree 118/2014/ND-CP dated December 17, 2014[39] on restructuring and development of SFCs to improve their performance calls on the large state forestland owners (PFMBs, SUFMBs, SFCs) to review and demarcate the forestland boundaries to identify the remaining forestland boundary of the organizations on maps and on the ground in order to allocate the land most effectively. Most of the country's forests are still managed by state entities such as MBs and SFCs which jointly manage approximately 45% of the total forest area. Nationally, approximately 26% of forest land (3.5 million ha) is managed by about 1.2 million households.

A large area of forest land has been allocated to households through contracts with protection forest management boards. In the protection forest area, FLA to local households generally takes the form of forest protection contracts. All special use and protection forest, and most of the natural forest on production forest

[37] In general, only SFCs with more than a 1,000 ha of production plantations with commercial potential are the focus of equitization. Of Vietnam's 139 SFCs, 72 meet the 1,000 ha plantation requirement.
[38] To, 2007
[39] Circular 07/2015/TT-BTNMT dated February 26, 2015 of MONRE on restructuring of SFCs, guides the implementation of Decree 118/2014/ND-CP.

land is still managed by government entities. Since 1995 SFEs and MBs are allowed to sub-contract forest lands to local households for forest protection and planting. The contracts require SFEs and MBs to provide forest protection or planting fees to households. The contract is usually for one-year and is renewable and the agencies pay forest protection fees to the households in exchange for labor spent on forest protection. Within the NCC, the total area contracted to households is close to 200,000 ha.

Payments for Forest Environmental Services

Vietnam's Payment for Forest Environmental Services (PFES) scheme has been operational since 2010. The PFES policy was issued through Decree No. 99/2010/ND-CP (24th September 2010) and the goals of PFES are to: 1) improve forest quantity and quality, 2) increase the forest sector's contribution to the national economy, 3) reduce the State's financial burden for forest protection and management, and 4) improve social well-being. The policy has created and developed a market for services and goods in forestry where sellers are forest owners in basins and buyers are hydropower plants, water supply companies and tourism companies and all of these can pass on their PFES fees to end-users (the public).

Vietnam's Forest Development Strategy views building a market for forest ecological services as an essential approach to mobilize non-state funds for forest protection. Successful piloting of the policy in two provinces paved the way for Decree 99 of 2010 which called for up-scaling implementation of PES nationwide. Users of forest environmental services make payments which are then channeled to forest owners in return for maintaining and managing forest areas. There are five forest environmental services that are eligible subjects of payments, but so far only payment schemes in the water and tourism sectors have been implemented. The PFES system is implemented by provinces, which have some flexibility in defining how it is carried out. So far, the vast majority of payments have come from hydropower. Payments are collected at the provincial level and distributed according to the forest area in the watershed. The scheme is currently being implemented in a number of provinces including in all provinces except Quang Binh (i.e. Thua Thien Hue Nghe An, Thanh Hoa, Ha Tinh and Quang Tri). MARD is currently considering amendments to the scheme to more directly encourage sustainable management by linking payments to good management practices and reduce discrepancies in PFES payments, which are based on how much power is generated rather than area of forest that is impacted upon. Revenue collected from users of forest environmental services in 2013 totaled around USD 48.5 million.

Several provinces have established forest funds. After four years of PFES policy implementation, 34 out 41 participating provinces with forest area have established forest funds at the provincial level, in which 28 forest funds work as trust funds, collect payments from buyers and deliver these to forest owners.[40] Major achievements have been made in establishing legal frameworks and institutional arrangements, generating substantial revenue for forest protection and development, poverty alleviation, improving livelihoods of forest owners, and gaining political commitment and interest in supporting PFES at both central and provincial government levels and among local people. In the ER-P, e.g. Nghe An province established a Forest Protection and Development Fund in November 2011 and after three years of operation total payment received from hydropower plants and water supply companies was nearly VND100 billion, in which 99.96% was from hydropower plants. The policy has contributed to increased awareness and responsibility of staff at all levels and local people on forest services and values. It is reported that the illegal logging, forest encroachment, and forest degradation in Nghe An have significantly decreased. Due to additional funding from PFES, more local people were recruited to protect forest and improve their living conditions, particularly ethnic minority people.[41] Quang Binh province has only recently established a Forest Protection and Development Fund with the largest revenue from tourism from Phong Nha - Ke Bang National Park.

Other policies related to poverty alleviation

- Decree No. 75/2015/ND-CP dated 9 September 2015 on mechanism and policies on forest protection and development linking to rapid and sustainable poverty reduction and support to ethnic minorities period 2015 – 2020. This policy provides support to the poor and ethnic minority people:

[40] From 2011 to the mid 2014, the funds have received VND 3,329,018,8 million, equivalent to US$ 157 million Policy impact report on PFES in Vietnam of Nguyen Huu Tuan Phu, June 2015.
[41] Nghe An PPC's report summarizing PFES results, September 2014.

i) cash payment for forest protection and development activities; ii) rice subsidy of 15 kg per head per month; and iii) credit for livelihoods and agro-forestry production without the need for provide assets or arrange a mortgage.

- National target program on sustainable poverty reduction 2016 - 2020 (Decision no. 1722/QĐ-TTg of PM dated 2 September 2016). This provides support to agro-forestry and fishery production and diversify livelihood options for poverty reduction, replication of best practices on poverty reduction models and adaptation to climate change.
- National target program on New Rural Development Program (Decision 800/QD-TTg of PM, dated on 14 June 2010).
- Decree 05/2011/NĐ-CP of the Government, dated on 14 January 2011 on policies for ethnic minorities that focuses on providing support and engagement of ethnic minorities in livelihood improvement, management of natural resources, education, vocational trainings and medical support.
- Resolution no. **30a**/2008/NQ-CP of the Government, dated 27 December 2008 on rapid and sustainable poverty reduction in 61 poverty districts. This provides incentives and support to agricultural production, engagement in forest protection and development, job and income generation, land and forests allocation to local people, particularly provide a monthly support of 15 kg of rice per head during time of not having income from forestry activities.
- Decision No. 449/QĐ-TTg of PM dated on 12 March 2013 on approving on ethnic minorities affair strategy towards 2020. One of the most important points is to improve gender equity and women development.

4.2 Assessment of the major barriers to REDD+

Many of the underlying drivers of deforestation and forest degradation discussed above, also present barriers to REDD+, however, a number of aspects of Vietnam's forest sector present some more specific challenges for REDD+ implementation. Vietnam is considered to be in a late stage of the forest transition curve, as evidenced partly by a net increase in forest cover. A corollary of this, is that there are few "low-hanging fruits" for REDD+. The main causes of deforestation and forest degradation, such as conversion to other land uses and poor policy implementation are difficult to tackle and potential financial incentives from REDD+ are relatively weak.

Deforestation is often concentrated in poor forest areas that are commercially depleted and where the opportunity cost of deforestation is low. As carbon stocks are also depleted, this results in lower potential REDD+ payments, making it difficult to provide enough incentives to protect forests. This is particularly the case where competing land uses, such as rubber and timber plantations, provide significant financial and economic benefits, and where their expansion is aligned particularly with provincial development policies. Forest enhancement can help to address this issue in the long run, but requires upfront investment.

Unlike some other REDD+ countries, Vietnam already has a strong policy framework for protecting natural forests. As noted in the analysis of drivers, the problem often lies in the implementation of the policies. This means that addressing persistent deforestation and forest degradation, will often require site-based approaches that include support in terms of capacity building, forest monitoring, and financing.

Enhancement of carbon stocks through lengthening rotations, forest enhancement, and new planting can play an important role in REDD+ in Vietnam. But these activities require upfront investment, while the returns from REDD+ are lower, and occur later, than from avoided deforestation activities.

4.3 Description and justification of the planned actions and interventions under the ER Program that will lead to emission reductions and/or removals

By supporting and building on key policies related to REDD+, the ER Program seeks to reduce deforestation and forest degradation and to improve carbon enhancement in the NCC. At the province level, the ER Program will support cross-cutting policies related to planning and coordination. At the site-level, the program will promote an Adaptive Collaborative Management Approach with Forest Management Boards and SFCs. This will address several drivers, including those related to poverty in forest areas, encroachment, sustainable forest management, and barriers to increased carbon enhancement from plantations.

The ER Program's design draws on a number of recent forest programs and on the outputs from the PRAP process. The ER-P has taken examples and lessons learned from recent major forest projects. These notably include the World Bank-supported Forest Sector Development Project (FSDP) and a series of KfW projects, which were implemented in some of the ER-P provinces. Both programs generally worked with and built on work undertaken by the Forest Sector Support Program (FSSP) which supported the National Forest Sector Development Strategy (NFDS, 2006-2020), and which closed in 2015. They included a degree of performance based funding and self-reliance management in the village-based forest protection development funds, which are part of the national PFES program.

The ER Program builds on the experience of the FSDP, in particular on the Vietnam Conservation Fund. The objective of the FSDP, which ended in 2015, was to achieve sustainable management of plantation forests and the conservation of biodiversity in Special Use Forests. The FSDP had three components: (i) Institutional development aimed to assist GOV in strengthening the enabling environment for sustainable forest management and biodiversity conservation; (ii) support for smallholder plantation forest aimed to establish plantation forests based on different cropping systems in Quang Nam, Quang Ngai, Binh Dinh, Nghe Anh and Thua Thien Hue provinces; and (iii) support for Special Use Forests aimed to improve the conservation in priority SUFs and increase the reliability of SUF funding through the establishment of an innovative financing mechanism. This financing mechanism, the Vietnam Conservation Fund (VCF), sought to support SUF planning and management and greater levels of community participation and pilot co-management, particularly with ethnic minority communities in remote mountainous areas. The VCF component was strongly orientated to performance based small grants. Three provinces with the ER-P region (Thanh Hoa, Nghe An and Thua Thien Hue) were part of the FSDP therefore it is envisaged that these processes and activities would still be familiar to the DARDs (which implemented the FSDP and would also be responsible for the ER-P).

The KfW program provides an important additional model for using incentives to promote local people's forestry activities. KfW's program on Forest Rehabilitation and Sustainable Forest Management was promoted primarily in Northern and Central Vietnam and directly involved the people living in the project regions. The program worked through incentives for sustainable forest management which included granting land use rights (LURCs) and innovative financial incentives for planting trees involving "green savings books."[42]

The ER Program, follows the Provincial REDD+ Action Plans (PRAPs), which operationalize the NRAP at the province level. A key task of the NRAP, for implementation in the period 2011-2015, was the 'development of action plans to implement REDD+ at the provincial level'. MARD-VNFOREST (with support of the UN-REDD Program) developed and endorsed a standard template and national guidelines for developing Provincial REDD+ Action Plan (PRAP) content and process. These national guidelines are meant to ensure that each province in the ER Program develops consistent PRAPs, that are specific in identifying localized drivers of deforestation and forest degradation, their underlying causes and the interventions needed to address them. By October 2016, five of the six provinces participating in the ER Program had finalized their PRAPs. These include a wide range of activities, including livelihood development activities,

[42] For more information on the KfW program see: https://www.kfw-entwicklungsbank.de/PDF/Entwicklungsfinanzierung/Länder-und-Program/Asien/Projekt-Vietnam-Waldschutz-2015-EN.pdf

that are proposed to be funded by a number of stakeholders including different on-going ODA donor projects and programs, and government funded rural development programs. The main activities considered for inclusion in the ER-P from the PRAPs are aimed at emission reductions and support for reducing deforestation and forest degradation.

4.3.1 Cross-cutting activities

The ER Program will support a number of cross-cutting activities and investments that address underlying drivers related to policy planning and implementation. These interventions include the following:

- Support for the implementation of new laws related to land and planning;
- Improvement of forest data collection and monitoring for more informed policy development and implementation;
- Empowerment of Forest Management Boards, SFCs, and local communities;
- The ER Program will support the implementation of a number of new laws related to land and planning. An updating of the Law on Forest Protection and Development is scheduled which should improve coordination with the Land Law and contribute to further improvements to Forest Land Allocation (FLA). In addition, the general approach to planning is undergoing a review and will be improved with better integration, under the forthcoming national Planning Law, which takes effect from January 1st 2017. The revised law will include more provisions on environmental services including forestry and biodiversity conservation. The Program will also support improved coordination on LUP development and implementation; and
- The ER Program will support a process for bottom-up data collection from the commune for forest cover monitoring and reporting. JICA has been developing an improved Provincial Forest Monitoring System (PFMS), which will receive support from project partners (VFD, JICA and UNREDD) and ER-P financing through FCPF Readiness funding in the NCC. The program aims to improve the process of measuring and reporting forest change within provinces, and addresses several limitations of the conventional PFMS in terms of accuracy, credibility, transparency and quality assurance and quality control. Reporting and checking of forest cover change are conducted at each level of the government (communes, district, provinces), and at the level of villages and forest management entities. For example, where forests are allocated to villages (or households or individuals), a Village Based Forest Patrolling Team undertakes forest patrols and reports to commune-based forest rangers. These conduct field measurements of forest change, and submit the collected data to a data server. Satellite images and photographs are used to verify forest changes, and the resulting information is used to update forest cover maps. JICA has been carrying out Training of Trainers in the NCC and will have completed this process for all six provinces by the end of 2016. The response from the provinces has been positive and it is anticipated that, with support from other donors, JICA will provide similar technical support including training facilitation, resource persons, and technical backstopping for replication training in these provinces in 2017.

By putting in place a region-wide MRV system, the ER Program will further contribute to improved planning. The MRV system will provide significantly increased transparency related to forest cover changes as well as to biodiversity and social indicators. Improved information on these issues can be expected to lead to improved policies and policy implementation, related to a number of drivers of deforestation, including encroachment, infrastructure development, and clearing of natural forests for plantations. MRV approaches combined with performance-based financing creates incentives and allows better feed-back, leading to adaptive management and overall improved implementation.

The ER-Program will support capacity building for the Provincial REDD+ Steering Committees (PRSCs). The PRSCs have representation from multiple sectors and this is expected to support coordination on land use planning between the relevant sectors. This work will contribute to a better cross-sectoral understanding of the value of natural forest and ecosystem services and will help identify priority policies for funding and implementation.

The program will seek to enhance the role of local communities, SUFMBs and PFMBs in decision making and planning. As described below, the ER Program will work mainly through forest management boards and SFCs, which have the potential to play a significantly greater role in policy development and implementation.

The Program includes a significant component on community empowerment, which will be implemented through an Adaptive Collaborative Management Approach (ACMA) which will lead to improved livelihoods, raised awareness, and a stronger role for local communities in forest planning and policy implementation.

In addition, a proposed World Bank supported coastal forests program, which will operate in the NCC, will provide support for priority issues in forest sector restructuring at the central level. The specific policies and mechanisms will be determined following a prioritization exercise, and could include support to obtain forest certification, arrangements for payment for forest ecosystem services (PFES), piloting activities that would accelerate SFC reform, and piloting the development of a regional linkage center.

4.3.2 Adaptive collaborative management of forest areas

At the site-level, the ER-Program will be implemented mainly through forest management boards and SFCs, and will target smallholders as well as the large forest management entities. The PRAPs strongly encourage the involvement of local forest dependent communities, as well as PFMBs, SUFMBs and SFCs. This is a realistic approach as the MBs and SFCs manage a significant portion of the forest land, and provide a suitable entry point for site-level approaches to address many of the drivers of deforestation. Within the NCC a total of 47 PFMBs, 17 SUFMBs and 16 SFCs have been identified as potential implementation partners for the ER Program. Those cover 241,697 ha, 834,865 ha, and 720,263 ha respectively. Engagement with these MBs and SFCs will take a stepwise and tailored approach and, based on experience with the FSDP, not all may wish to participate. The ER-P will entail ACMA through which MBs and SFCs will work with forest dependent communities and smallholders within their areas of influence. For example, for the project area managed by PFMBs, it is expected that around 20% will be implemented by smallholders.

The composition of ACMA Entities will be optimized for implementing ER Program activities across land use designations and for implementing benefit sharing plans. The ACMA structure will complement the existing management structures of the forest management entities by facilitating collaboration between managers and users of forests. The ACMA Committees will include representatives of: the forest management entity, the DPC, the CPC, and the villages in the buffer zones of the forest management entity. Involvement of the DPC will be critical, as the forest management entities themselves do not have legal jurisdiction over most agricultural land. Also, only the DPC, which acts on behalf of MONRE, is legally empowered to issue LURCs to forest land to individuals and households. It is also likely that mass organizations, especially the Vietnam Women's Union and the Fatherland Front together with an Ethnic Affairs Officer (if one is appointed), will be represented. ACMA Committee members will meet at least once monthly to discuss and approve ER-P related activities.

The first step will be to undertake REDD+ Needs Assessments (RNAs) and Social Screening Reports (SSRs) to help identify local forest and social issues and program options – these two processes were extensively used in the Forest Sector Development Project. RNAs are concerned with an assessment of deforestation and degradation issues and will identify priority locations for engagement, such as deforestation hotspots and threatened High Conservation Value Forests (HCVF). The RNAs will include assessments of the local drivers of deforestation, including potential impacts from HPP and other infrastructure projects, and any encroachment or boundary issues. They will also stake stock of the capacities of the MB/SFC. The SSRs will assess the socio-economic situation of the communities and assess forest dependency in and around the MB or SFC. The SSRs will continue the awareness and consultation process, and will further consultations with local communes. The SSRs will include socio-economic impact assessments of proposed actions, including selected forest and biodiversity conservation livelihood activities, and identify and help address or mitigate safeguard issues that are included in the management plan.

The second step will be the development of management plans. There will be two types of management plans: operational management plans (OMPs) for SUFs, and more general improved management plans for the PFMBs and SUFs. Procedures for developing OMPs have been tested by the FSPD and other projects, and procedures for developing management plans for PFMBs and SFCs will be piloted in 2017. The ER-P will provide financial and capacity building support for improved operational and management plans that will address and prioritize the issues identified in the RNAs and SSRs and will include a wide range of activities

to address the drivers of deforestation. Activities included in the management plans for support by the ER Program may include:

- Poverty alleviation and livelihoods programs, including Forest Land Allocation and the introduction of Benefit Sharing Plans;
- Promotion of plantation transformation and forest enhancement;
- Support for SFM and certification (including collaboration and coordination between different communities and the FMBs);
- Prioritization of forest management issues, forest governance, participatory forest patrolling;
- Other activities to directly address the local drivers of deforestation and degradation; and
- Rationalization of boundaries, participatory boundary resolutions.

The program will use a combination of funding approaches to maximize its impact on the participating MBs and SFCs. The work with the MBs and SFC follows a grant-based approach (as used in the FSDP), combined with access to funding through the VBSP. Channeling funding through the MBs and SFCs, will streamline the packaging and processing of the provincial budgets and will facilitate the implementation over a large and diverse area and different stakeholders. Directly involving the MBs in detailed work-plan budget planning, will greatly increase their ownership and accountability over program activities. The approach also allows flexibility, and facilitates specific solutions to specific management issues with different communities. It is also anticipated that program funding will help MBs and SFCs to leverage public and private finance respectively. The flexibility of funding in the process is a significant advantage as it can include front end funding and be supplemented by progressive top ups as funds are released from the CF.

4.3.3 Addressing poverty and supporting sustainable livelihoods in the NCC

Livelihood programs will help to address poverty, and will seek to provide alternative sources of income to local households. The REDD+ needs assessments and Social Screenings at the participating PFMBs, SUFs and SFCs identify the most vulnerable and forest dependent actors that need to be targeted to reduce deforestation and forest degradation. Based on that, a collaborative management activity will be developed, budgeted with USD 10,000 per year for each PFMB, SUF and SFC over the ER-P implementation period. This covers costs of local meetings, the salary for a coordinator, and travel costs. A grant mechanism will support agricultural improvement activities of vulnerable and forest dependent communities.

Through the small grants mechanism, the ER-P will provide key services to smallholders to improve their livelihoods through projects that are compatible with forest protection and biodiversity conservation. Such projects will be designed at the site-level through participatory approaches, and will be integrated into the management plans of the participating MBs and SFCs. Grants can be used for activities that are compatible with REDD+ and do not cause negative impacts on forests or biodiversity. These will depend on local needs and could include: the development of farmer field schools to improve agricultural activities etc., livestock / fodder production related investments to reduce free grazing, maize and cassava production intensification support to increase productivity, NTFP management, and a wide variety of other livelihood options. The program will build on poverty alleviation projects undertaken by partner programs and projects including the Vietnam Forest and Delta Program (VFD) and IFAD. It is estimated that around 16,000 households will directly benefit from the ER Program.

The ER Program will support Forest Land Allocation and improved household and community forest access rights. Through the ACMAs, the ER-P will support the allocation of Land Use Right Certificates (LURCs) to local households for smallholder plantation development. In addition to facilitating the granting of LURCs, the Program will support village, as well as individual, forest protection contracts. As such contracts by themselves do not necessarily lead to reduced deforestation, they will be combined with other program measures that require active participation of the communes, and improved forest management and protection.

The program will aim to improve 'ownership' over forested areas to facilitate local forest protection and enhancement. Co-management and participatory approaches can be effective tools to improve forest management. For example, the FSDP financed a range of co-management and participatory approaches that led to improved communication and understanding between MBs and communities, more sustainable resource use, better monitoring of threats, greater community ownership and awareness, and better information on the needs of local communities. Participatory approaches to sustainable forest management will build on and expand on progress in this area made by the FSPD and other programs.

4.3.4 Promoting plantation transformation through interventions that address investment barriers

As a consequence of the PRAP processes, many SFCs and PFMBs in the ER-P region have expressed an interest in improving their technical capacities for the production of large-dimension timber. This is mainly to better meet the large and growing demand of the processing industry that serves export markets for furniture. For example, the project financed by the German Ministry of Environment (BMUB) on "business models to address drivers of deforestation," currently provides technical support on improved forest management and the transition to these models to selected SFCs and PFMBs, but reports that many more companies located in the program area, and beyond, request similar support. As part of the implementation of the PRAP, the Forest Protection Department of Thua Thien Hue recently submitted a policy ("PLAN for Large timber plantation in Thua Thien Hue for period of 2016-2020" – 74/KH-SNNPTNT) to the PPC of TTH in which the overall target for the province until 2020 is set to 13,300 ha.

The program will address investment barriers, including financing constraints, for long rotation and mixed native species plantations. The ER-P will first support plantation transformation with large forest owners, before introducing the models through extension and outgrower schemes to other forest owners. Key services available through the ER-P (and based on the FSDP) to facilitate smallholder plantations include:

- Inputs on nursery accreditation and improved seedling quality;
- Support for improved silviculture;
- Livelihoods training;
- Land survey, mapping, landscape and plantation design;
- Land use right certificate (LURC) processing;
- Credit processes for VBSP loans;
- Extension services, technical training, scientific research;
- Ethnic minority development planning;
- Internal PFSM;
- Pilots in FSC certification; and
- Collaborative management.

Through these activities, the existing short-rotation Acacia business model can be successively replaced by new silvicultural and forest management approaches focused on producing high-value timber for sawn logs. These activities are expected to help to significantly increase the profitability of SFCs and PFMBs with production forests and provide a future resource base of legally produced timber for the export-oriented furniture industry.

Experience from the FSDP shows that accessible low interest loans can provide a catalytic funding mechanism to change smallholder attitudes towards plantation forest investment. Plantation development is often dependent upon grant funding as commercial lending is not available. During the FSDP the VBSP provided low interest loans, coupled with LURCs, technical support and extension services, quality seedlings and access to markets gave the GOV, VBSP and the smallholder investors the confidence to invest in plantation forests. On harvesting, smallholders generally paid back their loans and replanted without having to re-borrow. Smallholders adapted quickly to the commercial culture for smallholder plantation forest investment. Extension of the revolving fund, to 2036, will allow new smallholder investors outside the project

and in new provinces to benefit particularly if linked to LURCs, quality seedlings, technical and extension support, and access to markets. Building on the FSDP operation, it is expected that eligible producers would be able to take out loans for forestry plantations with programs such as that of the VBSP, which is funded until 2036, or a similar program, and repay the loans at harvest time. This would ensure that the component would be largely self-financing and sustainable through a reimbursable funding mechanism. Technical assistance would be provided in ways compatible with current government policy on ODA.

4.3.5 Sustainable forest management

The implementation of the adaptive collaborative management with PFMBs, SUFMBs and SFCs, along with support for forest enhancement, protection, and reforestation activities is expected to lead to direct impacts on forest cover in the NCC. Based on data provided during the consultation processes with the provinces for the development to the PRAPs, it is estimated that ER-P activities in the field will cover a total area of 359,942 ha. This area represents 8.1 % of the total forest area in the ER-P accounting area and 4.4 % of the ER-P accounting area. The activities can be divided into eleven intervention models as detailed in Table 4.5. This includes three models that are part of the planned World Bank-funded coastal project which is described below. Avoidance of deforestation and forest degradation and enhancement of carbon stock in degraded natural forest is expected to occur on 229,058 ha. Carbon stock enhancement through the transformation of existing short-rotation plantation to long-rotation and native species forest is estimated on an area of 77,820 ha, while new planting on bare land is estimated at 53,064 ha (Table 4.5 below). The area estimates are indicative and are based on the data provided during the consultation processes with the provinces for the development of the PRAPs.

The ER Program will support enrichment planting, assisted natural regeneration, and the protection of natural forests. While the total area of natural forest that will be targeted will depend on the outcomes of the RNAs and on the decisions of the ACMA Committees, it is estimated that the total natural forest area covered by direct ER Program activities will be around 230,000 ha. Of this area, forest protection of existing natural forest through forest protection contracts is expected to cover approximately 61,000 ha. Natural assisted regeneration of forests is expected to be undertaken on approximately 134,000 ha. In addition, it is expected that the World Bank funded coastal forests project will carry out protection of around 27,000 ha and enrichment planting of around 6,500 ha of coastal and mangrove forest (Table 4.5 below). In the long-run, this has the potential to increase the commercial value of remaining forests by providing increased potential returns from timber, making SFM a more viable option, and increasing the opportunity cost of converting natural forest to other land uses.

The ER Program will support the establishment of timber plantations on non-forested areas. While most of the program's plantation activity involves the transformation of existing timber plantations, it is expected that the program, through the ACMAs, will lead to new planting of approximately 53,000 ha (of which around 7,000 ha will be attributable to the World Bank's coastal forests program). Such afforestation/reforestation activities are likely to include plantations of acacia, native species (such as *Melia azedarach*), and mixed species. The ER Program will work through the ACMA to ensure that plantation establishment follows SFM practices, and does not replace natural forests. This will include support for mapping of remaining forest areas, awareness and capacity building, linking plantation development to FSC certification, and tying benefit sharing to the protection of natural forests.

Table 4.5: ER-P field-based intervention models

Intervention	Area targeted (ha)
1. Forest protection of existing natural forest through contracts	61,260
2. Natural assisted regeneration of medium quality forest / avoiding degradation (no planting)	70,260
3. Natural regeneration and enrichment planting of poor natural forest	64,200
4. Afforestation/Reforestation using Acacia long rotation model (12 years)	21,180
5. Afforestation/Reforestation using Acacia with mixed species (20 years) (50% native; 50% Acacia)	21,040
6. Transformation of Acacia short rotation to long-rotation (12 years)	37,040
7. Transformation of Acacia short rotation to long rotation mixed native species (20 years)	40,780
8. Afforestation/Reforestation - Melia azedarach (8-year rotation)	4,000
9. Coastal and mangrove forest protection	26,864
10. Enrichment planting of degraded coastal and mangrove forest	6,474
11. Afforestation and reforestation of coastal and mangrove forest	6,844
Total Indicative Area	**359,942**

Performance based approaches will provide additional incentives for forest protection and enhancement. The ER-P will build on the significant successes of other forest sector initiatives, such as the FSDP and KfW projects, in applying performance-based incentives. Participating MBs and SFCs will seek to identify opportunities for applying performance-based approaches as part of the collaborative management and as part of the site-level benefit sharing mechanisms.

4.3.6 Other planned and ongoing programs in the NCC with links to the ER Program

World Bank and UNDP projects in the NCC are expected to contribute to the enhancement, protection, and reforestation in coastal forests (models 9,10, and 11). The proposed coastal forestry project to be funded by the World Bank starting in 2017, will carry out protection, enhancement, and plantation activities along the coastal areas of the NCC. This will focus on mangrove forests and on coastal sandy soil and inland forests, and it is anticipated that it will cover a total area of around 3,900 ha of mangroves and 35,000 ha of coastal forests in the NCC, with most of the area (25,000 ha) being protection of coastal forests (Table 4.6). The protection of forests and the establishment of new plantations will buffer the impact of weather events in coastal areas and protect existing coastal forest carbon stocks and enhance forest carbon stocks. Furthermore, UNDP is currently implementing a Green Climate Fund supported project on “Improving the resilience of vulnerable coastal communities to climate change related impacts in Vietnam,” which is planning to reforest 4,000 ha of new mangrove and coastal forest. Partly the project will implement its activities in the ER-P accounting area. From this program, an additional 1,000 ha of new mangrove and coastal forest planting is assumed.

Table 4.6:Proposed World Bank Coastal Forests Program areas in the NCC

Provinces	Mangrove forests (ha)				Coastal sandy soil/Coastal inland forests (ha)			
	Protection	Enrichment	New plantation	Total	Protection	Enrichment	New plantation	Total
1. TT Hue	120	22	100	242	12,101	500	500	13,101
2. Quang Tri	0	70	28	98	4,489	3,552	1,600	9,641
3. Quang Binh	70	40	150	260	190	1,600	950	2,740
4. Ha Tinh	205	90	304	599	824	0	0	824
5. Nghe An	341	0	423	764	7,174	0	1,114	8,288
6. Thanh Hoa	740	600	600	1,940	610	0	75	0
Total	**1,476**	**822**	**1,605**	**3,903**	**25,388**	**5,652**	**4,239**	**34,594**

Notes: The project will also be implemented outside the NCC in Quang Ninh and Hai Phong.

The USAID-funded Vietnam Forests and Deltas Program (VFD, 2012 to 2017), through its work in Thanh Hoa and Nghe An, is closely aligned with the activities of the ER Program. In Thanh Hoa and Nghe An provinces the VFD supports land-use practices that protect forest resources and enhance environmental services. This involves reducing GHG emissions through improved forest management, a strengthened

financial base for forest protection, and increased promotion of climate resilient livelihoods as the basis for a sustainable landscapes approach. Activities include support for SFM, development of low emission livelihood models, and support for improving the quality of life for people living in the forests and forest edges. Further, the VFD provides support for sustainable forest management plans at the district and provincial levels. The VFD also supports FSC certification, sustainable community based forest management models, participatory forest land allocation, technical support for forest change monitoring, and longer rotation timber plantations.

There are a number of projects specifically supporting SFM in the ER Program region. The projects mentioned above have substantial SFM components, and will be supporting the ER Program's SFM targets. Additional projects that are mainly oriented to SFM include the following:

- Program on Conservation and Sustainable Use of Forest Biodiversity and Ecosystem Services in Vietnam. Includes training of SFM service providers and policy advice to VNFOREST. ("Forest-Biodiversity Project," Donor: BMZ, Germany. Implementation: MARD/GIZ);
- Promoting sustainable forest management in central Vietnam (Donor: IKEA; Implementation: WWF); and
- Promotion of sustainable management of natural production forests by forest companies in Vietnam. Includes the establishment of a SFM Competence Center in Quang Binh Province (Financing: BMEL, Germany. Now apparently approved by MARD).

4.3.7 Linking the ER Program Activities to the Drivers of Deforestation and Forest Degradation

Table 4.7: Relationship between the ER Program activities and drivers

Drivers	ER Program Interventions
Direct Drivers	
Expansion of rubber and timber plantations	These drivers are mainly addressed through: the underlying drivers related to land use planning, cross-sectoral coordination, and low forest values, as discussed below; and through improved forest protection through ACMAs and incentives that are expected to reduce forest clearing for these activities in hotspot areas.
Expansion of agriculture	
Hydropower (+water supply, irrigation)	
Road Development	
Mining	
Resettlement	
Forest Fire	
Encroachment	Encroachment and illegal logging are addressed through: activities that address the underlying driver of poverty, including support for alternative livelihoods, and through improved forest protection through ACMAs and incentives that are expected to reduce forest clearing for these activities in hotspot areas.
Illegal Logging	
Unsustainable forest management	Unsustainable (legal) forest management is largely addressed by the implementation of the 2014 logging ban. ER-P support is through capacity building and other support for SFM.
Underlying Drivers	
Poor implementation of Land Use Planning	Addressed through cross-sectoral activities linked to land use planning, and cross sectoral coordination, including support for policy implementation, support for PRSCs, and support for improved forest data and monitoring (MRV and PFMS)
Lack of cross-sectoral coordination	
Depleted state of remaining forests	This is directly addressed through forest enhancement activities in hotspot deforestation areas.
Insufficient financial and technical support for SFM	These underlying drivers are addressed through: investments in SFCs and MBs through ACMA, capacity building for SFM, support for certification, and incentives through PFES/BSM
Lack of technical and management capacity for SFM	
Inadequate enforcement of forest rules	Indirectly addressed through improved ownership of forest areas through ACMA, FLA, and forest protection contracts Improved information and monitoring of forest cover (MRV and PFMS)
Lack of financial and technical support for forest protection	
Corporate governance issues related to SFM	Not addressed
Poverty and lack of alternative livelihoods	Poverty alleviation and alternative livelihood programs through ACMA, including small grants, and BSM.

Drivers	ER Program Interventions
Insufficient information on forest cover and inadequate forest monitoring	MRV and PFMS

4.4 Assessment of land and resource tenure in the Accounting Area

The information in this section is based on a number of sources, including the following: the FCPF Assessment of Land Tenure and Land Resources carried out by MARD in 2016; land tenure assessments carried out as part of the PRAPs in five out of the six provinces; information on land use issues collected through the SESA; and information gathered directly from local communities and other stakeholders as part of project preparation.

4.4.1 The range of land and resource tenure rights and categories of rights- holders present in the Accounting Area

The total area of land designated for forestry purposes in the NCC is 3.2 million ha. Based on the primary management functions, these forests are classified into protection, special-use and production forests:

- **Protection forests** (991,980 ha) are used to protect water resources, catchment protection, land, prevent erosion and desertification, mitigate natural disasters, regulate climate, and contribute to environmental. Protection forests include: watershed; wind-, sand- and wave-break; sea encroachment and environmental protection forest subcategories.
- **Special-use forests** (608,070 ha) are used mainly to preserve nature (as a national park, nature reserve or a species habitat conservation area), representative ecosystems, plant and animal gene pools; for research purposes; to protect historical, cultural relics and landscapes; and to provide resort and tourism services, they also often have a dual purpose of acting as a watershed protection forest.
- **Production forests** (1,544,135 ha) are used mainly for production of timber, NTFPs, in addition to combined environmental protection purposes. Production forests include: natural, plantation and seed forests.

Table 4.8: Forestland categories in the NCC

Categories	Total Area	Thanh Hoa	Nghe An	Ha Tĩnh	Quang Binh	Quang Tri	Thua Thien Hue
Production forest land	1,544,135	317,294	492,948	164,013	309,253	125,672	134,954
Protection forest land	991,980	183,379	301,263	113,300	198,044	94,874	101,120
Special-use forest land	608,070	84,920	169,479	74,577	123,576	66,383	89,135
Forestland	**3,144,185**	**585,592**	**963,691**	**351,891**	**630,872**	**286,930**	**325,209**

Forestland is allocated to various user groups. The main relevant user groups to whom forest land has been allocated are: Forest Management Boards in protection and special use forests (PFMBs and SUFMBs), Forest Enterprises (SFCs) mainly in production forests, individuals and households, communities, and Commune People's Committees (CPCs). Other potential users include other organizations such as cooperatives, centers, research stations, and armed forces. Almost all protection and special use forest land is allocated to PFMBs and SUFMBs respectively, with some protection forestland also allocated to households and individuals and communities. Production forest land is allocated to SFCs and to households and individuals. Land that has not been allocated remains under the jurisdiction of Commune People's Committees.

Data collected for the PRAPs and for the Assessment of Land Tenure and Land Resources show the allocation of forest land for the NCC. Approximately 30% of the forest land area of the NCC is allocated to households and individuals. Most of this is in production forest land with some in protection forest land. Communities are allocated approximately 2% of the forest land. There are about 47 PFMBs, 17 SUFMBs and 16 SFCs in the NCC and they manage approximately 56% of the total forest land. These have the option of sub-contracting land to households and individuals through forest protection contracts, and there are 38,297 recorded forest protection contracts in the NCC covering 198,485 ha. Unallocated forest land, that remains under the jurisdiction of the CPCs makes up approximately 12% of the area. (The data related to the land resource assessment is available websites of the Management Board of Forest Projects and Vietnam REDD Office from 1st week of November 2016.)

Table 4.9: Allocation of forest land in the NCC

Province	Forest land	Organizations	Households, Individuals	Communities	CPCs
1. Thanh Hoa	684,021	182,347	360,274	14,220	85,920
2. Nghe An	904,643	563,247	284,875	115	54,459
3. Ha Tinh	364,664	274,660	32,194	-	57,810
4. Quang Binh	645,694	399,721	122,543	9,739	109,493
5. Quang Tri	262,881	195,676	51,272	1,785	13,467
6. Thua Thien Hue	335,173	215,576	53,745	26,659	39,193
Total	3,197,076	1,831,227	904,903	52,518	360,342
% of total forest land		**57%**	**28%**	**2%**	**11%**

Traditional usufruct rights, are not normally recorded, i.e. there is no formal recognition of the rights or title given. However, the Commune has a stock of land or “fund” and some land may be set aside for communal uses, such as communal forest (for NTFPs or firewood collection) or grazing land, and this communal use may be agreed, and recognized by the Commune administration, thereby allows some traditional forest use practices. Some traditional practices are also handled through the issuance of individual household Forest Protection Contracts, which allow the holder limited rights of use of a forest area, normally an area of protection forest, for collection of firewood, some NTFPs and a small payment to the householder in return for protecting the forest.

Shifting cultivation is variable in extent over the region, but is largely limited to the upland and mountainous western parts of the region. Little or no swidden is recorded in the central part of the landscape (Thanh Hoa, Ha Tinh and Quang Binh provinces), but up to 12,800 ha is recorded in the north (Nghe An province) and 14,500 ha in the south (Quang Tri and Thua Thien-Hue provinces) of the landscape (FPD 2011). Shifting cultivation is driven by traditional cultural practices of ethnic minority communities, in the absence of viable alternatives, although under various government poverty reduction programs and even activities by trading intermediaries increasingly there are alternatives that hitherto households involved in shifting cultivation are now considering viable.

4.4.2 The legal status of such rights, and any significant ambiguities or gaps in the applicable legal framework, including as pertains to the rights under customary law

In Vietnam, all land is constitutionally the property of the state, but exclusive use rights are given to individuals under a contractual arrangement with the state. Article 4 of Vietnam’s 2013 Land Law states inter alia: Land belongs to the entire people with the State acting as the owner’s representative and uniformly managing land. The State shall hand over land use rights to land users in accordance with the Law. The State provides for the rights to be registered and they become an indefeasible state-backed title. These use rights are transferable with few limitations, and the contract is sufficiently long-term (for example, renewable 50 years), so for most of the contract's duration, there is very little difference between possession of use rights and full property rights.

Land Use Right Certificates (LURCs) can be issued on production and protection forest land. Land-use right certificates (LURC) signify formal state recognition of a user's rights, and are necessary for secured tenure, formal land transactions, access to formal credit and legal protection of land-use rights. LURCs can be issued for land allocated for production forests so long as it does not exceed 25 hectares to organizations, households or individuals. Forestry LURCs cover 78% (2,464,368 ha) of the NCC's total forest land, and include LURCs allocated to state forest entities, as well as to households and individuals.

Protection forest land allocated to organizations, households, individuals, or communities does not have the same legal status as land with a LURC (Article 136). For protection forests, if there is no existing protection management entity (a PFMB) or none is planned, organizations, households or individuals can be allocated such land for purposes permitted under the 2004 Law on Forest Protection and Development, but this land must be used for forest protection and development activities and cannot be used to secure a mortgage or other financial instruments. The same provision applies under Article 137 in relation to special-use forest.
Forest management boards and SFCs can enter into forest protection contracts with households and individuals, but these contracts are limited (not long term, but renewable) and do not allow a change in land use. In the protection forest area, forest land allocation to local households generally takes the form of forest protection contracts. All special use and protection forest, and most of the natural forest on production forest land is managed by government entities, and these are allowed to "sub-contract" specific areas forest lands to local households for forest protection and planting. The contracts require SFCs and MBs to provide forest protection (or sometimes planting fees) to households. The contract is now usually for one-year renewable periods and the agencies pay forest protection fees to the households in exchange for labor spent on forest protection.

In principle, the Land Law and the Law on Forest Protection and Development unify current related provisions; however, there is a discrepancy between two laws regarding the allocation of production forest land with natural forests. As the Land Law was newly enacted in 2013 to replace the Land Law of 2003, and the Law on Forest Protection and Development was enacted in 2004, there are some differences related to forest management and forestland stated in the two laws[43]. For example, the Land Law 2013 does not allow production forestland, which is natural forest, to be allocated to households, individuals and communities. Through Article 135, the Land Law 2013 limits the potential recipients of natural forests on production forest land, to "management organizations to manage, protect and develop the forests".

Where forest land is accessed by local communities, communal ownership can provide concrete rights and help protect forest, but there is a gap between the Civil Code and Forestry Law in relation to communal ownership. Communal rights may represent the best arrangement for situations in which the opportunities to invest in the quality of the land are limited and the community is small, but because land is sufficiently scarce it pays to exclude outsiders from using it. This is one of the underlying pillars of FLA and CFM: outsiders are readily detected, and the entire community has an incentive to enforce their exclusion. Some districts have allocated protection forest land to communities and communes for forest protection and development. However, the Civil Code does not consider communities as legal entities for the purpose of land allocation. This means that, unlike households and individuals, they are not eligible for receiving LURCs, i.e. they cannot transfer, convert, lease, inherit and joint venture by forest and forestland use right. However, a community can apply for a LURC on production forest land by forming a cooperative or an association.

Community forest managed forestland can be allocated through District Decisions. Where a community is located in or is dependent on areas of production forest, and the forest is surplus to the requirements of the SFC, then an option is to assign this, generally for 50 years, through a District land use Decision, to a community that can include more than one village. The process involved in establishing the CFM areas, and recognizing traditional use has been promoted by several projects and is based around many whole

[43] For example the term "communities" (and not a commune) is defined differently between the Land Law and the Law for Forest Protection and Development. As stipulated in the Land Law, "communities, including Vietnamese communities residing in the same villages, hamlets and similar residential areas with the same traditions, customs or in the same extended family" As regulated in the Law for Forest Protection and Development, communities, are all households and individuals residing in the same villages, hamlets (a collection of houses or very small village – i.e. some ethnic minority groups live in small dispersed groups of houses) or similar residential areas.

community village-based meetings on current forest and NTFP use and meetings and agreements on boundaries between neighboring villages.

Historically there was customary land tenure among ethnic minority groups in the NCC. Forest resources other than land, including forest products and water sources, were communally owned and could be used by all community members. Outsiders were able to use these resources, but only with the permission of the village head. The village head and community "legal" guardians were responsible for controlling, protecting and resolving all land-related conflicts and representing their communities in ritual sacrifices to the "supernatural beings" whenever customary law is violated. Some old members of some ethnic minority groups, especially the Bru-Van Kieu, Ta Oi-Pa Co and Co Tu, have a good memory of customary land tenure, but recognize that this type of land tenure has disappeared. Current day farmers in all NCC ethnic minority groups prefer household or individual land tenure arrangements because the LURC provides them with a semblance of formal title and can contribute towards financial security in the form of helping to secure loans etc. and lending organisation will normally try and to avoid a foreclosure on ethnic minority households. This has become more important as non-monetarized forms of reciprocity have become less prevalent.

The Land Law does not recognize customary land use. Article 26 states inter alia: The State does not recognize the reclaim of land which has been allocated to others (to also mean individuals, households, groups or villages) in accordance with the State's regulations in the process of implementing the land policy of the State of the Democratic Republic of Vietnam, the Provisional Revolutionary Government of the Republic of Vietnam or the State of the Republic of Vietnam. Hence all laws that existed in Vietnam prior to the unification of Vietnam in 1976 following the end of the American War and the establishment of the Socialist Republic of Vietnam were rendered null and void after that date. It needs to be noted that the Government of Vietnam has the unequivocal sovereign right to decide land and resource tenure regimes in Vietnam.

As the Land Law 2013 does not recognize multiple ownership based on customary practices, the Civil Code cannot be used in the ER-P to legalize customary practices without a change in the Land Law 2013. The 2015 Civil Code that will come into effect in 2017 in Article 211 mentions that it is possible for multiple ownership within communities, whether based on kinship, ethnicity, tribal or religious affiliation in accordance with customary practices insofar as these multiple owners contribute to the customary practices. Furthermore, it is stated that the members of these communities are able to jointly manage, use and dispose of such property in accordance with customary practice. However, Article 258 on the basis for the establishment of usufruct rights states they must be established as prescribed by law, and Articles 101 and 241 clearly state that such rights are governed by the Land Law 2013.

Customary practices in the past included recognition within villages as to what forest land could be utilized by individual households and forest land that was available for the use of all the community. Boundaries between different villagers were established and agreements reached as to whether villagers from one village could also access forest resources in another village. Sanctions were in place to penalize villagers who did not respect land use practices in the village. There was generally a clear definition of who an "outsider" was and how their access would be restricted or prohibited. In relation to NTFPs it was often decided when they could be collected or hunted on a seasonal basis and a distinction was made between NTFPs that could be exchange for other goods and services and NTFPs that would be consumed by the collectors. These customary practices extended to watershed management and what type of collaborative arrangements were necessary with other villages in the watershed. Finally, these practices identified the location of sacred forests (where trees could not be fallen or NTFPs collected or hunted) and burial forests (where similar provisions to sacred forests existed). Access to sacred and burial forests was restricted to villagers residing in the same village.

In general, while there is legally restricted access to and use of protected area forest resources, forest dependent households are not normally denied access on a *de facto* basis. While much of the forest land is still managed by PFMBs, SUFs and SFCs, and legally they can restrict access to this forest land, the reality on the ground is that in forest-dependent communities, where there has been limited forest land allocated, individual households can have access to parts of these forests, for example people may have informal

access to the Administrative or Ecological Rehabilitation Zones but not to the Strict Protection Zone of a SUF. This access includes for harvesting of NTFPs and tree felling for household construction purposes. Some individual households or "outsiders from other communes and districts" can "over-exploit" this informal access by the over-harvesting of NTFPs for commercial purposes and quasi-commercial logging albeit on a small scale. The Government of Vietnam recognizes that NTFPs are an important source of additional food security for forest dependent households that can also be converted into an exchange value for the acquisition of necessary goods and services. The Government also recognizes that high-value hardwoods realize significantly greater returns for the level of effort required than other upland livelihood activities but it will not condone this form of "illegal logging". Forest Protection Department staff are required to strenuously enforce forest protection regulations vis-à-vis "illegal logging" but to be more lenient with households that harvest NTFPs. Hence the lack of tenure *per se,* does not mean lack of access.

4.4.3 Areas within the Accounting Area that are subject to significant conflicts or disputes related to contested or competing claims or rights

Statistics of land disputes are available in Vietnam but these are often not complete and only record the more serious or longer lasting disputes that have failed to be resolved locally. Assessments of land issues through the PRAPs, and the Assessment of Land Tenure and Land Resources of the NCC have identified a number of potential sources of conflict, including land-related risks that the ER Program will need to address. More detailed assessments will be carried out through the REDD+ Needs Assessments and the Social Screening Reports that will identify key issues at the site-level for example encroachment issues and potential resolution of any dispute.

By far the most common form of land-related conflict in the NCC involves disputes related to access to forest land managed by state forestry organizations. In some areas within the NCC, there are historical and on-going disputes related to access to forest and agricultural related encroachment or land boundary disputes. As noted above, MBs and SFCs formally control over half the forest land in the NCC. Rural population growth (reported in Nghe An) and local reliance on forest resources, combined with unclear boundaries and an 'open access' situation, often encourage encroachment for small scale logging, NTFP collection, or conversion to agriculture.

In most cases the access/ encroachment issues are generally resolved locally with a compromise, and in many cases the SUFMBs have excised areas of heavily encroached on land in favour of local communities as the biodiversity and conservation value are compromised. SUFMBs are at a particular disadvantage as Special Use Forest areas are often looked upon as a public good, while the Forest Protection and Development Law prohibits any collection or removal of forest resources from them. In many cases, the SUFMB is unable to fully prevent NTFP collection or encroachment, and will try to arrive at a practical solution with a community. Often this leads to a compromise, where the SUF MB and the community agree to limit forest resource collection to non-commercial quantities by agreeing that no commercial quantities are removed or that no further encroachment takes place in return for the right to collect limited amounts of NTFPs for household use. PFMBs and SFCs face similar issues, but these are not so well documented and the PFMBs and SFCs have an advantage in that NTFP collection is not formally prohibited.

Competition over resources and conflicts may be linked to localized migrations due to infrastructure development. Problems arise where there are continued local land pressures, i.e. there is not enough adequate land for crop production and there is an increase in the local populations. While the overall trend in the NCC is a migration from rural to urban areas, in some cases road development can attract new settlements. HPP development, on the other hand, has led to the displacement of people to other areas where they may come into conflict with local populations.

Inadequate compensation for resettlement or forest loss is another potential source of dispute, and communities may be particularly disadvantaged where they have no formal rights to their land. Infrastructure, and in particular hydropower, development often requires the acquisition of agricultural and forest lands and the resettlement of villagers. In some cases, affected people are disappointed with the compensation and resettlement schemes. Where land is informally held, it can be particularly difficult for local people to receive

adequate compensation. For example, a village in Phong Dien District was reclaimed by the state and granted to a sand-mining company. The compensation for the loss of Acacia trees planted by the villager was estimated to be less than 40% of the full compensation that the villagers would have received if they'd had legal rights to the forest.[44]

Law enforcement activities and restrictions on forest resource use may negatively impact communities, especially the poor and forest-dependent households. Forest resources, such as timber, NTFPs, and wild animals are an important source for domestic consumption for people with high forest dependence. They are also an important source of cash where alternative income opportunities are limited. For this reason, benefit sharing approaches, alternative livelihood development, PFES, and participatory forest management approaches are critical for addressing risks to local communities (and forest) and help mitigate the livelihood problems they face, this needs to be done in conjunction with the MBs (SUFMBs and PFMBs) and SFCs.

It is proposed through the Adaptive Collaborative Management Approach (ACMA) that stakeholders will look more closely at land use and land tenure issues to determine how (a) existing conflicts between forest owners and forest users who are not owners can be resolved; (b) current activities to accelerate forest land allocation to individual households and community groups can be realized; (c) re-examination of existing LURCs to ensure individual joint-owners (primarily women) are included in re-issued LURCs; and, (d) a concerted attempt to facilitate learning outcomes whereby statutory and customary rights can be reconciled or at least synergies can be achieved between the two.

4.5 Analysis of laws, statutes and other regulatory frameworks

Vietnam has a complex legal framework based on a hierarchy of codified laws, resolutions, ordinances, decrees, decisions and circulars made at different levels starting with the National Assembly. There is a high degree of complexity in the system in that many legal decisions are made at different levels. For example, for many decisions made at national level, a provincial decision also needs to be made that echoes the national level decision before it is implemented. Therefore, the PPCs guide the implementation of national programs according to the circumstances of their own provinces. An issue, for example, such as the classification of forests into production, protection or special use is a matter for the provinces to finalise with their own provincial decrees or decisions in harmony with the higher level decisions and implementation circulars.

At times, when spheres of responsibility overlap, then Ministerial decisions may also overlap or even contradict each other in part. In the forestry sector and land use this is also true, especially where MARD and MONRE are concerned, however, there is the possibility to issue joint ministerial circulars that avoid overlaps and possible contradictions already in place.

Whenever assessing the policy, legal and regulatory frameworks, it is necessary to consider some important background legal and administrative information that has important implications for REDD+, its implementation and the local communities' potential to benefit from it:

- Communities/ villages are not legal administrative entities in Vietnam so are without decision-making powers, although the Forest Law 2004 (Articles 29 and 30) does recognise them as potential forest land owners along with individuals, households, organisations and the Army (this recognition of 'community land', however, only exists to a very limited extent under the Land Law 2013 and there is no formal community title);

[44] However, it should be noted in infrastructure projects financed either partially or wholly by the providers including the WB (e.g. Trung Son HPP in Thanh Hoa Province) involuntary resettlement impacts are compensated based on the policies of the provider of the ODA. Where such projects have been financed by providers of ODA every effort has been made to ensure that affected people are adequately compensated and actions are monitored to ensure these households are no worse off as a result of such projects and ideally better off.

- Without administrative entity status, communities/ villages are not allowed to enforce their own forest regulations with administrative punishments such as fines – this process remains with government officers such as FPD, police and communes;
- The Land Law 2013 does not allow the allocation of natural forest land to anything but a formal legal entity (to ensure more accountability and responsibility) an established forest protection and management organisation (but these can include commune and village associations and commune or community cooperatives with forest protection as an important objective);
- A Cooperative and an Association are legal entities, and it is possible for the village community to establish itself as a cooperative or as an association, but this is not easy to set up and the process can by-pass or be independent of the village (or community) and so can raise some exclusion or elite capture issues;
- CFM and SFM
    - There is no precise legal recognition for Community Forest Management (CFM) in Vietnam, with the exception of certain ODA projects (e.g. the series of KfW projects) and several decisions allowing its piloting in a limited number of locations to date areas of particularly good forest have been targeted.
    - However, there is recognition of sustainable forest management in: "Guidelines on sustainable forest management planning"[45] Circular 38 No. 38/ 2014/TT-BNN allows for different stakeholders (householders, organizations and includes entities described above) to participate.
- Regulations governing forest management, including timber harvesting, transport and sales, are complex and with relative high cost implications for local communities which they will often try to avoid, unless part of an ODA project. For example, a CFM project would require a series of 5-year forest management plans and timber can only be legally harvested for commercial purposes following the detailed plan and currently there are strict limits on timber harvesting for legal sale i.e. for natural forests there is a moratorium on timber harvest unless it is certified forest and in some areas, there is a total ban;
- Land use planning and forest planning:
    - There are Circulars (from MONRE and MARD) and the Land Law 2013 encourage and require a degree of consultation and participatory land use planning (PLUP) but this remains quite a top down process for the wider community (Article 43 of the Land Law requires collection of views on land use plans and land use planning) unless an ODA helps with the processes and meet part of the costs;
    - Participation in community forest planning is clear through MARD "Guidelines on sustainable forest management planning" Circular 38 No. 38/ 2014 / TT-BNN, but there are clear difficulties in the availability of resources for implementation of the participatory planning approach that the Circular requires except, more or less, where ODA projects are implemented.
- There is a general moratorium on natural forest commercial timber harvesting except where the SFC has a proper management plan and is FSC certified; and
- If people lose their land use rights because the State requires the land (e.g. road project), people are entitled to compensation, but if people lose access rights such as to areas for NTFP collection, there is normally no legal provision for compensation.

Table 4.10:Summary of policy law and regulation Issues

Law/Policy	What is at issue?	Relevance to ER Program and REDD+
Decision 178 of 2001	This decision sets the tone for future legislation on individual and household ability to benefit from different types of forest land. In essence, the more the State has invested in	178 has more or less superseded and has proved to be impractical to implement. If REDD+ activities result in State-sponsored inputs

[45] Circular 38 No. 38/ 2014 / TT-BNN 3rd December 2014 "Guidelines on sustainable forest management planning" with annexes.

Law/Policy	What is at issue?	Relevance to ER Program and REDD+
	afforestation on forest production land, the lower the benefit accruing to the forest owner. Lack of consistency over the competence to approve harvesting for domestic consumption by households between the Decision 186/2006/QĐ-TTg (forest management regulations) and Decision No. 178/2001/QĐ-TTg (entitlement policies).	into production forest land, it has the possibility to curtail local communities' benefits.
Forest Protection and Development Law 2004	Articles 29 and 30 of the Forest Protection and Development Law recognise "village population communities" as eligible to be allocated forest land, but with fewer rights than other assignees (i.e., cannot transfer or mortgage). The extent of FLA to communities has been quite limited in the ER-P area, but has been done in Quang Tri and TT Hue. The value of the title is somewhat hindered (fettered) and raises a number of issues including extinguishment of rights and inclusion. Because the "community" is not a judicial entity, it is not recognised under the Land Law 2013[46].	An official FLA title to a community remains problematic due to legal requirements as set out in the Constitution, Civil Code and Land Law which recognize citizens/individual use rights (as opposed to collective rights or customary land rights), the community is required to become a legal entity e.g. a Cooperative or an Association
	The Forest Protection and Development Law distinguishes between natural and planted production forest and affects households' ability to benefit from the two types. Households' main chance to benefit from production forest is when they have planted their own seedlings and then harvest without interventions or subsidies from the State.	This will limit householders opportunity to benefit from REDD+, as they will continue to try to get benefit from harvesting their own plantations as they see fit (often more short term rotations).
Civil Code, 2005 (to be updated by the 2015 Code in 2017)	Does not recognise villages or communities as judicial persons who may enter a contract (but PFES still paid in some provinces to communities). This means that PFES (or REDD+) contracts cannot be made with communities unless they have formed a cooperative or association. The risk here is that major benefits from REDD+ go to existing organisations such as SFCs, PFMBs and SUF MBs.	Communities, or groups of communities of similar ethnic groups, would be ideal partners for a number of PFES/ REDD+; The BSM needs to take this into account.
Ordinance on the Exercise of Democracy in Communes, Wards and Townships, 2007	This ordinance encourages the provision of information to, and gaining feedback from, local people on socio-economic development. The Ordinance has not always been enthusiastically implemented, and does not include subjects directly related to forest management.	Ordinance allows/ encourages a participatory approach so can be seen a as supporting PLR for FPIC
Land Law 2013	"The State shall allocate land with production forest which is natural forest to the forest management organizations for management, protection and development" -natural forest land allocation is therefore difficult to households, as per Article 135; affects ER-P area because no provinces have completed FLA process (of adequate quality, even if quantity).	Potential for negative impact for EM communities surrounded by natural forest.
	Explicitly states under Article 27, Paragraph 2, that it is the State's responsibility to develop "policies to facilitate for ethnic minorities who are directly involved in agricultural production in the countryside to have land for agricultural production."	Potentially of positive impact in increasing tenure security in the ER-P areas if Article 27 can be actively implemented with some form of participatory process.

[46] The previous version of the Land Law (2003) had a few clauses in which a community of citizens may have the right to be allocated land, although there was no specific mention of forest land allocation to a community.

Law/Policy	What is at issue?	Relevance to ER Program and REDD+
Law on Environmental Protection 2014	Article 21, Paragraph 2 states that "Project owners are obliged to consult with regulatory agencies, organizations and communities that are directly affected by the project." The Law, however, does not outline any procedures as to the nature of consultations.	On the one hand, this law supports consultations in the field of environment, but it is in a limited context (of projects defined as requiring an EIA/ESIA), does not refer to FPIC, nor make reference to ethnic groups with a special or deep connection with land and resources.
Decision 30a and Program 135	There are 12 Program 30a Districts in the ER-P provinces (7 in Thanh Hoa), and potentially over 300 Program135 communes. These decisions make additional budgets possible for designated poor districts, and includes budgeting for forest protection contracts.	Positive for REDD+ outcomes: one of the few means by which budgets should be available in advance of performance-based payments in districts that are otherwise under-resourced.
Decision 75	Increases the financial limits for both forest protection and forest development. However, at least Thanh Hoa Province – statistically, the poorest in the ER-P area, has only made very small forest protection and/or PFES payments to date (far less than VND 200,000 per ha). Decision 75 only applies in Category III communes.	Positive for REDD+ outcomes: if increased payments, including for afforestation and enrichment planting, can be made, then people may gain more interest in developing their production FL (high subsidies available under Decision 75).
Law on Royalties 2009	High Royalties rates for wood from natural forest and other natural resources local people get little or no support no preferential rate for credit (or other tax) and strict control transportation – issue in KfW 6	The policy does not encourage companies and especially hhs in natural forest and development of forest protection and is encourage illegal logging and transport and tax evasion

Notes: There is no attempt here to be complete; it is only to give an indication of a few of the major issues of REDD+ relevance that arise from the PLR framework.

4.6 Expected lifetime of the proposed ER Program

It is expected that the Emission Reduction Program Agreement (ERPA) with the Carbon Fund will run from 2017 to 2024. As the Program is linked to national policies and will be integrated into the overall NRAP plan to implement REDD+, the activities will extend beyond the ERPA period. The economic model assumes a 20-year program period which corresponds to the long-term perspective of successive NFDS with which the program is aligned.

5 STAKEHOLDER CONSULTATION, AND PARTICIPATION

5.1 Description of stakeholder consultation process

Stakeholders from the household level to the national and international level have been consulted. For the past three years, there have been consultations of an iterative nature, with the consultation process getting fully underway in October 2015. Participation methods have included village-level meetings of households, focus group discussions, workshops, participatory forest transects, natural resource assessments, interviews of key informants, and a quantitative survey of over 3,000 households. In addition, there have been face-to-face meetings and the exchange of reports relevant to REDD+ based on activities and studies. Consultations have sought to identify local people's views regarding opportunities and constraints arising from forest and land resource access and use, including possible land use conflicts, and the security of their livelihoods at present. In this way, a picture of challenges and opportunity-costs of potential REDD+ activities in the localities was formed. Qualitative data acquired through these processes has been used in the design of the overall program approach, the PRAPs, (which involved separate sets of consultations to those recorded above) and of the BSMs.

At the commune and village community levels, the SESA/FCPF team used focus group discussions to consult local communities, especially focusing on ethnic minorities, and their leaders. Communities were selected based on existing socio-economic data and forest inventories, nearness and expected reliance on forests. Household consultations followed an iterative process, with forest-dependent households chosen based on a selected sampling approach (based on the design of the quantitative socio-economic Probability Proportional to Size (PPS) survey).

The SESA team tried to ensure that discussions were open and representative. Consultations targeted highly forest-dependent households and communities, with the emphasis being on ethnic minority households but not to the exclusion of non-ethnic minority households. Efforts were made to ensure that women, younger people, the aged and vulnerable households (especially the poor and physically handicapped) were included in these consultations. Focus group discussions were often held in informal settings with everyone sitting together as equals in order to reduce the incidence of village leaders and external officials dominating the proceedings.

A statistically robust quantitative socio-economic Probability Proportional to Size (PPS) survey covering 3,060 households was administered in 102 communes across the NCC by an independent consultant (see Figure 5.1; Table 5.1, 5.2.

Information gathered from CSOs, research centers, and NGOs was used to complement the information from local stakeholders. The SESA team interacted with regionally and nationally established CSOs[47] in Hue, Vinh and Hanoi, and with university research centres in Hue and Vinh. Information gathered from CSOs and research institutes provided broadened perspectives, and allowed the team to benefit from previous experiences with consultations at the village level and from previous research. There has also been interaction with several international[48] NGOs who have been involved in issues related to REDD+ including forest land tenure.

Consultations were held with government entities at various levels, with mass organizations, SUF MBs, PFMBs and with State Forest Companies. At the commune level, the Commune People's Committees were consulted together with mass organizations including the Vietnam Women's Union, the Farmers Association, the Fatherland Front, and the Youth Organization and where appropriate, the Ethnic Affairs Officer. At the district level the District People's Committee has been consulted including the Department of Agricultural and

[47] Note that the term "Civil Society Organisation" does not exist within the legal framework of Vietnam. What would normally be considered CSOs in other countries have to register as Associations in Vietnam to have formal recognition. See for example Decree 45/2010/ND-CP on the Organization, Operation and Management of Associations.

[48] Including discussions with SNV, SRD safeguards on FLEGT, Oxfam and Care (Climate Change technical working group Chair) on land issues (The Land Alliance (Landa), established in June 2013, is one of six coalitions participating in Oxfam's Coalition Support Program) and climate change, and forest land tenure with CIRUM which is just starting a small EU project to protect and promote the ethnic minority people's rights in accessing forest and farming land.

Rural Development, Department of Natural Resources and Environment and other relevant departments and other organizations. At the Provincial Level the same provincial departments have been consulted, as have State Forest Companies as have representatives of the Provincial People's Committee. Meetings were also held with the different forest management boards. At the national level MARD has consulted with a range of relevant government ministries including MONRE, MPI, Ministry of Labour, Invalids and Social Affairs (MOLISA) and MOF. (Similarly with consultations on PRAPs these have been wide held with communities and communes Districts in deforestation "hot spots" and potential areas of investment and with the different MBs and are still on going.)

Figure 5.1: Map showing the quantitative survey commune sites

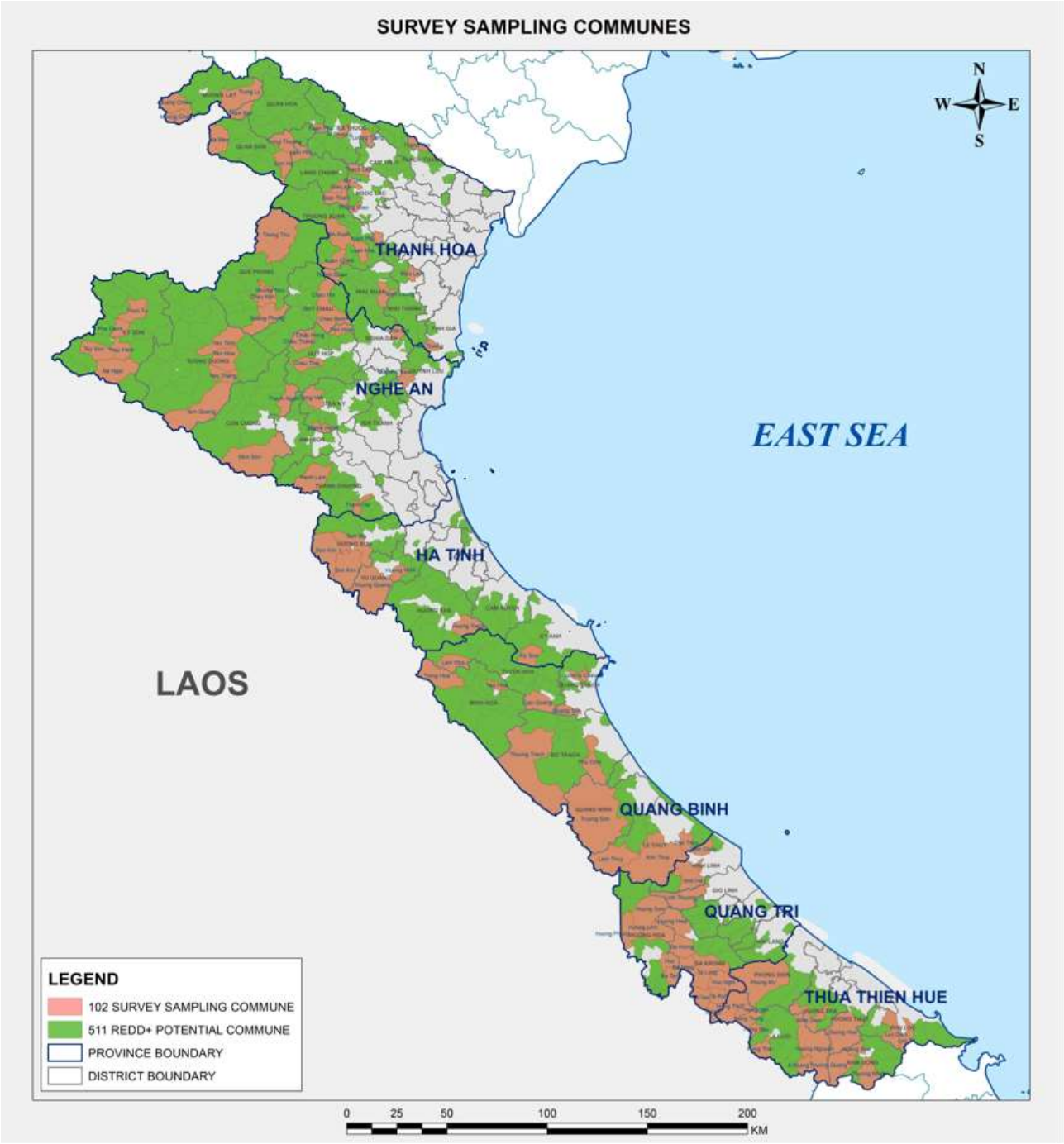


Table 5.1: Summary of consultation visits in the ER-P region

ID	Proposed ER provinces	District	Commune	Ethnic groups consulted at village level
1	Thanh Hoa	Quan Hoa*	Thanh Xuan	Thai
		Lang Chanh*	Tan Phuc	Muong
2	Nghe An	Con Cuong	Chau Khe	Dan Lai
			Lac Gia	Dan Lai,Thai
			Luc Da	Thai, Tho, Dan Lai
		Tuong Duong*	Tam Hop	Hmong
			Luong Minh	Khmu, Thai
		Tan Ky	Dong Van	Thai, Tho, Tay
3	Ha Tinh	Huong Khe	Huong Lien	Chut
4	Quang Binh	Quang Ninh	Truong Son	Van Kieu
		Le Thuy	Lam Thuy	Van Kieu
5	Quang Tri	Dak Rong*	Ta Rut; Huc Nghi; A Ngo	Pa Co, Ka Tu
		Hai Lang	Hai Ba Hai Duong	Van Kieu, Kinh
		Huong Hoa	Huong Son, Huong Linh	Van Kieu
		Vinh Linh	Vinh Ha	Kinh, Van Kieu
6	TT Hue	Phong Dien	Phong My	Pa Co, Ka Tu, Pa Hy Kinh

Note: *Districts marked with an asterisk are classified as poor target districts under the government's poverty Program 30a.

Table 5.2: Large Forest Management Boards and SFCs consulted (by Province)

Province	Name of PFMB	Name of SUFMB	Name of SFC
Quang Tri	Dak Rong – Huong Hoa; Thach Han	Bac Huong Hoa NR; Dak Rong NR	Ben Hai; Trieu Hai
Nghe An	Con Cuong; Tuong Duong	Pu Mat NP	Con Cuong
Thanh Hoa	Lang Chanh	Pu Hu NR	
TT Hue	A Luoi; Nam Dong; Song Bo, Huong Thuy; Bac Hai Van	Phong Dien NR; Management Board of Sao La Conservation zone	Phong Dien Forestry Enterprise; Tien Phong Forestry Company
	Huong Phu Commune Community Forest Management Board		
Quang Binh			Long Dai, Trung Son; Khe Giua

International organizations with a stake in REDD+ have also been consulted, and continue to be consulted, on the ER Program. These include, UNREDD II, FAO, multilateral providers of ODA for some aspects of REDD+ including KfW, bilateral providers notably GIZ, JICA and USAID, and international NGOs, notably WWF and SNV.

There have been in excess of 30 program-related workshops at the national and sub-national level. For field-based studies the emphasis has been on qualitative research, with the exception of the SESA which used a quantitative approach. Based on consultation and participation records, it is estimated that consultations have involved the following stakeholders:

- 24 rural communities and approximately 500 individual householders. The vast majority of them (95%) were members of ethnic minority groups (with poverty rates in excess of 70%) and more than half (295) were women.
- 12 CPCs (with 75 members, including 22 women) and District People's Committees (DPCs) (with 120 members, including 20 women), and six PPCs (with 25 members, including 6 women) were consulted at the sub-national level.
- At the national level, including international participants, in excess of 100 people (including 25 women) were consulted.
- For CSOs and NGOs some 35 people, including 20 women, of which 11 NGOs have been consulted in detail on REDD+ by the program, and have participated in all or some of the REDD+ activities.

An indicative list of the stakeholders who attended the meetings is provided in Annex 7.

In addition to the above, there have been separate sets of consultations related to the PRAPs and to other programs. The preparation of the PRAPs involved consultation processes within the provinces that covered key stakeholders at the different levels. Also, extensive and extended consultations have been undertaken by the two partner programs of the VFD and UN-REDD phases 1 and 2. The VFD Program work on drivers of deforestation and forest degradation has been extensive in Thanh Hoa and Nghe An, and this has included work with the main forest stakeholders. The UNREDD Programs have worked extensively with multiple stakeholders while developing the PRAPs and their site level approach.

While consultations have informed the overall design of the ER Program, the program itself is built around adaptive collaborative management (the ACMA), which is participatory in nature. Field-based activities will be developed and implemented using participatory approaches. REDD+ Needs Assessments and Social Screening Reports will be developed at the forest management level (PFMBs SUFMBs, and SFCs) and will involve consultations with local communities. These consultations will cover proposed interventions, SFM, biodiversity/ conservation issues related to access to natural resources, socio-economic and environmental impacts, and options for mitigation including livelihood support to reduce dependency and encroachment impacts on forests. Communities would be expected to participate in preparation of the management plans of the PFMBs, SUFMBs and SFCs, and it is envisaged that the PFMBs and SUFMBs and community leaders would agree to formal partnerships based on collaborative shared protection responsibilities and benefits over the natural forest. Local villages will facilitate participatory consultations to secure free, prior and informed consultation from village-level stakeholders and agreement will be sought on issues such as forest boundary demarcation, access to forests and use of forest resources by users. Elections in each village community will be facilitated to ensure the two most popularly elected village members (to ensure the participation of at least one-woman representative per village as well) represents the village at meetings of the ACMA Entity. The ER Program will finance a Participation Specialist for supporting participatory processes for ACMA and benefit sharing plans.

5.2 Summary of the comments received and how these views have been taken into account in the design and implementation of the ER Program

Issues raised during the consultation process related to illegal logging, forest values, livelihoods, tenure, forest protection and management, planning and others relevant to REDD+ are summarized in Table 5.3 and 5.4.

Table 5.3: Specific issues raised during different consultations with communes and village communities

Consultation	Issues raised	Notes
General commune and district consultation for the SESA and PRAPs	19 issues raised including: illegal logging (top/ often); impacts of infrastructure mainly HPP some minor roads (top/often) ; forest fires; livelihoods related issues (top/often); mining (mainly gold) natural disasters; lack of cultivation land; would like to be able to invest in plantation forest (plantation benefits) but the lack technology (next often); forest protection and management issues; fragmentation of forest (biodiversity issues); encroachment issues (next often); forest patrolling; land tenure issues (next often); over exploitation of NTFPs; demand for timber; general forest degradation issues; law enforcement and lack of knowledge and awareness (next often); lack of access to credit; poor LUP	Issues included in the PRAP activities and BSM approach. The issues and solutions at site-level will be further identified through RNAs and SSRs and ER-P interventions, including SFM, livelihoods will be designed through ACMAs.
Opinion Survey (n=3,060 households) See Map 5.1 for the location of the survey communes	25% of respondent stated that the prevalence of illegal loggers has increased	The ACMA should improve forest governance, ownership and control over forest resources
	64% of respondents stated that illegal logging has been put in check (reduced)	
	64% of respondents stated that income generated from forestry and forest related sources has become less reliable	ER-P activities aim to increase income from forestry and also to support alternative livelihoods
	27% of respondents stated that there has been increased competition from outsiders in the collection of forest products	The ACMA should improve control over forest resources
	41% stated that allowances received for forest management work are too small	The ER-P aims to support alternative livelihoods
	74% stated that the area of production forestland assigned to households is insufficient	FLA is a component of the ER-P
	98% of respondents stated that forests were very important to them.	This is recognized through the ACMA
	54% believe that households/ communities are the most capable in managing forests (highest score)	The ER-P is expected to give significant management responsibility to HH/communities through ACMA
SUF PFMB	Encroachment/ collection of NTFPs	The ACMA should improve control over forest resources

Table 5.4: Summary of provincial planning issues raised (through central level and provincial workshops which included SUFMBs, Districts, and discussions with the REDD+ Steering Committees)

Summary of issues	Notes
Impacts of natural disasters, storms/ flooding	Issues included in the PRAPs. Interventions in mangroves and coastal forests will help to address some disaster risk. Locally important risks can be addressed through the ACMA.
Lack of production land shifting cultivation, land tenure issues (FLA and re-allocation issues), livelihood issues (poverty alleviation)	These will be addressed at the site-level through the ACMA. The ER-P includes FLA activities, and livelihood support.
Infrastructure development: road construction, hydropower construction, lack of offsetting afforestation (although a government policy); inconsistent donor policy on EMP and similar	Issues included in the PRAPs and need to be raised in the PLRs, and ministries.
Illegal logging	Addressed in the PRAP activities
Over exploitation of forest/ NTFPs	Addressed in the PRAP activities. Can be addressed through ACMA at the site level.

6 OPERATIONAL AND FINANCIAL PLANNING

6.1 Institutional and implementation arrangements

The arrangements for institution and implementation of ER-P in the NCC are briefly presented in Table 6.1 and Figure 6.1.

Table 6.1: Main responsibilities of ministries and management entities

Ministry or management entity	Main responsibilities
The Ministry for Agriculture and Rural Development (MARD)	Assists the Climate Change Steering Committee in supervising, guiding, and facilitating agencies to implement climate-change-responsive agriculture and rural development projects[49]. MARD is the Program Owner, which has the following responsibilities and rights including the management and responsibility for use of ODA funds, preferential loans, programing of counterpart funds (according to Decree 16/2016/ND-CP). The MARD is accountable to the Government of Vietnam to ensure that: (i) issuing Decisions to organize the program implementation; (ii) approving master plans for Program implementation; synthesizing and approval of the annual work programs and implementation plans; (iii) issuing guidelines for the procedures for procurement in accordance with the current law on procurement; (iv) organization of monitoring and evaluation of the program implementation to ensure that the Program is conducted in line with the progress, quality and objectives set out; (v) be responsible for the management and use of ODA fund and preferential loan under its management; (vi) fulfill its tasks and rights in accordance with the current law, implementation of international conventions; ODA agreements and preferential loan. MARD is responsible for rural development, governance, and the promotion of agriculture, fisheries, forestry, and irrigation in Vietnam. Figure 6.1 below shows a summary organization chart and summary responsibilities.
Ministry of Natural Resources and Environment (MONRE)	MONRE has the primary responsibility for the oversight and facilitation of environmental quality standards, land administration, and land use planning; has the principle responsibility for managing the response to climate change[50] and is the national focal point to implement the UNFCCC and the Kyoto Protocol[51]. MONRE has the primary responsibility for the oversight and facilitation of environmental quality standards, land administration, and sustainable natural resources use and conservation, including land use planning and is responsible for preparing the 10-year strategy and 5-year action plans for natural resources and environment protection. It also administers laws relating to environment protection, biodiversity and water resource management. Most of the natural system and conservation functions remain with MARD
The Ministry of Planning and investment (MPI)	Is responsible for mainstreaming sustainable development and climate change into Vietnam's strategies and development plans. MPI, with international support, has undertaken a study into low-carbon, climate-resilient development in Vietnam as the first step in designing a low-carbon growth strategy as identified in the NTP-RCC.
The National REDD+ Steering Committee	Chaired by the Minister of MARD and was established in January 2011 by Prime Minister, the NRSC has the responsibility to coordinate REDD+ implementation including the ER-P between the different governmental agencies, social organizations, private companies and international partners. The composition of the NRSC under the Chair of the Minister for MARD, the committee includes The Office of the Government; Ministry of Natural Resources and Environment (MONRE); Ministry of Planning and Investment (MPI); Ministry of Finance (MOF); Ministry of Science and Technology

[49] MARD is responsible for implementing the Payment for Forest Environmental Services Decree: 99/2010/ND-CP which requires collection of payments from forest ecosystem services users and disburses the funds to forest managers to support sustainable resource management and livelihoods.

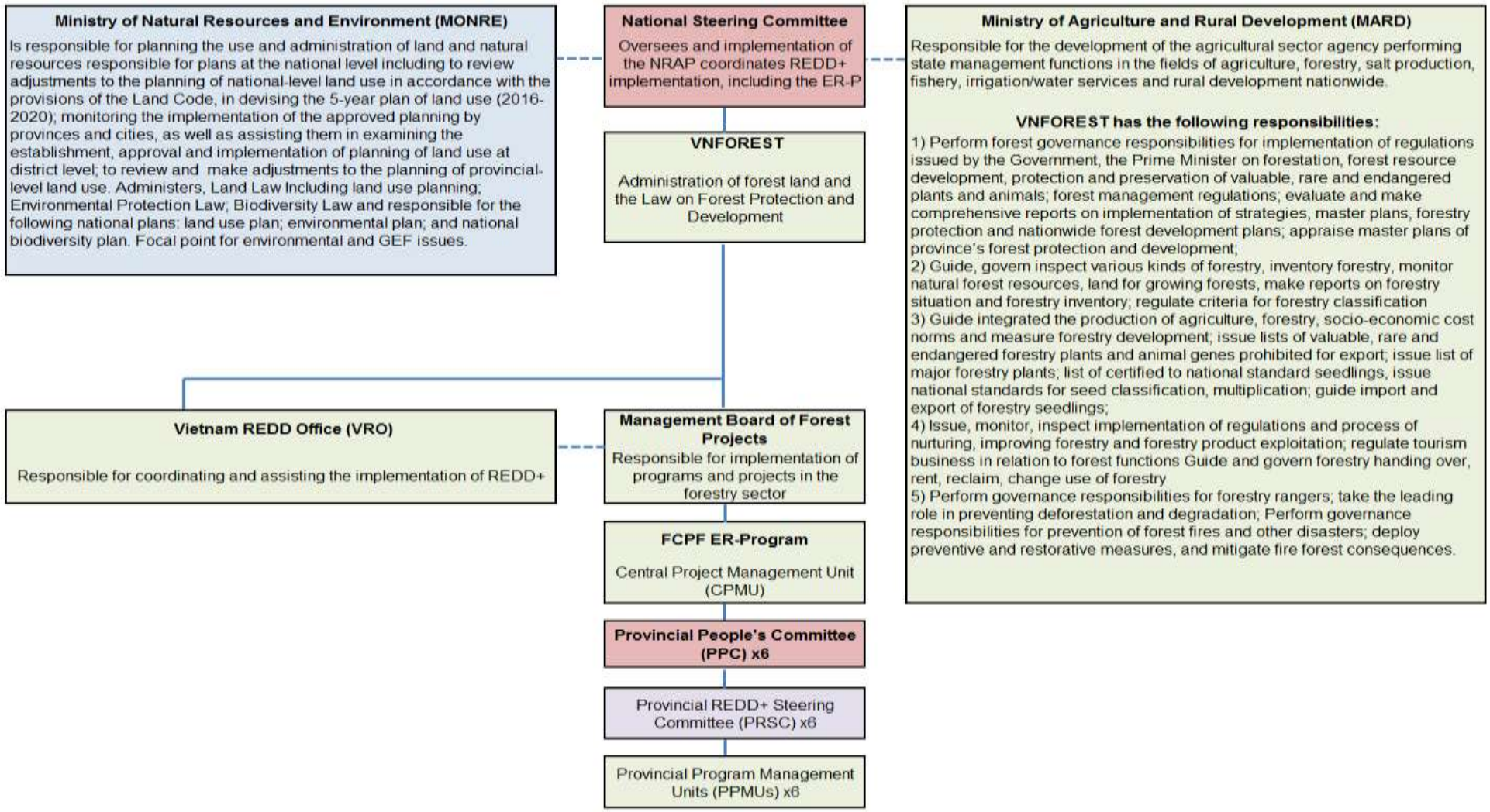
[50] Within the mandates of MONRE, the Department of Meteorology, Hydrology and Climate Change (DMHCC) is assigned to co-ordinate climate change-related activities while the Department of Legal Affairs (DLA) advises on the legal aspects of climate change including legislation development. Environmental management responsibility in Vietnam is spread over many ministries and implementation responsibility is often devolved to provincial and district levels

[51] Vietnam submitted its First National Communication to the UNFCCC in 2003 and its Second National Communication in 2010. In December 2014, Vietnam submitted its Initial Biennial Updated Report (BUR1) to the UNFCCC. According to the BUR1, as of June 2014, Vietnam had 253 Clean Development Mechanism (CDM) projects and over 10m Certified Emissions Reductions (CERs) were issued As of June 2015, Vietnam had 254 Clean Development Mechanism (CDM) projects accredited and registered by the CDM Executive Board (EB). Vietnam is ranked number four internationally for number of projects, with a total GHG reduction amount of approximately 137.4 million tCO2e in the credit period. Among the 254 projects, energy projects account for 87.6%, waste treatment for 10.2%, reforestation and afforestation for 0.4% and other projects for 1.8%. To date, more than 12 million CERs credits have been issued by the EB for Vietnam, which is ranked eleventh in the world.

Ministry or management entity	Main responsibilities
	(MOST); Ministry of Foreign Affairs (MOFA); National Ethnic Committee (CEMA).
Vietnam Forestry Administration (VNFOREST)	VNFOREST is a member of the NRSC, coordinates and works with MONRE to prepare national reports on Climate Change and directly assists MARD in the development of policies related to the authorization of ER-P and transfer of carbon emission reduction rights. VNFOREST supports the Management Board of Forestry Projects to update the annual database, coordinating ER-P forest monitoring system of the provinces to ensure that is consistent with the ER-P requirements and the national forest monitoring system. VNFOREST is authorized to be the focal agency for the REDD+ and is responsible for coordinating all efforts and activities among government agencies, private organizations, NGOs, CSOs and international development partners in the REDD+ implementation. The VNFOREST reports to the National Steering Committee on the progress of the REDD+ activities.
Management Board for Forestry Projects	The Management Board of Forestry Project sets up the program management and implementation in accordance with a Decision of MARD; manages and utilizes ODA funds and preferential loans, program counterpart funds; establishes and submits to MARD the overall plan and annual plans; implements procurement in accordance with the current regulations on procurement; negotiates, signs, monitors the implementation of the contracts and addresses the problems arising in accordance with the authorization; carries out monitoring and evaluation of the program in accordance with the legal requirements and regulations; guides the Central Program Management Unit to prepare final reports, outputs and program liquidation reports in accordance with the legal regulations.
Vietnam REDD Office and Technical Working Groups	The VRO is located in VNFOREST, and established in 2011 to coordinate and manage the design of the tools and processes to implement the National REDD+ Program of Vietnam. The VRO national monitoring unit is responsible for strategic development and daily management of the NRAP, including review of the results from MRV work and guarantees for the reasonable maintenance and management of the administrative system for the certified carbon emission reduction and sequestration credits. The VRO is responsible for coordination of responses for all matters arising from the NRAP. The VRO is responsible to help in coordinating and promoting REDD+ activities at the central and provincial level and providing support for the implementation of the program and part of this work involves the work of the sub-technical working group[52] (STWGs) activities, which have become more active and inclusive, as an important foundation for the consultation at national and sub-national levels. The STWGs are open to all organizations and governmental agencies are free to join the meetings. It is needed to identify the relevant stakeholders and encourage them to take part in the topics of the sub-groups, e.g. the sub technical working group - safeguard (STWG-SG) established and chaired by VRO with SNV (NGO) as the co-chair.
Central Program management unit (CPMU)	CPMU for the program and tasks including: (i) assisting the Program Owner to prepare the overall planning and annual detail work plans; (ii) assisting in preparation and implementation of the Program; (iii) assisting in procurement and contract management; (iv) assisting and managing disbursement and financial and asset management; (v) setting up and managing the monitoring and evaluation (M&E) of the program and monitoring and reporting on implementation status; (iv) preparing completion reports and the final report and liquidation reports for the program; (v) other tasks as agreed within the Program. The CPMU works as a focal point to support the NRSC and the Management Board of Forestry Projects in managing and organizing the implementation of the program to comply with the objectives and regulations in the program document, laws, regulations and Donor policies.
Provincial Peoples Committees in the ER-P area (PPCs)	The PPCs are the Managers of the components and activities that are implemented in the provinces. They have responsibilities and rights as follows (in accordance with Decree 16/2016/ND-CP): Decision on organization of management and implementation staff structure; approving annual provincial workplans; guiding procurement in accordance with the current laws, international ODA conventions, agreements, procurement preferential loan; organizing monitoring and evaluation of the components conducted by the provinces. The PPC set up the PRSC, (already in existence in all ER-P provinces) the PRSCs support the PPCs to provide general policies, reviewing annual working plans and ensure the coordination and linkage with the relevant agencies. The PPC is responsible for approval, budget allocation, and overall coordination and supervision of the PRAP involving different line agencies and ensuring the smooth implementation of the PRAP. The figure below shows the proposed organisation chart for the implementation of the ER-P and shows the links to different projects and programs and the links down through the provincial administration and management system to the commune and a village forest protection team

[52] The STWGs include six working groups: Safeguards, REDD+ implementation, REDD+ financing and governance, Private sector involvement, MRV, Benefit Sharing/ Distribution Systems.

Figure 6.1: Organizational structure for implementation of the ER-P



Provincial REDD+ Steering Committees (PRSCs)

All ER-Ps provinces have a Provincial REDD+ Steering Committee, which is due to play a critical central coordinating role in the provinces for the ER-P and in planning integrating forestry with other sectors. The PRSC is multi-sectoral committee with representatives drawn from most provincial departments (including DARD, DONRE, FPD, DPI, DOF etc.) and is tasked with improving cross sectoral planning, promoting REDD+, coordinating the design and implementation of the PRAPs, monitoring, maintaining and improving forest cover, improving forest governance and improving land use planning. The PRSC is to provide policy options to the PPCs on REDD+ provide linkages to CCAP. The PRSC is also expected to include SUF MB and PFMB representatives therefore helping them to have a say in forest and land use planning.

Departments of Agricultural and Rural Development and PPMUs

The provincial DARDs are the leading provincial agency, coordinating all activities of the programs, projects, organizations, and individuals in the provinces are responsible for implementation of the components, interventions and the activities carried out by the provinces, and are responsible for: (1) organizing counterpart funds (for the components and activities carried out by the provinces); (2) organizing the management and implementation staff structure in accordance with the decisions of PPCs; (3) effectively managing and using ODA funds, counterpart funds; (4) preparing and submitting to the PPC the annual program implementation plans; (5) conducting the procurement in accordance with the current laws on procurement; negotiating, signing and monitoring the implementation of the contracts and address the problems arising in accordance with their authority; (6) guiding the CPMU to prepare final report, outputs and liquidation reports in accordance with the laws.

DARD will set up a PPMUs which are the management unit focal point for supporting PRSCs PPCs and program implementation and responsible to PPCs, DARDs and CPMU in managing and organizing the program in the province. The DARDs assign tasks for the PPMUs in accordance with the PPMU's establishing Decisions. The PPMUs will be expected to work closely with DONRE and SUFs, PFMBs and SFCs to manage and implement project activities on the forestland area managed by the SUFs, PFMBs and SUFs.

DARD advises the PPC on REDD+ related functions and responsibilities to the Steering Committee on Provincial Forest Protection and Development Plan for 2009-2020 for the implementation of the PRAP; and provides advise, as necessary, on the establishment of a PRSC with representatives from DARD, DONRE, DPI, Department of Finance, DOST, Labour Invalids and Social Affairs and Districts as necessary.

DARD is the main executing agency for the PRAP implementation and inter-sectoral coordination at the provincial level. DARD should lead, coordinate, and integrate the PRAP implementation with other ongoing projects and programs under the jurisdiction of DARD including but not limited to the FPDP, PFES program, forest land allocation (DARD leads and coordinate with DONRE to complete the land and forest allocation within the province), forest inventory work, NRDP, 30a and 135 Program.

Institutionally, DARD coordinates the work of the newly integrated Sub-Department of Forest Protection (Sub-FPD) for forest allocation, monitoring, forest governance, distribution and enforcement of the PFPDF for PFES; the Center for Agriculture and Forestry Planning and Design (CAFPD) for forest inventory, allocation, and mapping; and the Agriculture Extension Center for extension service provision for livelihoods development.

Currently, the PPMUs are currently integrated with FCPF project PPMUs (in the cases of Quang Binh, Quang Tri and Thua Thien Hue), VFD project PPMUs (in cases of Thanh Hoa and Nghe An, the VFD Program is due to close in 2018, but the ER-P PPMU would continue), and UN-REDD Program phase 2 PPMU in the case of Ha Tinh.

Department of Natural Resources and Environment

The DONRE is the provincial focal agency for land use, natural resources, and climate change related projects and Programs in charge of the LUMP, CCAP, and land allocation (including the issuance of LURC red books). DONRE ensures that the PRAP is implemented in coordination with the LUMP and CCAP and that the land allocation is conducted smoothly in line with forest allocation that is under DARD. DONRE leads and coordinates with DARD to advise the PPC on directing People’s Committees at the district level to check and finalize procedures for land and forest allocation and issuance of land use certificates in

accordance with Plan 430/QD-UBND dated 02 March 2010 by the PPC and its subsequent plans; and integrates REDD+ implementation in land use planning at different levels.

District management agencies

The provinces can establish project management units at the district and communal levels to help manage and implement the program activities on the forestland area managed by the districts and communes.

Other project management agencies

The provinces can establish project management units at the district and communal levels to help manage and implement the project activities on the forestland area managed by the districts and communes.

- Special Use Forest Management Boards (SUFs) and PFMBs: manage and implement project activities on the forestland area managed by the SUF and PFMB. Protection forests are designated primarily for watershed protection function, usually having undulating terrain and in located within watershed catchment areas. Most the protection forests that are in the ER-P include areas of both protection and production forest. Special Use Forest are the protected areas in Vietnam and are under threat from encroachment and illegal extraction of logs, hunting and in many areas over harvesting of NTFPs, under the Forest Protection and Development Law all harvesting from the SUF is technically illegal.
- State Forest Companies (SFCs): manage and implement project activities on the forestland area managed by the SFC.
- The Department of Planning and Investment (DPI) is the focal agency for the SEDP implementation. DPI leads and coordinate with DOF and DARD to allocate state budget and other funding resources to forest protection and development and socio-economic development in relation to the PRAP; and integrates the PRAP implementation with other relevant programs and projects, especially the SEDP, in the province.
- Department of Finance (DOF) monitors the spending for PRAP implementation and program implementation and coordinates with DARD to formulate financial management mechanisms and policies for PRAP implementation; formulate guidelines for management and use of REDD+ funds at all levels; and monitor stakeholders to ensure their compliance to guidelines for management of REDD+ funds.
- District-level People's Committees (DPCs) undertake awareness raising and other relevant REDD+ activities under the PRAP with the CPCs and other relevant stakeholders at district level. The DPCs should direct, guide, and check the development and implementation of site-level REDD+ implementation arrangement under the general guidance of DARD.

Private sector involvement

The private sector in Vietnam continues to rapidly develop and independent companies, joint venture companies continue to invest in and development of forests and there is Vietnam timber and forest product association (VIFORES) supporting FSC and companies in timber processing and export. There is continuing move for the equitisation of SFCs, which has been supported by the readiness program and has seen the FCPF REDD+ project work with the FSDP in two SFCs[53] and other programs have also been working with the SFCs in the NCC with view to improving the management.

Smallholder plantation development is The FSDP operation demonstrated a successful approach for forest plantation development over 75,000 ha focusing on productivity and profitability in the context of environmental and social sustainability. Results were encouraging with average financial returns at around 15% for smallholder plantations.

[53] Ben Hai and Long Dai SFC in Quang Tri and Quang Binh respectively – equitisation work has included a detailed review of company assets, financial status, reviews of current regulations on valuation and equitisation and this work is continuing through 2016 and it is hoped to develop Ben Hai as first pilot for the equitisation process. Forest area allocated: 8,164ha (red books), natural forests: 2,500ha (protection forests: 927ha); plantations: about 5000ha (protection forests: 723ha) and about 1.500 ha (mainly pine forest). The company plantations are FSC certified.

Coordination mechanisms

MARD and VNFOREST participate in the program to develop activities related to Forestry sector for institutional arrangements and policies.

Working relationship between NRSC and MBFPs, CPMU: NRSC provides guidance, coordinates and directs MBFPs, CPMU by monitoring the management and organization of implementation of the program as a whole to achieve the objectives, progress, quality and efficiency as set out in the current regulations on the Program Management and Implementation.

The CPMU at central level will deal with the cross-cutting issues, and facilitates the coordination between the different ministries, departments, general departments under MARD, MONRE and MPI to enhance the synergy and the unified direction from the central level to the grassroots level. CPMU, under the direct guidance of NRSC and MBFPs, carries out the tasks as assigned and will coordinate with VRO and the STWGs and for MMR.

Working relationship between PRSCs and DARDs and PPMUs: PRSCs provides guidance, coordinates and directs DARDs and PPMUs to implement the program activities in the manner complying with the targets, progress, quality and efficiency as set out in the Program Documents, Agreements and relevant Laws.

Working relationship between MBFPs and DARDs: This is the coordination relation to carry out the program activities in the manner complying with the targets, progress, quality and efficiency as set out in the Program Documents, Agreements and relevant Laws.

Working relationship between CPMU and PPMUs: PPMUs are under the guidance of CPMU's professional expertise, inspection, monitoring and evaluation for all the components and activities in the provinces in the manner complying with the targets, progress, quality and efficiency as set out in the Program Documents, Agreements and relevant Laws.

6.2 ER-Program budget and financing plan

6.2.1 ER Program Budget (uses of funds)

- For the identification of the financing needs we assume the total project costs (total uses) as presented in Table 6.2 and the financial revenues to the ER-P program, presented in table 6.3 (total sources). In the table 6.3, also the financing needs (gap) are identified and accumulate to **USD 15.95 million** by year 4 of the program implementation timeframe. This financing gap considers also that CF payment and assumptions are validated (advance payment in year 1 = USD 5 million and in year 2 = USD 6 million. From year 5 onwards the ER-Program should not require additional external sources of finance and will be financially self-sufficient, considering that the revenues from forest products sales are reinvested into the ER-P activities.
- While it is understood that the ER-P is performance related program for the program to get off to a good start an advance payment would be most beneficial to start the program the reasons being that institutionally the central level and provinces need to see something concrete that shows the implementation is proceeding and that and management processes and for example financial planning and transactions steps that are required to prepare for all the implementation of the supporting measures required by the ER-P are justified investments and commitments will be followed. This is not new issue would be a realistic bottle neck as provincial authorities are always under some budgetary pressure, so justification that based on good performance are extremely difficult to explain with outcome good faith payments to start the process – essentially allowing or aiding the province to set up the necessary financial and management processes to start the program. Without an advance, then realistically the program can expect to have very difficult start.
- The financing gap would nominally be for investment funding for the investments required for the longer rotation plantations, transformation of the plantations in the PFMBs and SFCs. Part of the funding gap would be grant funding that would expected to be used to fund the technical assistance and some funding for protected area SUFs; however, a so far undetermined part of the funding for the SUFs could be expected to come from CF payments as they would be seen as a category of potential beneficiary particularly given their role as keeping of some of best remaining carbon stock of evergreen broadleaf forest and losing this would impact on the ER.

Table 6.2: Summary of the total ER-Program costs (expected uses of funds)

Year		Year 2018	Year 2019	Year 2020	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Total (8 years)
Costs related to administrative oversight of the ER Program	USD	844,850	773,550	690,500	580,400	556,850	538,550	548,850	546,550	**5,080,100**
Operational and implementation costs related to the actions and interventions that are part of the ER Program	USD									
1. Province level cross-cutting activities and investments; collaborative management and livelihoods	*USD*	*10,311,660*	*9,113,235*	*6,343,085*	*4,743,085*	*4,943,085*	*4,341,284*	*4,341,284*	*4,341,284*	***48,478,003***
2. Reducing deforestation / forest degradation component	*USD*	*0*	*1,078,909*	*3,013,091*	*5,280,000*	*7,546,909*	*8,749,091*	*9,090,545*	*9,090,545*	***43,849,091***
3. Forest carbon stock enhancement component	*USD*	*0*	*13,476,494*	*28,630,924*	*40,026,247*	*49,427,467*	*54,683,377*	*55,892,643*	*55,892,643*	***298,029,794***
4. Mangrove restoration and C enhancement component	*USD*	*5,598,626*	*7,234,768*	*7,743,872*	*8,252,976*	*8,762,080*	*0*	*0*	*0*	***37,592,322***
Costs related to development and operation of the Reference Level and Forest Monitoring System	USD	219,450	0	1,058,100	0	172,200	0	0	1,022,100	**2,471,850**
Costs related to the Implementation of Benefit Sharing Plan and relevant Safeguard Plan(s)	USD	393,850	291,200	353,300	297,200	296,400	148,700	148,700	217,900	**2,147,250**
Costs related to the implementation of the feedback and grievance redress mechanism(s)[54]	USD									
Costs related to stakeholder consultations and information sharing	USD	42,000	37,000	42,000	37,000	42,000	37,000	37,000	42,000	**316,000**
Total uses		**17,410,436**	**32,005,157**	**47,874,872**	**59,216,909**	**71,746,991**	**68,498,002**	**70,059,022**	**71,153,022**	**437,964,410**

[54]Cost included under Benefit sharing plan and safeguards plan and stakeholder consultation and information sharing

6.2.2 Sources of finance

Table 6.3 presents the key sources of funds. It is important to note the source of funds are subject to uncertainties and depend on the donor organization. Thus, the source of funds must be read as indicative and will require additional consultation and commitment of other donor organizations and the government of Vietnam.

In total the program current financing gap amounts of up to **USD 15.9 million**. In this assessment, the following the key sources and assumptions were made:

- **ER performance based payments** will be the largest source to finance to the ER-P. Based on the ex-ante GHG emission reductions of 22 million tCO_2 that will be eligible for results-based payments and a carbon price of USD 5, the expected funding source amounts to **USD 109.96 million over 8 years**.
- **Current governmental budget** for the forest sector include about **USD 71 million** for the ER-P lifetime which also included the funding of PRAP activities. However, this include various REDD+ related and non- REDD+ related source. Based on the PRAP assessment, it is estimated that REDD+ related governmental budgets amount to about **USD 20.5 million** over the ER-P implementation timeframe. Further **USD 18.36 million** are expected from PFES and are counted as a source of funding to the ER-P and which is attributed to governmental contribution. In total, **governmental funding contribution adds up to USD 38.87 million**.
- Further funding source is expected to come from the **State forest enterprises (SFCs)** that invest into natural forest management and plantation management. Major source of funding is expected from the revenues SFC currently generate or alternative loans. The scale of SFC finance is estimated at **USD 93.8 million**.
- Synergies are expected with the proposed **World Bank Coastal Forest development and rehabilitation Project** (~USD 130 million) which overlaps with the six ER-P provinces and while the exact details of the proposed are yet to be developed it is expected that will the objectives of climate-change mitigation, production forestry and sustainable financing will be linked and the project look to provide access to finance for SFCs and for coastal plantations and rehabilitation of mangroves. The project would draw on experiences under the recently closed Forest Sector Development Project (FSDP) and on-going FCPF Project. **About USD 37 million is assumed as a source for the ER-**P.
- Another potential project with which synergy would be expected to be developed is a proposed **KfW forestry project** that would potentially support forest certification through the development and implementation of a new fund to support forest certification to ensure climate change co-benefits go hand-in-hand with forestry production and profits. On a indicative basis, this project may provide a TA grant of about USD 12 million to the government which is accounted as 50% of this volume in the source of funding **(USD 6 million**). This is expected to be accompanied by approximately a USD 50 million loan to the government of Vietnam. For the ER-PD 30% of this volume is counted as a source – in total **USD 15 million over 5 years**.
- Further support may be forthcoming from the several other program currently running or are planned to be implemented in the ER-P accounting area. In total, it is estimated that at least additional **USD 5.2 million** will come from the following sources:
    - Government of Norway which is contributing to the UN-REDD Program which also operates in Ha Tinh;
    - Training and Demonstration Centre for sustainable forestry management financed by the German Ministry for Agriculture and Food Security (BMEL) Quang Binh Truong Son SFC;
    - Vietnam Forest and Delta Program (VFD) including PFMS pilot support in the Thanh Hoa and Nghe An;

- JICA 2 project including training and PFMS work in selected provinces ER-P including Thua Thien Hue, Quang Tri and Quang Binh;
- UNREDD phase 2 continued pilot support for Ha Tinh province;
- The ADB's Biodiversity Conservation Corridors (BCC) project operates in Thua Thien Hue and Quang Tri and covers an entire corridor area in Thua Thien 190,000 ha (2 districts, 10 communes) and includes the following possible contributions to the Thua Thien Hue PRAP for 2016-2019;
- WWF Carbon and Biodiversity Project Phase 2 is under consideration for implementation and may include activities in Thua Thien Hue and Quang Tri; and
- GIZ - Program on Conservation and Sustainable Use of Forest Biodiversity and Ecosystem Services this is work mainly at the national level. Key goal of the project is to bring lessons learnt from past projects in the areas of SFM, protected are management, activities for supporting REDD+ fit under component 1 and they are limited to bringing lessons learnt from past GIZ/KfW projects to the national processes (NRAP revision). Lessons-learnt in the areas of SFM, PA Management, land allocation, and lessons learnt from REDD+ pilot activities in Quang Binh. The three components are:
  - Legal framework: includes supporting the revision of forestry law and by-laws (with a focus on biodiversity management in SUFs, and SFM in production forests). It also includes support to the revision of PFES Decree and other selected legal documents;
  - Institutional capacity development for SFM and Biodiversity Management (focus on SUF). Includes training of service providers in SFM and PA Management and this includes "piloting" of SMART in seven PAs; and
  - Timber legality/FLEGT. Includes support to development of VNTLAS, and the development/implementation of a VNTLAS implementation road map;

See Annex 1 – Summary of financial plan for more information.

Table 6.3: Expected source of funds and financing needs

Year		Year 2018	Year 2019	Year 2020	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Total (8 years)
Grants - KfW expected TA to forestry sector (USD 12 million)[55]	USD	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000				**6,000,000**
Loans WB - Expected coastal forest protection and rehabilitation project	USD	5,598,626	7,234,768	7,743,872	8,252,976	8,762,080				**37,592,322**
Loans - KfW - Expected loan for forestry sector (USD 50 million)[56]	USD	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000				**15,000,000**
Revenue from REDD+ activities (e.g., sale of forests & agricultural products)[57]	USD	0	4,852,386	9,367,262	16,879,700	27,178,678	44,961,392	62,339,980	76,355,448	**241,934,847**
Potential Revenue from sale of Emission Reductions (not yet contracted)[58]	USD	5,000,000	6,000,000	10,101,896		17,910,450			70,952,138	**109,964,483**
Revenue from sale of additional Emission Reductions (contracted)	USD									**0**
Vietnam forest sector governmental REDD+ related budget[59]	USD	232,100	634,859	1,519,177	2,557,155	3,495,245	3,898,364	4,085,318	4,085,318	**20,507,536**
PFES funding in the ER-P accounting area		509,389	1,047,171	2,051,868	2,552,829	3,103,236	2,963,935	3,040,679	3,097,040	**18,366,146**
State Forest Enterprises (SFC)[60]	USD	0	5,366,165	9,722,202	12,308,267	15,741,780	16,892,055	16,892,055	16,892,055	**93,814,580**
Other donors - UNDP Green Climate Fund coastal protection project, JICA and SNV[61]	USD	800,000	500,000	500,000	500,000	500,000				**2,800,000**
Other donors - USAID Green Annamites program (USD 24 mill)[62]	USD	480,000	480,000	480,000	480,000	480,000				
Total sources (before taxes)	**USD**	**16,820,115**	**30,315,350**	**45,686,277**	**47,730,927**	**81,371,469**	**68,715,746**	**86,358,033**	**171,381,999**	**548,379,915**
Net revenue before taxes (=Total sources – Total uses)	**USD**	**-590,321**	**-1,689,807**	**-2,188,595**	**-11,485,982**	**9,624,478**	**217,744**	**16,299,011**	**100,228,978**	**110,415,505**
Cumulative financing need (before taxes)	**USD**	**-590,321**	**-2,280,129**	**-4,468,724**	**-15,954,705**	**-6,330,228**	**-6,112,483**	**10,186,528**		

[55] KfW grant TA assume 50% of the total expected funding
[56] Expected loan from KfW, assume 30% of a USD 50 million loan
[57] Assume that revenues can be re-invested for REDD+ activities; 20% are not counted because assume smallholder adopt which will not return to the program, but stay with smallholder
[58] Assume that payment for ERs are paid in advance: 18% of 8 years ER, the 18% advance payment is deducted from the verified ER in year 5
[59] Vietnam governmental budget lines for forest sector related to REDD+ in ER-P area
[60] Accounted in the cost benefit analysis and as financing source, assuming that SFC will invest themselves without external finance
[61] UNDP + JICA II + SNV project Tanh Hoa
[62] Assume 5% of total funding as a source

7 CARBON POOLS, SOURCES AND SINKS

7.1 Description of Sources and Sinks selected

The sources considered in the ER Program are deforestation and forest degradation and contribute significant emissions in the Accounting Area. However, there also exist significant carbon sinks that are removals from forest enhancement and reforestation. The sources and sinks considered for the program are presented in the following Table 7.1.

Table 7.1: Justification of sources and sinks included in the ER program

Sources/ Sinks	Included?	Justification / Explanation
Emissions from deforestation	Yes	Deforestation has mainly taken place in natural forests such as conversion of forests to agricultural cultivation, infrastructure development etc. In the program area, the spatial analysis of deforestation shows significant area of deforestation. The annual average forest loss is 30,195 ha for the period 2000 - 2010.
Emissions from forest degradation	Yes	Forest degradation is the gradual reduction in the density of biomass due to anthropogenic variables such as illegal logging. This is a source of significant loss of forest biomass. It is estimated that in the program area, annual forest area of 27,283 ha was degraded during the period 2000 – 2010.
Removal from forest enhancement	Yes	Forest enhancement is accelerated through promoting natural regeneration and forest enrichment. Over the past 20 years, a number of programs on recovering forest vegetation have been implemented. In the project area, it is estimated that the annual area of 14,049 ha of forests has been regenerated and enhanced.
Removal from reforestation	Yes	Vietnam has made great efforts in implementing reforestation programs to convert non-forests area to forested area. Those programs contributed considerably to the increase of forest cover, particularly from 2000 onward. It is estimated that the annual rate of reforestation in the program area 2000 – 2010 is about 74,982 ha.
Emissions and/or removals from conservation of carbon stock	No	The national REDD+ activities are not clearly defined for the conservation of carbon stock. In this context, the conservation of carbon stock is not accounted for as it is conservatively assumed that emissions are equal to removals.
Emissions and/or removals from sustainable management of forests	No	There is unclear definition of this activity under national REDD+ scheme and there are no clear boundaries for forest areas under sustainable management. Therefore, this activity is included either in above the REDD+ activities.

7.2 Description of Carbon Pools and greenhouse gases selected

The selection of carbon pools and greenhouse gases for the construction of FREL/FRL for the NCC is presented the tables below:

Table 7.2: Carbon pools and gases included in the construction of the FREL/REL

Carbon Pools	Selected?	Justification / Explanation
Above Ground Biomass (AGB)	Yes	This is the largest carbon pool and is impacted by the sources of deforestation and forest degradation.
Below Ground Biomass (BGB)	Yes	The BGB is a significant carbon pool. As there is no country specific data on BGB, it is estimated using IPCC 2006 default values.
Dead wood	No	Phuong et al (2009) indicates that average dead wood biomass of forests accounts for less than 2% of total AGB biomass. In addition, in the national forest inventories there are no data on dead wood. The national GHG inventories for LULUCF and National submissions of reference level to UNFCCC have not included this pool.
Litter	No	Conservative. IPCC 2006 (Vol 4, Chapter 2) notes that Tier 1: Carbon stock of DOM is assumed to be 0 for non-forestland use categories. The conversion of forests to non-forests, the carbon of post deforestation is also considered 0. Furthermore, litter data is not collected under the national forest inventories and this pool is also excluded in national GHG inventories and national submission of reference level
Soils	No	IPCC 2006 (Ch. 4, Section 4.2.3.1) indicates that the Tier 1 approach accepting there is no change in forest soil carbon with management or soil carbon change is zero for mineral soils. In Vietnam, most of the NCC area are covered by mineral soils (Sam et al 2000).
Harvested Wood Products	No	Not required by the Methodological Framework and is thus excluded.

Table 7.3: Gases included in the construction of FREL/REL

Greenhouse gases	Selected?	Justification / Explanation
CO_2	Yes	The ER Program shall always account for CO_2 emissions and removals. The emissions are caused by deforestation and forest degradation. The removals are generated from reforestation and forest enhancement.
Non-CO_2	No	Non-CO_2 gases (such as CH_4, CO, N_2O) are emitted only through incidents of forest fires. The BUR (MONRE, 2014) indicated that total non-CO_2 gases emissions caused by burning of biomass (for example, forest fire) accounted for 0.04% of the total of Vietnam's emissions. Non-CO_2 emissions are not significant in the proposed project areas and therefore it is not selected. In the NCC, the non-CO2 emissions is estimated less than 1% of total emissions of the region.

8 REFERENCE LEVEL

8.1 Reference Period

From the start of preparing the ER Program, it is noted that the requirements of the reference period for the ER-Program area, following the Carbon Fund Methodological Framework (2013), the reference period should be 10 years from the latest data available prior to 2013. Therefore, the reference period used to construct the reference level for the ER Program area is from mid 2000 to mid 2010[63].

However, the newly adopted requirement of the Methodological Framework (2016) for reference period that requires the reference period is end date should be no later than 2 years before the first mission of TAP (i.e. 2016-2=2014), so 2000-2010 technically meets the criteria using existing data.

Vietnam has a long history of national forest inventory and monitoring and assessment program (NFIMAP) from 1990 and it is implemented through a 5 year cycle. To date, data from the national forest inventories are only available for 1990 – 2010. Vietnam is now implementing the 2015 national forest inventory and statistics[64].

Given the new requirements of the Methodological Framework, it is proposed that Vietnam will update the reference period. It is planned that the updated reference period will be from 2005 – 2015. The year 2015 is proposed because it is consistent with the Vietnam national forest planning cycles (5 year increments beginning in 1995), and because it provides a more jump off point than 2014 for the future FCPF project. It would also give the flexibility to use an updated 10 year period of 2005-2015 using existing forest cover map for 2005. Alternately, an update year of 2014 would not provide the opportunity to build on the 2005 cover map with a 10 year period.

To develop a reference level for such period, the generation of a forest cover map for 2015 and the associated AD for the period 2010 – 2015 will be implemented following the consistent methodologies used in NFIMAP and the availability of forest data generated by national forest inventory and statistic to be published in 2017 (see more details in the Annex 2 for a plan of updating reference level for 2005-2015). Therefore, the use of reference period of 2000 – 2010 for reference development can be considered as a temporary period. The new 2015 forest cover map and associated 2010-2015 Activity Data will be used to check the utility of the RL based on 2000-2010, and to generate an updated 2005-2015 RL.

After the 2015 forest cover map is generated and validated, the boundaries in the 2005 and 2010 forest cover maps will be adjusted to match the 2015 boundaries, for boundaries that are present across years. This will eliminate the problems observed by the TAP regarding independence of maps and introduction of errors arising when 'differencing' maps. This will also facilitate tracking the time series of change for individual parcels, to enable better classification of forest cover change activities and to enable detection of indirect conversion of natural forest to plantation forest.

We are choosing to work with the 2005 and 2010 forest cover maps (rather than reanalyzing the underlying imagery) because of the significant level of effort through multiple international projects that has gone into developing and checking those maps, and because the forest cover maps provide the linkage to the estimates of biomass and carbon available from the historical forest inventory programs.

8.2 Forest definition used in the construction of the Reference Level

8.2.1 Forest Definition

The definition of forests used for Forest Reference Emission Level/Forest Reference Level (FREL/FRL) for Vietnam, follows the definitions provided under Circular 34 (2009)[65]. This definition is in line with the

[63] Forest inventories take multiple years we assume that time 1 = mid 2000 and time 2 – mid 2010, that is 10 years.
[64] The final maps and data is expected to be published in early 2017.
[65] Issued by Ministry of Agriculture and Rural Development in 2009.

definition of forests used for the national GHG inventory[66]. It is also consistent with the definition of UNFCCC Decision 12/CP.17, following this definition, an area is identified as a forest when it meets the following three criteria:

- An ecosystem where the major component is perennial timber trees, bamboos and palms of all kinds of a minimum height of 5m (except new forest plantations and some species of coastal submerged forest species), and capable of providing timber and non-timber forest products and other direct and indirect values such as biodiversity conservation, environmental and landscape protection. New forest plantations of timber trees and newly regenerated forests of forest plantations are identified as forests if they reach the average height of over 1.5m for slow-growing species, and over 3.0m for fast-growing species and a density of at least 1,000 trees per hectare. Agricultural and aqua-cultural ecosystems with scattered perennial trees, bamboos or palms etc. will not be regarded as forests.
- Having a minimum tree cover of 10% for trees that constitute the major component of the forest.
- Having a minimum plot area of 0.5 ha or forest tree strips of at least 20m in width with at least three tree lines.

8.2.2 Forest stratification

The government forest classification of forest Circular 34 also includes a number of criteria for classifying forest based on wood stock, biological characters etc. To reduce the complexity of such a system, and for the purpose of improving the estimation of forest carbon stock and emissions and removals; the harmonization of forest and land uses classification was proposed following Karsten et al, 2010[67]; the 2012 JICA (2012)[68] study also used this proposed classification. In this system, there are 17 land uses, of which 12 land uses are forests. However, for the ER-P, this is further simplified by merging rehabilitated evergreen broadleaf forest and rocky forests into poor forest; bamboo and mangrove forests are combined into other forest; and all non-forest lands (bare land, water body, residential area and other) are combined as carbon stock of those are considered zero. The reason for the simplification is that sub-classifying evergreen broadleaf forest based on wood stock needs to be consistent and carbon stock for rehabilitated evergreen broadleaf forest and poor evergreen broadleaf forest is quite similar (Dien, 2015). In addition, the number of ground truth points system using a primary sample unit (PSU) for such forest types are limited and if they are separated, the accuracy of the carbon stock estimation is not confident. Such simplified forest classification will help reduce uncertainty in the activity data (AD) and emission factors (EF). The forest stratification used for the construction of the ER-P reference level includes the following five types of forestland and non-forest land as shown in Table 8.1.

Table 8.1: Stratification of land use types for the NCC

ID	Forest type	Code	Forest / Non-forest
1	Evergreen broadleaf forest, rich forest	EBF-R	Forest
2	Evergreen broadleaf forest, medium forest	EBF-M	Forest
3	Evergreen broadleaf forest, poor forest	EBF-P	Forest
4	Other forests	OFO	Forest

[66] MONRE, 2014. First Biannual Updated Report (BUR) for 2010.

[67] Karsten Raae et al., 2010. Technical Assistance in the Development of the National REDD Program of Vietnam Component of Collecting Information and Analysing Trends of Forest Resources and Forest Carbon Stock for Establishment of the Interim Baseline Reference Scenarios. Danish Forestry Extension and Nordeco. The main activities of this project were the digitization of the hard copy maps of the NFIS for the period of 1998-2000 and standardizing of digital output map and the mapping of NFIMAP cycles 3 and 4; including: classification system, coordination, and structure of attributes. However, there were some limitations such as the satellite images of 2000, 2005, and 2010, which were less used to supplement and update the maps accordingly. The content that needed to be updated included: polygon boundaries, names of forest type and logical forest change over time.

[68] JICA, 2012. Potential forest and land related to “Climate change and forest” in the Socialist Republic of Vietnam, Hanoi. The study was aimed at the enhancement of the quality of the maps produced by the Nordeco project, including: Landsat images covering the period 2000, 2005 and 2010 were used for enhancing the quality of the maps by applying visual interpretation methods, including: polygon boundaries, names of forest type and misclassification of forest changes over time. The limitation was that the results were subjective and depended on the knowledge and experiences of the interpreter, hence the quality of the enhanced map is uneven.

ID	Forest type	Code	Forest / Non-forest
5	Plantation	PLA	Forest
6	Non-forest lands	NOF	Non-forest

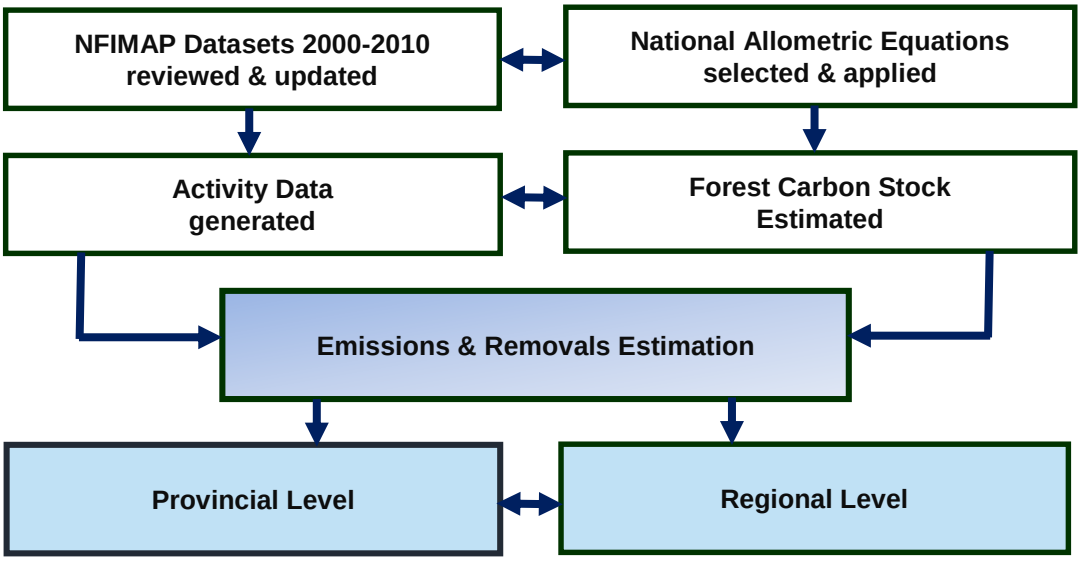
8.3 Average annual historical emissions over the Reference Period

8.3.1 Description of method used for calculating the average annual historical emissions over the Reference Period

Vietnam considers it more transparent to present historical emissions and removals separately rather than presenting net emissions/removals. This separation allows a more adequate representation of the trends in both emissions and removals over time and it provides an improved way of monitoring the different efforts of enhancing forest carbon stocks and reducing emissions from deforestation and forest degradation. Therefore, the emission and removals are presented separately for the ER-P.

The approach for estimation of historical emissions and removals is based on Activity Data (AD) and Emission Factors (EF) and Removal factors (RF). AD is generated spatially using remote sensing information. To detect land use change, land use matrices are generated by overlaying land cover maps between the inventory cycles. To develop EF and RF, forest carbon stock is estimated by applying allometric equations and measurement data of National Forest Inventory, Monitoring and Assessment Program (NFIMAP) cycle 4. Based on land use matrices and EF and RF, emissions and removals are accounted for in two inventory cycles (2000-2005 and 2005-2010) for every province and then summed up to regional level (see Figure 8.1). See more details of the methods used in construction of reference level in Annex 15 – Reference Level Report for the NCC Region of Vietnam. (The data related to the AD, EF and RL is available websites of the Management Board of Forest Projects and Vietnam REDD Office from 1st week of November 2016.)

Figure 8.1: Approach of reference level construction



Activity Data

The AD and land use change matrices are generated from the updated forest cover maps for all classified land uses at provincial and regional level for the two periods of 2000-2005 and 2005 – 2010 at provincial level, adjusted for bias following the accuracy assessment, and then are aggregated for NCC. The following Tables 8.2 to 8.6 show the development of the AD.

Table 8.2: Activity Data for the construction of the reference level

<table>
<tr><th>Description of the parameter</th><th>Parameters</th></tr>
<tr><td>Description of the parameter including the time period covered (e.g. forest-cover change between 2000 – 2005 or transitions between forest categories X and Y between 2003-2006):</td><td>Spatial analysis of 4 parameters: deforestation, forest degradation, reforestation and forest enhancement is conducted for separate periods 2000 – 2005 and 2005 – 2010. The definition of those parameters are as follows:

Deforestation: The activity of conversion of forests to non-forest land, as identified following the NFIMAP[69] and updates[70]. Where a series of activities including deforestation may have occurred within a single cycle of the National Forest Inventory (NFI).

Forest degradation: Any activity resulting in a downward shift in terms of carbon stock between forest types, including evergreen broadleaf forest volume-based sub-types of “rich, medium, and poor” (based on the average standing volume per ha) and other forest types. In the case that the deforestation activity occurring as a transitional activity not captured by the NFI, and thus will be reported as degradation.

Reforestation: Any activity resulting in land use change from non-forest land to forest land. The conversion of forestland into plantations is not considered “reforestation”;

Forest enhancement: Any activity resulting in an upward shift of carbon stock between forest types, including evergreen broadleaf forest volume-based sub-types of “rich, medium, and poor” (based on the average standing volume per ha) and other forest types;</td></tr>
<tr><td>Explanation for which sources or sinks the parameter is used (e.g deforestation or forest degradation):</td><td>Emissions associated with deforestation and forest degradation are considered sources.

Removals generated by increment of forest biomass through forest enhancement and reforestation are considered sinks.</td></tr>
<tr><td>Data unit (e.g. ha/yr):</td><td>ha/period and ha/year</td></tr>
<tr><td>Value for the parameter:</td><td>
<table>
<tr><th>Parameters</th><th>2000-2005</th><th>2005-2010</th><th>Average (ha/yr)</th></tr>
<tr><td>Deforestation</td><td>177,802</td><td>124,147</td><td>30,195</td></tr>
<tr><td>Forest degradation</td><td>140,199</td><td>129,536</td><td>26,974</td></tr>
<tr><td>Reforestation</td><td>352,809</td><td>397,008</td><td>74,982</td></tr>
<tr><td>Forest restoration</td><td>51,751</td><td>91,828</td><td>14,358</td></tr>
</table>
</td></tr>
<tr><td>Source of data (e.g. official statistics) or description of the method for developing the data, including (pre-)processing methods for data derived from remote sensing images (including the type of sensors and the details of the images used):</td><td>Primary data sources used for construction of reference level are NFIMAP. To date, Vietnam has completed four cycles of the NFIMAP (1991-1995; 1996-2000; 2000 – 2005; and 2006-2010). All forest cover maps of the four inventory cycles have been updated using remote sensing images with automated (eCognition) and manual classification and a consistent forest definition has been prepared with the work programs supported by Finland (Karsten Raae et al., 2010), JICA (2012), MARD (Dien 2015) and UN-REDD (2015). During these updates, all forest changes within these inventory cycles are checked for errors in classification and suitable corrections are made to the forest cover maps by reviewing the satellite imagery taken near the time of map creation. Under the ER-P, the updated forest cover maps of cycle 3 (2000-2005) and cycle 4 (2006-2010) for NCC and six provinces of NCC were again updated.

IPCC Approach 3 was used to develop spatially disaggregated AD using updated forest cover maps for 2000, 2005, and 2010 based on remote sensing images (Landsat, Spot 5). Land use change matrices are used to detect the land use changes for 2 sub-periods 2000 – 2005 and 2005 – 2010 for provinces. Land use changes for the periods are then aggregated for NCC.

See details in the AD report (Annex 13: Activity Data Report).</td></tr>
<tr><td>Spatial level (local, regional,</td><td>Provincial and regional (NCC)</td></tr>
</table>

[69] Including both plot measurements and remotely sensed information.
[70] Updates were made to the original results of the NFI Cycles 1-4 by the same implementing body the Forest Inventory and Planning Institute (FIPI) under MARD with technical and financial assistance from (in sequential order) Finland, Japan, MARD and UN-REDD throughout 2011-2015.

national or international):	
Discussion of key uncertainties for this parameter:	As the high resolution satellite images or aerial photos are not available for 2000, 2005 and 2010 for the project areas, therefore the accuracy assessment cannot be achieved by applying the above remote sensing and aerial photo methods. Key uncertainties for determining the above parameters are misclassification of forest types, particularly the changes in forest types to detect forest degradation and forest enhancement. In addition to the use of remote sensing information, such detection also requires ground survey data and information, therefore errors of ground survey including measurement and sampling errors are considered the key sources of uncertainties for identifying forest degradation and forest enhancement.
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	A total of 539 points are sampled and checked for analysis for 6 mentioned land use categories for 2000 – 2010. Olofsson's Method[71] is used to estimate accuracy. The accuracy assessment results show that at 95 % confidence level, the overall accuracy of land use change detection is 92.1 % for changes in 2000 – 2005 and 95% for the changes in 2005 – 2010. Estimates of area by Activity have been adjusted following the approach outlined in Olofsson. For details see Section 12 and Activity Report (Annex 13).

Table 8.3: Development of the Emission Factors

Description of the parameter	**Parameter**
Description of the parameter including the forest class if applicable:	Above Ground Biomass (AGB) is estimated using national allometric equations and plot measurement data (DBH) of NFIMAP cycle 4. At present Cycle 4 is the only inventory data believe to be of sufficient quality to use for estimating biomass in NCC forests. This precludes estimation of change in biomass for forest which remains in the same stratum during the Reference Period. However, in the future under the proposed MMR system, the inventory will be repeated and estimates of change for forest-remaining-the-same will become possible. The Cycle 4 inventory data came from a systematic sample across all forest lands. All forest conditions (including REDD+ Activities) are sampled in proportion to the area in which they occur, and are thus reflected in the estimates of AGB. This includes all examples of forest plantation in existence during 2005-2010 (the period of NFIMAP Cycle 4), The biomass equations are available for evergreen broadleaved forests (including plantations) and bamboo forest. Belowground Biomass is estimated using IPCC default value of 0.20[72]. The total forest carbon is estimated using carbon faction (CF = 0.47). Carbon stock of post -deforestation is assumed to be zero. The carbon stock of non-forestland (such as rocky mountain, resident and water areas and other land) is assumed to be zero (IPCC 2006 default values). (See details in EF reports in Annex 12)
Data unit (e.g. t CO_2/ha):	tCO_2/ha
Value for the parameter:	Estimated carbon stock for land uses and forests are as follows:

Land use and forest	**Carbon stock (tCO_2e/ha)**	**STDEV (tCO_2e/ha)**	**SE, 95% cl (%)**
1. EBF-R	543.5	240.6	8.2
2. EBF-M	264.9	91.8	4.3
3. EBF-P	115.5	89.2	7.3
4. OFO	82.9	91.6	20.8
5. PLA	89.0	74.5	24.3
6. NOF	0	NA	0

[71] Good practices for estimating area and assessing accuracy of land change.
[72] Table 4.4. of IPCC 2006. AGB of forests values in Vietnam are less than 125 tones ha-1except for Evergreen Rich forest, which has AGB > 125 tones ha-1

Source of data (e.g. official statistics, IPCC, scientific literature) or description of the assumptions, methods and results of any underlying studies that have been used to determine the parameter:	The sources of data used for development of emission and removal factors (EF/RF) are dataset of plot measurement of Secondary Sample Plot (SSP) under NFIMAP cycle 4 (2006-2010). The area of SSP is 500 m^2 (20 x 25 m). This dataset has been reviewed and updated several times during the study by JICA and for the preparation of the national reference level for REDD+ (JICA 2012; MARD, 2015). The use of this dataset is consistent with the national reference level. There are 10,600 SSP of 1,998 Primary Sample Plot (100 ha each) and this dataset includes information in tree species name, DBH, tree height. Those information is used to apply in national allometric equations[73] to estimate AGB for evergreen broadleaved forests, bamboo forests and plantation. The AGB is estimated at tree level, then scale up to plot level and to a hectare of forests. Based on estimated AGB and IPCC default value of root to shoot ratio and carbon fraction, the forest carbon stocks of forests are calculated. Only the other forests which include bamboo and mangrove forests, the carbon stock of mangroves is estimated based on scientific literature review report (Phuong et al 2016). Based on carbon stocks estimated to forest types and AD on land use changes, the EF/RF is calculated (see details separate section* below and in report on development of emission factors in Annex 14)
Spatial level (local, regional, national or international):	Regional
Discussion of key uncertainties for this parameter:	The significant uncertainties for estimating emission and removal factors are associated with uncertainties of forest carbon stock estimation and AD of land use changes. The key uncertainty of forest carbon stock estimation is a propagation uncertainty of parameters used for the estimation. Such uncertainties include models for estimating forest above biomass, plots measurement error, statistical random sampling error and uncertainty of AD as mentioned above. However, of those potential uncertainty sources, the error of statistical random sampling and measurement error are not applicable to uncertainties analysis for the parameters as there is no data and information. See more details in Section 12.2
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	A propagation error of forest carbon is assessed based on uncertainties of above forest carbon estimation generated from national equations and plot measurement data, errors of carbon fraction and root to shoot ratio. The propagation errors of forest carbon stocks range from 24 - 34%. For details see Annex 15 (Reference Level Report).

8.3.2 Methods for estimation of forest carbon stock

The steps for the development of emission and removal factors are as follows:

1) Estimation of AGB at tree level

The estimation of AGB at tree level is based on plot measurement data of NFIMAP cycle 4 (tree species name, DBH, tree height and wood density) and allometric equations developed for the NCC (UN-REDD 2015). The tree level AGB is estimated for all SSP and the following equations are applied (Table 8.4).

Table 8.4: Allometric equations used for tree level AGB estimation

Forest types	Equations	Indicators
1. Evergreen broadleaved forests (including plantations)	1.1. AGB = 0.1245*DBH^2.4163	n = 110; SE = 18.37%; R^2 = 0.99
	1.2. AGB = 0.0421* (DBH^2 * Hmt)^0.9440	n = 110; SE = 16.23%; R^2 = 0.99
	1.3. AGB = 0.699*(DBH^2 * Hmt * WD/10)^0.940	n = 110; SE = 13.73%; R^2 = 0.99
2. Bamboo forests		
B. balcooa	2.1. AGB = 0.1021*DBH^2.2100*H^0.0612	n = 120; SE = 15.2%; R^2 = 0.92
Dendrocalamus membranaceus	2.2. AGB= 0.1527*DBH^2.1044*H^0.1013	n = 80; SE = 18.2%; R^2 = 0.91

[73] Under the support of UNREDD, Vietnam has developed allometric equations for aboveground biomass estimation for several forest types such as evergreen broadleaved forests, bamboo forests and deciduous forests. Those equations are also available to use for national level and eco-region (northeast, north central coast, central highland, southeast).

B. chirostachyoides	2.3. AGB= 0.4514*DBH^1.5022*H^0.3558	n = 120; SE = 18.2%; R^2 = 0.92
Indosasa angustata	2.4. AGB= 0.3704*DBH^1.6460*H^0.2829	n = 70; SE = 18.2%; R^2 = 0.92

Where:

- AGB is above ground biomass expressed in kg;
- DBH is diameter at breast height expressed in cm;
- Hmt is height of tree along its stem in meter and Hmt = Htop*1.04 (FIPI, 1995);
- WD is wood density expressed in gram/cm^3. WD data are taken from national studies (mainly Vietnam Academy of Forest Sciences) that was compiled as a WD database by UN-REDD Vietnam (UN-REDD Vietnam, 2012). In the case where there is no WD data available for tree species, the value of WD will be taken from global WD database, and if not, the average WD value of tree species in Vietnam (0.584) is used[74].

2) Calculation of forest biomass

Forest AGB: After calculation of the tree level AGB, the AGB of the plots is calculated for forest types. The general formula for calculation of AGB of measurement plots is as follows:

$$AGB_i = \sum_{j=1}^{n_i} AGB_{ij}$$

Where:

- AGBi is total AGB of all trees and bamboos in the measured plot i. This is expressed in kg or tonnes of dry mass per plot.
- n_i is numbers of measured trees in the plot i;
- AGB_{ij} is AGB of tree j in plot i;

Forest BGB: To estimate BGB of forests, it is estimated using root to shoot ratio (R). As Vietnam has no specific data on R and the development of such a factor is very costly, therefore, the default value of R of 0.20 (IPCC 2006) is used as conservative estimation for BGB as follows.

$$BGB = AGB \times 0.20$$

Total biomass (TB): It is calculated for every measurement plot by summing AGB and BGB in each measurement plot as follows:

$$TB = AGB + BGB$$

3) Calculation of forest carbon stock:

Forest carbon stock estimation is accounted for based on biomass and carbon fraction (CF). Default value of CF (0.47) is used (IPCC 2006). The formula for calculation is as follows:

$$C = TB \times CF$$

After the carbon stock of all measurement plots is estimated, based on area of measurement plot, the carbon stock per ha of forest type is calculated as follows:

$$C\ (tC/ha) = \frac{C_i \times 10^4}{10^3 \times \mathrm{A}}$$

[74] WD data in Vietnam is available for more 300 species and most of them are natives. As Vietnam has thousands native species and the species vary from region to region therefore, an average WD value of known species is applied for species having no data on WD.

Where:

- Ci is the carbon stock of plot i; A is area of measurement plot in m^2 (for woody forest, measurement plot area is 500 m^2 and this is 100 m^2 for bamboo forest).

Once the carbon stock per ha of all forest types is estimated, the average value of carbon stock per ha for every forest type is calculated as follows:

$$\bar{X}_i = \frac{1}{np_i}\sum_{j=1}^{np_i} x_{ij}$$

Where:

- $\bar{X}_i$ is average value of carbon stock for forest type i;
- x_{ij} is carbon stock of measurement plot j for forest type i;

Regarding the other forests (bamboo and mangrove forest are combined), the carbon stock is calculated using a weighted value. The calculation of carbon stock for this forest type is as follows:

$$C\ (tC/ha) = \frac{Cb*Ab + Cm*Am}{Ab+Am}$$

Where:

- Cb is average carbon stock (tC/ha) of bamboo forest calculated from its biomass using equations;
- Ab is area of bamboo forest (ha);
- Cm is average carbon stock (tC/ha) of mangrove forests;
- Am is area of mangrove forests (ha).

Regarding the mangrove forests, there are no measurement plots in the PSU in mangrove forests, however there are a number of studies on biomass of mangroves. A review report on biomass and carbon stock suggests that the average weighted carbon stock for mangrove forest in the North (NE, NCC and SCC) is 35.2 tC/ha and for the South (SE and SW) is 64.4 tC/ha and national level is 58.0 tC/ha (Phuong et al 2015).

4) Estimation of emission and removal factors (EF/RF):
Based on carbon stocks estimated to forest types and AD on land use changes, the EF/RF is calculated as follows:

$$EF \text{ or } RF\ (tCO_2e/ha) = ((Ci - Cj)/Ai \times 44/12$$

Where:

- C_i and C_j is carbon stock per ha of forest type/land use i and j corresponding to the changes; and
- Ai is area of forest type/land use i changed.

If Ci > Cj, such a change is considered to be emissions (higher carbon stock land use changed to lower carbon stock land use, for example deforestation, forest degradation).

5) Estimation of uncertainty of forest carbon:
Uncertainty of forest carbon is assessed through the errors of forest carbon estimation using propagation error. Propagation error is derived from errors of sampling, estimation of AGB (error of biomass equations), BGB (errors of conversion using root to shoot ratio) and carbon (error of carbon fraction). The formula for calculation of propagation error of forest carbon stock is as follows:

$$Ep = (E_s^2 + E_m^2 + E_r^2 + E_c^2)\text{^}0.5$$

Where:

- E_s is errors of sampling (%) (this is calculated).
- E_m is error of biomass equations (%) (this is calculated).

- E_r is error of root to shoot ratio used for conversion of BGB from AGB (default value of GOFC-GOLD sourcebook 2015, Table 2.3.3, page 72).
- Ec is error of carbon fraction (%) (the default value of the IPCC, Volume 4,).

Calculation of the average annual historical emissions over the Reference Period

The average annual historical emissions (resulted from deforestation and forest degradation) and removals (generated by reforestation and forest enhancement) are estimated separately over the reference period 2000 – 2010. The estimation is based on AD and EF/RF and the steps implemented are as follows:

1) Develop emissions and removal matrices of provinces
Using the AD (land use change matrix) of the provinces (for 2000 -2005 and 2005 – 2010) and EF/RF, emissions and removal matrices are prepared for provinces for 2000 – 2005 and 2005 - 2010. Those matrices indicate emissions associated with deforestation and forest degradation and removals resulted from reforestation and forest enhancement[75]. The EF/RF used in this analysis represent the average tCO2e/ha for each forest type, based on a statistical sample across the landscape. Any land which changes forest cover classes is assumed to change from the average of the starting cover class to the average of the ending cover class, over a five-year period.

The rational for this approach is that it is assumed that the remote sensing analysis of Activity Data will characterize each hectare based on what is observed at the time of sensing, which in turn reflects the actual biomass on the site at that time. For example, land which transitions from Non-forest in time t to Poor Forest in time t+5 is assumed to have crossed the threshold of biomass presence during that time period.
It is understood that this is not a perfect reflection of what actually happens on each hectare; in some cases, the change will be overestimated, in other cases it will be underestimated, but on average over time the calculations should reflect the average behaviour across the landscape, and the variation is captured in the estimates of uncertainty.

Note, this is much less of an issue for land which transitions from Non-forest to Plantation. Plantation rotations in usual practice in Vietnam are on the order of 5-7 years, so assigning the average plantation biomass in a five year increment is likely close to reality.

2) Calculate emissions and removals for provinces:
Emissions and removals are accounted for all provinces in NCC based on emissions and removal matrices for 2000 – 2005 and 2005 - 2010. Emissions and removals of provinces are then aggregated for period of 2000 – 2010. Average annual emissions and removals of provinces are then calculated (see Table 8.5)[76].

Table 8.5: Emissions (+) and removals (-) (tCO_2e) for the period 2000 – 2010 by province

Parameters	Thanh Hoa	Nghe An	Ha Tinh	Quang Binh	Quang Tri	T. T Hue
1. Deforestation	9,849,752	7,035,561	2,566,652	3,711,821	4,792,101	5,123,156
2. Forest degradation	5,382,375	8,658,681	5,346,309	17,309,056	8,177,792	6,909,834
3. Reforestation	-16,412,104	-21,044,919	-9,693,930	-10,284,240	-9,816,637	-10,401,049
4. Forest restoration	-3,549,806	-7,560,695	-1,219,244	-3,591,169	-3,442,373	-3,162,406
5. Total emissions	**15,232,127**	**15,694,242**	**7,912,962**	**21,020,878**	**12,969,893**	**12,032,990**
6. Total removals	-19,961,910	-28,605,613	-10,913,174	-13,875,409	-13,259,011	-13,563,455
7. Net emissions	-4,729,783	-12,911,371	-3,000,212	7,145,469	-289,117	-1,530,465
8. Average annual emissions	**1,523,213**	**1,569,424**	**791,296**	**2,102,088**	**1,296,989**	**1,203,299**
9. Average annual removals	**-1,996,191**	**-2,860,561**	**-1,091,317**	**-1,387,541**	**-1,325,901**	**-1,356,346**

[75] The detailed calculations are available in a separate spread sheet.
[76] As footnote above. The detailed calculations are available in a separate spread sheet.

3) Calculate emissions and removals for NCC

Once the emissions and removals of provinces are calculated, emissions and removals are aggregated for NCC for 2000- 2005, 2005 – 2010 and then 2000 – 2010. Based on the adjusted AD resulted from accuracy assessment of forest cover maps, the emissions and removals for NCC is accordingly re-calculated. The final emissions and removals for 2000 – 2010 for NCC is presented (see Table 8.6)[77].

Table 8.6: Estimation of emissions and removal for the NCC in 2000 – 2010

Activities	Emissions (+)/Removal (-) for 2000-2005 (tCO_2e)	Emissions (+)/Removal (-) for 2005-2010 (tCO_2e)	Emissions (+)/Removals (-) for 2000-2010 (tCO_2e)	Average annual emissions/Removals (tCO_2e) for reference period (2000 – 2010)
1. Deforestation	18,138,337	14,940,876	33,079,213	3,307,921
2. Forest degradation	27,346,395	24,436,968	51,783,363	5,178,336
3. Reforestation	-33,882,374	-43,770,811	-77,653,185	-7,765,319
4. Forest restoration	-8,137,271	-14,388,328	-22,525,599	-2,252,560
5. Total emissions	**45,484,732**	**39,377,844**	**84,862,576**	**8,486,258**
6. Total removals	**-42,019,645**	**-58,159,139**	**-100,178,784**	**-10,017,878**
7. Net emissions	**3,465,087**	**-18,781,295**	**-15,316,208**	**-1,531,621**

8.4 Estimated Reference Level

Historical emissions associated with deforestation and forest degradation and removals generated by reforestation and forest enhancement are estimated for reference period for the ER Program. The Table 29 below summarizes the estimated reference level (see details at Annex 15: Reference Level Report).

Table 8.7: The estimated ER Program Reference level

ERPA term year *t*	Average annual historical emissions from deforestation over the Reference Period ($tCO_{2\text{-}e}$/yr)	If applicable, average annual historical emissions from forest degradation over the Reference Period ($tCO_{2\text{-}e}$/yr)	If applicable, average annual historical removals by sinks (reforestation) over the Reference Period ($tCO_{2\text{-}e}$/yr)	If applicable, average annual historical removals by sinks (restoration) over the Reference Period ($tCO_{2\text{-}e}$/yr)	Reference level ($tCO_{2\text{-}e}$/yr)	
					Emissions	Removals
2017	3,307,921	5,178,336	-7,765,318	-2,252,560	8,486,258	-10,017,878
2018	3,307,921	5,178,336	-7,765,318	-2,252,560	8,486,258	-10,017,878
2019	3,307,921	5,178,336	-7,765,318	-2,252,560	8,486,258	-10,017,878
2020	3,307,921	5,178,336	-7,765,318	-2,252,560	8,486,258	-10,017,878
2021	3,307,921	5,178,336	-7,765,318	-2,252,560	8,486,258	-10,017,878
2022	3,307,921	5,178,336	-7,765,318	-2,252,560	8,486,258	-10,017,878
2023	3,307,921	5,178,336	-7,765,318	-2,252,560	8,486,258	-10,017,878
2024	3,307,921	5,178,336	-7,765,318	-2,252,560	8,486,258	-10,017,878
2025	3,307,921	5,178,336	-7,765,318	-2,252,560	8,486,258	-10,017,878
2026	3,307,921	5,178,336	-7,765,318	-2,252,560	8,486,258	-10,017,878
Total	**33,079,213**	**51,783,363**	**-77,653,185**	**-22,525,599**	**84,862,576**	**-100,178,784**

[77] As footnote above. The detailed calculations are available in a separate spread sheet

8.5 Relation between the Reference Level, the development of a FREL/FRL for the UNFCCC and the country's existing or emerging greenhouse gas inventory

The Reference Level prepared for the NCC is consistent with Vietnam's Submission on Reference Level for REDD+ Results Based Payment to the UNFCCC. The consistencies include the methodology for RL/REL construction such as forest definition, stratification, carbon pools, gases, generation of Emission Factors and Activity Data, and use of NFIMAP dataset etc. The construction of Vietnam's Reference Level for the UNFCCC is based on aggregated emissions and removals estimated for eight agro-ecoregions. However, the Reference Level for the NCC is based on a sum of emissions and removals of six provinces in the NCC region. The Reference Level for the NCC can be considered as a part of Vietnam's Reference Level for the UNFCCC. The difference between such Reference Levels is the reference period. The Vietnam's Reference Level for UNFCCC is from 1995 – 2010, however, for the NCC region it is 2000 – 2010. Such difference is derived from the different requirements for the Reference Level of the UNFCCC and FPCF.

With regards to the National Greenhouse Gases Inventory (GHGI), the Reference Level relates to the GHG inventory in LULUCF, particularly the Initial Biannual Updated Report (BUR) of Vietnam for 2010. To date, Vietnam has prepared national a GHG inventory for 1994, 2000 and 2010. The estimation of emissions and removals in national GHGI. Reference Level for NCC is more consistent with BUR in terms of forest definition, carbon pools and gases. However, the AD used in the BUR is mainly based on national statistics. Vietnam is in the process of preparing the second BUR and the preparation of Reference Level can contribute to an improvement of estimating the emissions and removals in LULUCF by using the best available forest data generated from remote sensing information and allometric equations for biomass estimation.

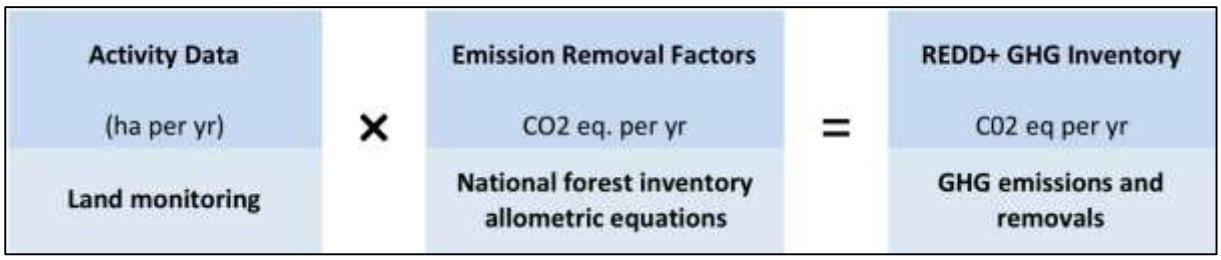
9 APPROACH FOR MEASUREMENT, MONITORING AND REPORTING

9.1 Measurement, monitoring and reporting approach for estimating emissions occurring under the ER Program within the Accounting Area

9.1.1 Approach for estimating emissions and/or removals

The approach for estimating emissions/removals follows the IPCC guidelines, multiplying the activity data (AD) with the emission/removal factors (EF/RF) (Figure 9.1)[78].

Figure 9.1: Approach for estimation of emissions/ removals



9.1.2 Monitoring activity data for forests using remote sensing

Activity data (AD), or the extent over which a human activity occurs, are data on the area of a Category that potentially results in GHG emissions or removals, over a given period of time. The IPCC (2006) describes three overall approaches for the representation of land use and Indicator 14.2 in the FCPF Methodological Framework Document requires that deforestation is determined using Approach 3. To be consistent with this indicator, Approach 3 is therefore applied in the Accounting Area to monitor all REDD+ activities and is the most informative and applicable for measurement monitoring and reporting (MMR) due to tracking of land-use conversion in a spatially explicit data format (see details at Annex 16 – MRV Report).

Generating forest cover maps

Currently, the National Forest Inventory and Statistics (NFIS) Project has been carrying out in Vietnam since 2011. This project will generate forest cover maps (FCMs) at 1:10,000 for Vietnam and to date 40 provinces (including Thanh Hoa, Nghe An and Ha Tinh provinces) have FMCs. The FMCs of the remaining twenty provinces will be completed in 2016. The status of provincial forest statistics maps for the six NCC provinces is given in Table 9.1 below:

Table 9.1: Status of provincial FCMs of the six NCC provinces

Province	Year of baseline FCM	Note
Thanh Hoa	2014	Completed
Nghe An	2014	Completed
Ha Tinh	2012	Completed
Quang Binh	2015	On-going
Quang Tri	2015	On-going
Thua Thien - Hue	2015	On-going

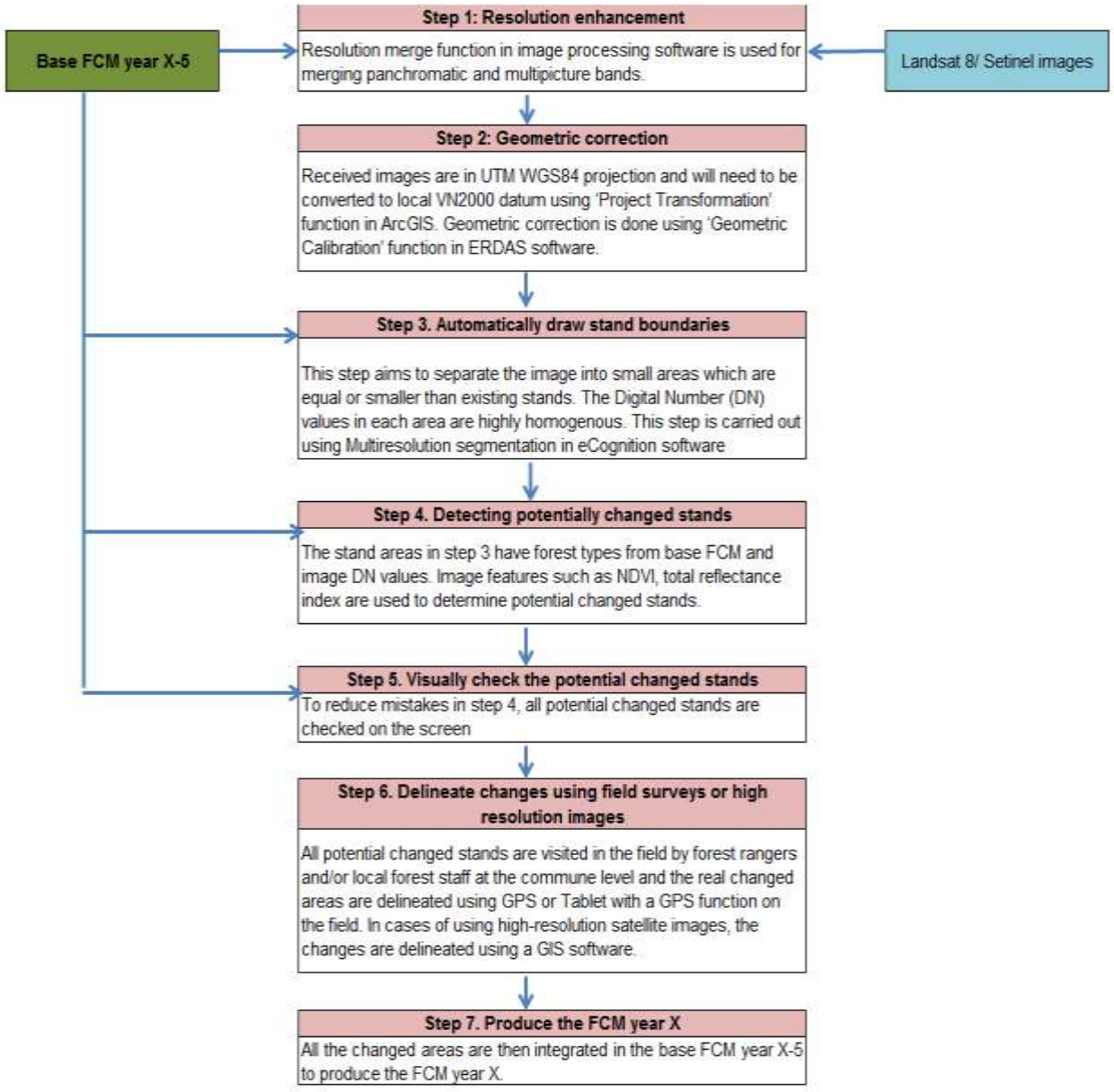
However, the approach for generating the FCMs under the NFIS Project is not consistent with the approach that has been used for generating the historical FCMs 2005-2010-2015 for FREL/FRL setting. The main

[78] The forest definitions, stratifications, REDD+ activities, carbon pools and gases to be monitored, change matrix are all standardised and follow those already described in Section 8.

inconsistency is that the approach under NFIS allows two ways of estimating the volume of forest stand: (1) using randomly located sample plots and (2) using a correlation relationship between forest stand volume and satellite imagery indexes. Recently, a preliminary analysis of FCM year 2010 (produced by FIPI under NFIMAP Cycle IV) and FCM year 2012 (produced by Vietnam National Forest University under NFIS) in Ha Tinh province shown a lot of changes during the period 2010-2012. These changes are likely artifacts due to the inconsistency of the approach used. Therefore, the FCMs produced under the NFIS are not suitable for generating AD under the MMR of the ER-P.

To maintain the consistency with historical FCMs used in FREL/FRL setting, the approach under the MMR of the ER-P to generate FCM year X is proposed as follows: (1) using medium resolution remote sensing imagery to identify the potential forest change areas compared to the base FCM year X-5; (2) using ground surveys and/or high resolution remote sensing imagery to delineate all identified areas of changes; (3) reference all final forest strata boundaries to the boundaries existing in the base FCM year X-5, with the 2015 forest cover map as the original basis, to produce the FCM year X. The following Figure 9.2 summarises the processing steps applying Approach 3 for generating the FCM year X based on medium-resolution satellite images and the FCM year X-5.

Figure 9.2: Approach for generation of the FCM year X from base FCM year X-5



All forest and bare land stands in the baseline map are examined based on medium resolution satellite images such as Landsat 8 and/or Sentinel. The image features of each stand are calculated for examination. For example, low homogeneity value in a stand indicates a potential change of forest type in the stand; high normalized difference vegetation index (NDVI) value in the bareland stand indicates a potential change from bareland to forest etc. Currently Landsat 8 and Sentinel images are considered to be the most suitable[79].

Mapping using GPS or Tablet would take a long time and involve high expenditure in large changed areas. Therefore, buying high resolution images for mapping is considered to be more cost effective. There are some kind of high resolution images such as VNREDSat-1, SPOT-6, and SPOT-7 which could also be used.

Generating a forest and land cover change map and matrix

By using the above procedure, FCMs will be generated for each province in the NCC region from 2020 with a 5-year interval in a manner consistent with the methods used to generate the forest cover maps used in 2005-2010-2015 for the Reference Level. The provincial forest and land use change map will be generated by intersecting the provincial FCMs in year X with the corresponding provincial FCMs in year X-5 for all the NCC provinces. They will then be combined to generate a regional NCC forest and land cover change map. A matrix of changed area (i.e., AD) will be extracted from this regional forest and land use change map. This matrix contains basic information for estimating emissions and removals for each of the REDD+ activities. Time series change sequences for individual parcels will be tracked over time to improve the classification of the Activity Data (deforestation, degradation, reforestation, etc.) and to enable tracking of Reversals. In particular, land parcels which transition from forest to non-forest, then later from non-forest to plantation, will not be counted for FCPF purposes as Reforestation/Afforestation; they will be tracked as a separate forest-to-plantation class, and the conversion from non-forest to plantation on these land parcels will not counted as Carbon Removals.

Accuracy assessment of AD

As described above, AD is generated from overlaying two forest cover maps at two different dates. Such maps are subject to interpretation errors and the role of the accuracy assessment is to characterize the frequency of errors for each land cover change class in each map.

Different components of the monitoring system affect the quality of the area estimates, including:

- Quality and suitability of satellite data (i.e., in terms of spatial, spectral, and temporal resolution);
- Radiometric/geometric preprocessing (correct geo-location);
- Cartographic standards (i.e., land category definitions and minimum mapping unit);
- Interpretation procedure (algorithm or visual interpretation);
- Post-processing of the map products (i.e., dealing with no data, conversions, integration with different data formats); and
- Availability of reference data (e.g., ground truth data) for evaluation and calibration of the system.

The method for assessing the accuracy of a map uses *independent reference data* (of greater quality than the map) to obtain—by the Accounting Area—the *overall accuracy, errors of omission* (excluding an area from a category to which it does truly belongs), and *errors of commission* (including an area in a category to which it does not truly belong).

Reference data should be distinguished from the *training data* and must be acquired using a probability sampling design. The method for obtaining reference data is based on interpretation of high resolution satellite images such as SPOT-5,6,7 or equivalent which were taken during the ERPA with the assistance of the Open Foris Collect Earth software.[80] A stratified sampling method will be used to randomly generate the observation points. At a maximum, there will be 36 classes (including 30 land cover change classes and 6

[79] The Landsat 8 satellite image include a spatial resolution of 30 m, image size 180 x 180 km, and revisit cycle of 16 days. The characteristics of Sentinel satellite images include spatial resolution of 10m, a swath width of 290km and a five day revisit cycle. Both types of satellite images are free of charge.
[80] Available at http://www.openforis.org/tools/collect-earth.html.

stable classes) in the land cover change map. The number of observation points is estimated to be 50 points per class, or 1,800 points for all 36 classes.
The method described in Olofsson et al. (2013)[81] and Olofsson et al. (2014)[82] will be applied to build a confusion matrix, estimate un-biased areas per each class, derive errors of area estimates as well as calculate the user's accuracies per class, producer's accuracies per class and overall accuracy.

9.1.3 Estimating emission removal factors using forest inventory

Sampling design

After the completion of Cycle IV, of NFIMAP, Vietnam received support from FAO-Finland through the "Support to National Assessment and Long-term Monitoring of the Forest and Trees Resources in Vietnam (NFA)" Project to improve the sampling design of the NFIMAP to be implemented in the 2016-2020 and subsequent cycles. The NFA Project has successfully developed an improved sample plot system that maintains the consistency with the old sample system but is more efficient. This improved sampling design was reviewed by international experts from United States Forest Service and the World Bank and was highly regarded. Forest Inventory and Planning Institute is now preparing necessary steps for approving the improved sample plot system to be implemented in the 2016-2020 and subsequent cycles. These results will be available for purposes of updating Emission/Removal Factors during the FCPF performance period. Since this is a systematic sample across the landscape, it will capture any changes in C removals occurring as a result of FCPF and other related activities, in proportion to the area of the activities across the landscape. If this improved sample plot system is approved, it will also function as part of the national Measurement, Reporting and Verification (MRV) system for REDD+. Therefore, for the MMR system in the NCC region be consistent with the emerging national MRV system, the improved sample plot system proposed by the NFA Project is selected for generating the EFs/RFs for the MMR system in the NCC region. Although very unlikely, in the case the improved sample plot system is not approved, it will still be implemented in the NCC region for the purpose of MMR for the ER-P.

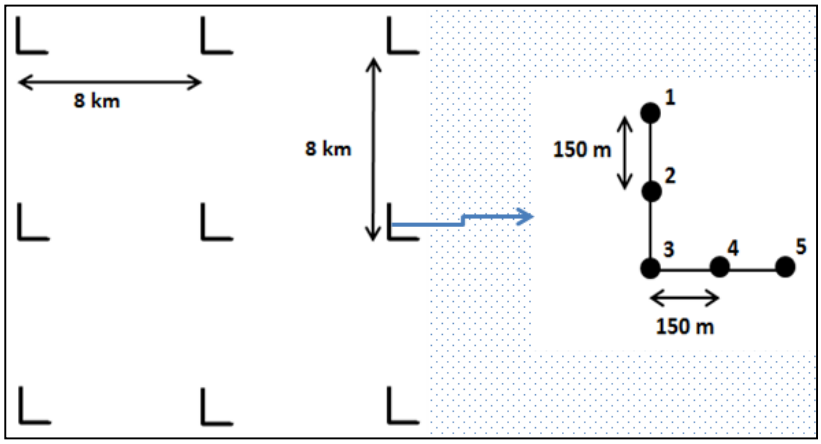
The sample plots system is designed by the systematic method covering whole six provinces (Thanh Hoa, Nghe An, Ha Tinh, Quang Binh, Quang Tri and Thua Thien Hue). On each intersection (grid point) one cluster is established (see Figure 9.3)

Main parameters of the sampling design are:

- The distance between the clusters is 8km x 8km;
- The cluster is in L shape;
- The number of the sample plots in one cluster is five; and
- The distance between the sample plots is 150m.

[81] Olofsson, P.; Foody, G.M.; Stehman, S.V.; Woodcock, C.E. Making better use of accuracy data in land change studies: Estimating accuracy and area and quantifying uncertainty using stratified estimation. Remote Sens. Environ. 2013, 129, 122–131.
[82] Olofsson, P.; Foody, G.M.; Herold, M.; Stehman, S.V.; Woodcock, C.E.; Wulder, M.A. Good practices for estimating area and assessing accuracy of land change. Remote Sens. Environ. 2014, 148, 42–57.

Figure 9.3: Shape and distance between clusters sample plots



The numbers of clusters and plots per provinces are provided in Table 9.2. The precise locations of the sample plots will be kept confidential, so as to avoid possible manipulation of the results over time.

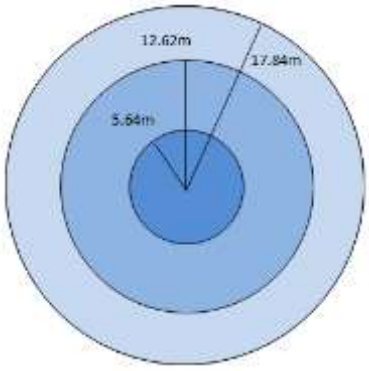
Table 9.2: The number of clusters and plots by provinces

No	Province	Number of clusters	Number of plots
1	Thanh Hoa	179	895
2	Nghe An	252	1,260
3	Ha Tinh	87	435
4	Quang Binh	125	625
5	Quang Tri	72	360
6	Thua Thien Hue	74	370
Total		**789**	**3,945**

Sample plot design

One sample plot consists of three concentric circular sub-plots with radiuses of 5.63 m (SP1), 12.62 m (SP2) and 17.84 m (SP3), respectively (Figure 9.4). The distance mentioned here refers to horizontal distance.

Figure 9.4: Sample plot design



Sub-plot with the area of 100 m^2 and radius of 5.64m (SP3): Measuring trees with DBH ≥ 6 cm; measuring bamboos with DBH ≥ 2 cm

Sub-plot with area of 500m^2 and radius of 12.62m (SP2):
- Measuring trees with DBH ≥ 20cm
- Measuring dead, stump-cut trees;
- Measuring shrubs, ground cover vegetation
- Measuring climber with D ≥ 2cm

Sub-plot with area of 1,000m^2 and radius of 17.84m (SP1):
- Measuring all trees with the diameter at the height of 1.3m (DBH) ≥ 40cm

Quality assurance/Quality control (QA/QC)

A Quality Assurance/Quality Control (QA/QC) protocol will be applied to field inventory. The QA/QC teams controls quality of measurements of the plots measured by other field teams. This controlling measurements

are conducted within 1–2 weeks after the measurements by the initial team. The purpose of QA/QC is to ensure that the field teams have conducted measurements according to the instructions and in a correct way. Furthermore, results of control measurements can be used for training purposes, that is, to find out issues unclear to the teams after training.

The results of the control measurements are reported by using a control measurement checklist. The QA/QC team hands over the checklists to the field work manager. Feedback is given both to the field team and field work manager who is in charge of field work. The QA/QC team shall detect and observe shortcomings and errors in measurements conducted by normal field teams in the feedback session. Differences in measurements between QA/QC team and field team are stated, and unclear issues are clarified. It must be taken into account that every field team is controlled.

The reports can be used for evaluating reliability of the field data. Measurements that were found to be difficult shall be emphasized in future training. To evaluate the reliability of the field data, data quality objectives need to be defined. A full QA/QC protocol, including data quality objectives, for field inventory of the improved sample plot system is going to be developed in 2016-2017. Therefore, the data quality objectives for field inventory in the MMR of the ER-P will be defined at a later stage to be consistent with the national system.

9.1.4 Calculation of emissions reduction and/or removals enhancement

The method for estimating EFs/RFs from inventory data should be consistent with that in Reference Level setting. This means that the allometric equations as well as the R/S ratio and the Carbon Fraction factor used should be the same with those used in Reference Level setting. Based on AD generation and estimation of EFs/RFs, the emissions and removals are estimated using the following formula:

$$\mathrm{E/R} = \sum_{i=1}^{n}\sum_{j=1}^{n} AD_{ij} \times EF/RF_{ij}$$

Where *n* is the number of classes; AD_{ij} is the AD for land use change from land cover type *i* to land cover type *j*; and EF/RF_{ij} is the emission/removal factor for land use change from land cover type *i* to land cover type *j*.

The emissions reductions and/or removal enhancements are calculated by subtracting the emissions/removals calculated above from the forest reference levels.

Uncertainty assessment

The same method for uncertainty assessment in FREL/FRL setting (see Section 8.4) will be used to assess uncertainty of emissions reduction and/or removals enhancement. The Monte Carlo method can be used for assessing uncertainty of the estimates of ER (following indicator 9.2 in the FCPF Methodological Framework Document) in needs to be consistent to the approach to FREL/FRL setting.

Table 9.3: Data and parameters to be measured

Parameter:	**ADij (1 ≤ *i* ≤ 6; 1 ≤ *j* ≤ 6)**
Description:	Area of conversion from land class *i* in year x-5 to land class j in year x
Data unit:	Hectare per year
Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international) and if and how the data or methods will be approved during the Term of the	Provincial forest and land cover map year x-5 for the six provinces in the NCC region. Provincial forest and land cover map year x for the six provinces in the NCC region. Intersect provincial forest cover maps year x-5 with provincial forest cover maps x to generate forest and land cover change maps. Combine provincial forest and land use change maps of six NCC provinces to generate the regional forest and land cover change map for the NCC region. Generate the matrix of changed area (i.e., AD) from the regional forest and land cover change map. Generate the matrix of changed area (i.e., AD) from the regional forest and land

ERPA.	cover change map.
Frequency of monitoring/recording:	The FCM set to be updated annually and to meet requirements of the program AD can be monitored annually
Monitoring equipment:	Combination of remote sensing images and field drawing using GPS or tablet. Using medium resolution satellite images (e.g., Sentinel and/or Landsat) to detect the potential changes annually. Using field drawing with GPS or tablet to update the provincial forest cover maps annually.
Quality Assurance/Quality Control procedures to be applied:	Standard procedure for generating the forest cover map Accuracy assessments of the forest cover maps year x and year x-5 are based on interpretation of high resolution satellite images (e.g., SPOT-5,6,7) using stratified sampling and applies the method described in Olofsson et al. (2014) to calculate the overall accuracies.
Identification of sources of uncertainty for this parameter:	Quality of satellite images Interpretation error of the forest cover maps Boundary delineation error (due to error of GPS, tablet)
Process for managing and reducing uncertainty associated with this parameter:	Following standard procedure for classification Using high accuracy GPS or tablet Conducting accuracy assessment. If the overall accuracy of forest cover map is below 70%, conduct additional field drawing to increase the accuracy of the maps
Any comments:	

Parameter:	**EFij/RFij ($1 \le i \le 6$; $1 \le j \le 6$)**
Description:	Emission/Removal factors for conversion of land class *i* to land class *j*.
Data unit:	tCO_2e/ha
Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international) and if and how the data or methods will be approved during the Term of the ERPA.	Plot measurement data of improved NFIMAP will be used together with country-specific allometric equations and IPCC default values for R/S ratio and Carbon fraction factor to estimate average carbon stocks per forest type per agro-ecological region. The EFs/RFs resulting from conversion of land types are calculated as the differences of carbon densities between two land types.
Frequency of monitoring/recording:	Every five years
Monitoring equipment:	GPS, tree diameter measurement equipment, tree height measurement equipment, distance measurement equipment
Quality Assurance/Quality Control procedures to be applied:	The quality assurance/quality control protocol for field inventory developed for the improved NFIMAP will be applied.
Identification of sources of uncertainty for this parameter:	Measurement errors, sampling errors, allometric equation error, errors of IPCC default values (R/S ratio, Carbon fraction factor)
Process for managing and reducing uncertainty associated with this parameter:	Following QA/QC protocol for field inventory. Using equipment with high accuracy.

9.2 Organizational structure for measurement, monitoring and reporting

9.2.1 Organizational structure, responsibilities and competencies

Organization structure and responsibility of the line organizations and agencies are provided in Figure 9.5. The MMR is an integral part of the overall M&E system for the ER-P, other issues, for example, safeguard monitoring is covered separately to the MMR, but is also integrated into the M&E system (for monitoring of safeguards see Section 14, 14.2). Local communities would be encouraged to participate in monitoring activities under Article 32.2 of the current Forest Protection and Development Law (2004) specifies that "Forest owners shall have to make forest statistics and inventory and monitor forest resource developments

under the guidance of, and submit to the inspection by, specialized forestry agencies of the provinces…". Therefore, local communities can participate in the monitoring system[83] either:

- Directly, as forest owners (individual households or collectively as village communities under community forest management); or
- Indirectly as subcontracted service providers to larger state-managed forest owners (e.g. state forest companies or protected area management boards).

The role of local communities in the implementation of the proposed ER-P forest monitoring system are as follows:

- Identifying and monitoring the key drivers of forest cover change, forest degradation, and carbon stock enhancement across the landscape;
- Assisting in field data collection for estimating forest carbon stocks and EFs/RFs;
- Assisting in accuracy assessments of (spatial and non-spatial) activity data generated for REDD+, for verifying or validating remote sensing products; and
- Accessing AD, EF and emission reduction information from the national REDD+ information system and conducting basis analysis to inform refinement of management interventions.

Participatory forest monitoring under the proposed ER-P will be integrated into a modified annual monitoring of forest and forestry land program implemented by the FPD, which has the mandate and human resource capacity (with forest ranges at all levels of administration, from national to commune level), to engage with forest owners and local communities.

Figure 9.5: Responsibility of the relevant Ministries, agencies and localities

1) Ministry of Agriculture and Rural Development (MARD)
MARD acts as manager of the ER P establishes a central PMU to manage the implementation of the ER-P

2) Vietnam Administration of Forestry (VNFOREST)
The VNFOREST will conduct the checking and supervision of the forest monitoring process in the Accounting Area, including:
*Cooperate with the ER-P in selecting suitable national and international consultants; *Connect with People's Committees, branches and agencies of provinces in MMR implementation at provincial level; *Organize annual and final acceptance quantity and quality checks of the MMR product and receive outcomes and register carbon certificates for the Accounting Area *Updates the central forest database annually.

3) Program Management Unit (PMU)
Provide support to MARD in activities such as
*Approval of the MRV implementation plans in six provinces, review and selection of technical issues, standard procedures including field survey manual, field data collection quality control, biomass calculation method, and technical guidelines of each specific work step *Support MARD in for the approval of cost estimates of each work item and in identification of financial resources *Select suitable national service providers and national consultant teams for implementing change detection using satellite imagery for the ER-P, field verification and update of forest cover maps, accuracy assessment of the land cover change map, calculation of emission reduction, uncertainty assessment of emission reduction results *Select suitable international consultants for validation of emission reduction results

4) Provincial People Committees and Provincial Program Management Units
Provincial People Committees (PPCs) of the six provinces in the Accounting Area will be the owner of the provincial program. Each PPC will establish a Provincial Program Management Unit (PPMU) to manage all the work in that province. The PPMU will:
*Support the PPCs in establishing provincial MMR teams to verify the potential changes identified by remote sensing and update the confirmed changes to the provincial forest database *Cooperate with the PMU to develop resource plans (human resource and cost) for MRV implementation at the provincial level

[83] Also following Criterion 16 of the Methodological Framework December 20 2013.

5) Forest Inventory and Planning Institute (FIPI)
FIPI has been implementing the NFIMAP and this data was used to develop the FREL/FRL for the ER-P it has been the main agency to implement the forest inventory step of the National Forest Inventory and Statistics (NFIS) for 2011-2016 and has a mandate to implement the improved NFIMAP in the future, it is therefore expected that FIPI will implement the following work:
*Develop technical guidelines including a field data collection and survey manual; satellite imagery processing manual; QA/QC guideline and forms; field data management and processing manual *Conduct a forest change detection using remote sensing *Conduct a field inventory and quality control *Conduct training, technological transfer for provincial MMR teams on field verification and update of forest cover maps; *Provide potential national consultants on estimating emission reduction for the Accounting Area, uncertainty assessment of emission results

6) Support from central specialized agencies
The central specialized agencies such as Vietnam Academy of Forest Science (VAFS) will act as a potential service provider for the following tasks:
*Conduct a quality assurance for the field inventory implemented by FIPI *Conduct an accuracy assessment of land cover change map 2015-2020 in the Accounting Area *Provide potential national consultants on estimating emission reduction for the Accounting Area, uncertainty assessment of emission results

7) Local communities
Local communities are expected to participate in the monitoring, pilots are now in place in three provinces in the NCC and they are planned for all provinces to introduce the commune PFMS tablet based forest monitoring system that will link to FORMIS

9.2.2 Methods and standards for generating, recording, storing, aggregating, collating and reporting data on monitored parameters

As part of the MMR System, an information system will be established. This information system will have a GIS database that store all the maps and data collected by the MMR as well as information about the methods, and a web-based information portal to provide information to stakeholders, users and reviewers. Detailed information on key data and methods to enable the reconstruction of the Reference Level, and the reported emissions/removals are documented and made publicly available online via this web-based portal. The following information will be made publicly available online:

- Forest definition;
- Definition of classes of forests;
- Choice of activity data, and pre-processing and processing methods;
- Choice of emission/removal factors and description of their development;
- Estimation of emissions/removals, including accounting approach;
- Disaggregation of emissions by sources and removal by sinks;
- Estimation of accuracy, precision, and/or confidence level, as applicable;
- Discussion of key uncertainties;
- Rationale for adjusting emissions, if applicable; and
- Methods and assumptions associated with adjustment, if applicable.

In addition, the following spatial information, maps and/or synthesized data will be displayed publicly:

- Accounting Area;
- Activity data (e.g., forest-cover change or transitions between forest categories);
- Emission/Removal factors;
- Average annual emissions over the Reference Period;
- Adjusted emissions, if applicable; and
- Any spatial data used to adjust emissions, if applicable.

In Vietnam, the Development of Management Information System for Forestry Sector – Phase I (FORMIS I) Project (2009-2013) has developed a system with adequate structure and capacity for integrating and sharing data through standard interfaces. The FORMIS system comprises of three sub-systems: (1) the databases for storing quantitative and qualitative data collected and managed by agencies inside and outside of the FORMIS system; (2) the platform for providing capacity for integration of existing and new data and applications, security, exposing data and business functionalities in standardized manners; and (3) the content delivery layer for including different channels such as the portal for delivering the information to the target users and for accessing various applications. However, due to time limitation, only a limited amount of data has been put into the databases of the FORMIS system to date. The Development of Management Information System for Forestry Sector – Phase II (FORMIS II) project has started in May 2013 and will last until 2018. FORMIS II aims to integrate most of forest resources data including the results of the NFIS 2011-2016 into the system developed by FORMIS I. If the proposed ER-P is approved, the Government of Vietnam will give priority to integrate forest-related data of the provinces in the Accounting Area into the FORMIS system and use FORMIS as the information system of the ER-P.

9.2.3 How the proposed Monitoring Measurement and Reporting system builds upon existing systems

For the ER-P to be performance-based, a MMR is needed to estimate ERs generated by the ER-P. To be consistent with Decision 11/COP19, the MMR will be built based on existing forest monitoring systems.

As mentioned in Section 9.1.5, the proposed MMR will rely on an approach which relies on the use of medium resolution satellite imagery and the base FCM year X-5 to generate the AD. The improved NFIMAP proposed by the NFA Project will be used to generate EFs/RFs for the MMR of the ER-P.
The ER-P, when approved, will be nested into the national REDD+ implementation to avoid double accounting of emission reduction and/or removal enhancement at the national level. This means that the FREL and/or FRL of the Accounting Area will be nested into the national FREL and FRL to be submitted to the UNFCCC. Similarly, the emission reduction and/or removal enhancement resulting from REDD+ activities in the Accounting Area will be nested into the national REDD+ performance to be reported to UNFCCC as a mitigation action in a technical annex of Biennial Report Updates.

Therefore, in addition to reporting the performance of the ER-P to FCPF Carbon Fund following required template, the ER-P also needs to report biennially its performance to the Vietnam REDD+ Office (VRO), which is the focal point for national REDD+ implementation and has the mandate to oversee and coordinate all REDD+ projects/programs in Vietnam, to be included in Biennial Report Updates and submitted to UNFCCC. Information to be reported to VRO includes:

- FREL and/or FRL of the Accounting Area, prepared on the basis of agreed guidelines (Decision 12/CP.17 and the FCPF Methodological Framework Document), IPCC methodologies (including the 2003 Good Practice Guidance for Land Use, Land Use Change and Forestry), and other relevant information (historical data, information on methods, approaches, models and assumptions used, pools/gases, and activities included in FREL and/or FRL and the reasons for any omission);
- Information on forest-related emissions/removals resulting from REDD+ activities in the Accounting Area (prepared following agreed guidelines in Decision 12/CP.17 and Decision 13/CP.19 and IPCC methodologies) and other relevant information (information on methods, approaches, models and assumptions used, pools/gases, and activities included and the reasons for any omission); and
- Information on how safeguards are respected and addressed (Decision 1/CP.16) in the ER-P.

The biennial reports on REDD+ performance in the Accounting Area to VRO needs to ensure that:

- There is consistency in methodologies, definitions, comprehensiveness, and information provided between the assessed reference level and the results of the implementation of the activities;
- The data and information provided in the report is transparent, consistent, complete and accurate, and adherence to the guidelines; and
- The results are accurate, to the extent possible.

9.3 Relation and consistency with the National Forest Monitoring System

Currently, Vietnam's national forest monitoring system consists of three elements:

1) National Forest Inventory, Monitoring and Assessment Program (NFIMAP)

Based on a series of Prime Minister's Decisions, NFIMAP has been implemented by FIPI since 1991. So far, four 5-year cycles (Cycle I: 1991-1995; Cycle II: 1996-2000; Cycle III: 2001-2005; and Cycle IV: 2006-2010) have been completed. It is, however, not being implemented for the period 2011-2015. This is because a NFIS (see below) is being implemented during this period. The Program uses remote sensing in combination with ground surveys to monitor forest resources changes. Each cycle has generated provincial forest cover maps at the scale of 1:100,000; regional forest cover maps of six forestry regions at the scale of 1:250,000 and a national forest cover map at the scale 1:1,000,000. Cycle IV has also generated commune-level (scale 1:25,000) and district-level (scale 1:50,000) forest cover maps. Data from a permanent sample plot system were also collected in each cycle. The forest cover maps and sample plot data of NFIMAP are used for FREL/FRL setting in the Accounting Area (see Section 8). The NFIMAP is currently under review for improvement and is expected to be restarted from 2016-2020 and subsequent cycles.

2) National Forest Inventory and Statistics Projects

Based on Prime Minister's Decisions, several NFIS Projects have been carried out in the past and the current NFIS Project is being implemented during 2011-2016. In the latest NFIS Project, there are two stages in generating the forest cover maps: (i) "Forest survey stage" - interpretation of RS imagery will be used in combination with ground surveys to generate non-cadastral-dossier-based forest cover maps (which are called the "forest inventory maps"); (ii) "Forest statistics stage" - the forest inventory maps will be used as inputs to overlay with the cadastral-based forest owner boundary maps to generate the cadastral dossier-based forest cover maps (which are called the "forest statistics maps"). The forest statistics maps will be printed out as a deliverable to each forest owner for verification and revised as necessary. As the generation of forest statistics maps employs a participatory method, higher accuracy is expected compared to the forest inventory maps.

The scales of forest cover maps are 1:10,000 or 1:25,000 for the commune level, 1:50,000 for the district level, and 1:100,000 for the provincial level. During the forest inventory stage, a system of sample plots is inventoried to estimate the mean volume stocks for each forest type. These sample plot data can also be used to estimate the mean carbon stocks in AGB pool for each forest type. The main agency to implement the forest inventory stage is FIPI under MARD. For the forest statistics stage, the main actors are provincial authorities and local forest owners with the technical support from national institutions such as FIPI, Vietnam National Forest University and Vietnam Academy of Forest Sciences.

3) Annual Forest and Forestry Land Monitoring and Reporting Program

This Program has been being conducted by FPD under VNFOREST since 2001 following the Directive No. 32/2000/CT-BNN-KL dated 27/03/2000 by MARD. Based on forest baseline maps of the latest NFIS Project, forest rangers collect information on changes in the communes under their responsibility, and then update these changes in a database. These updates are usually based on reports from forest owners and do not requires remote sensing imagery or field surveys. Data are then aggregated through the FPD system from commune to district to province up to the central level. The Program has generated a dataset on area of forest and forestry land, broken down by drivers, forest owners, forest functions, and administrative units. However, this dataset still has some limitations, including: (i) the data are just for forest area; there is no data on forest stocks; and (ii) the data on area changes cannot be tracked spatially as they are not associated with maps.

A national forest monitoring system for REDD+ is being developed based on the above programs/projects and will allow sub-national forest monitoring. Provincial forest cover maps will be generated every 5 years, starting from 2020, based on medium resolution satellite imagery with the previous map as a base for generating AD. Since the Accounting Area of the ER-P consists of six provinces, the ER-P forest monitoring system will be an aggregation of all data generated by the annual forest monitoring system operating in each province so it is fully consistent with the evolving national forest monitoring system for REDD+.

At the national scale, a revised NFIMAP will be operationalized to collect data on changes in forest growing stock. At the minimum, the ER-P MMR will apply all technical specifications of the revised NFIMAP. It will only consider applying higher technical specifications (e.g., increasing the number of sample plots for achieving higher accuracy) than those in the revised NFIMAP if it is more cost-effective (i.e., the benefits received from reduction of ERs set aside for uncertainty when using lower conservativeness factor is significantly larger than the cost for achieving lower uncertainty). To be consistent, the ER-P forest monitoring system will use the same forest stratification for carbon accounting under REDD+ as with Forest Reference Level development.

10 DISPLACEMENT

10.1 Identification of risk of Displacement

The potential risks of displacement of emissions from the proposed ER Program activities are summarized below in Table 10.1. The overall potential risk of domestic displacement is characterized as low, while the risk of international displacement is characterized as medium, but decreasing to low over time.

Table 10.1: Summary of possible displacement risk

Driver of deforestation or degradation	Risk of Displacement	Explanation/ justification of risk assessment
Domestic		
Planned conversion to agricultural land	Low	An increase in commodity prices (particularly latex and cassava/ starch) could increase land demand, and there is some risk that the ER Program could shift forest conversion to regions outside the accounting area. This risk is considered low because national policies are in place to reduce the conversion of natural forests.
Unplanned forest conversion to agriculture (shifting cultivation)	Low	Shifting cultivation and encroachment tend to be localized drivers of deforestation, and the ER Program is not expected to lead to displacement of people outside the accounting area. Even if local displacement of farmers had been expected, these would mostly have occurred within the accounting area, as the western boundary consists of national borders, and the eastern boundary is a coastline. Furthermore, the differences in ecological conditions across agro-ecological regions limit displacement of conversion for small-scale agriculture, as the crops associated with encroachment outside of the NCC are mainly coffee and pepper which are not significant crops in the NCC. The ER Program's design will further mitigate the risk of unplanned conversion to agriculture (see Table 10.2 below).
Planned and unplanned natural forest conversion to planted forest	Low	The ER Program is unlikely to lead to a displacement of forest conversion to timber plantations. While the ER Program is expected to reduce conversion of natural forests to timber plantations, it will also support the development of plantations on bare lands, thereby mitigating its impact on timber supply. Also, nationally there has been a tightening of regulations on conversion of natural forests to other land uses. This includes the national logging ban of 2014.
Planned and unplanned conversion related to infrastructure	Low	Planned and unplanned conversion of forests related to infrastructure development is comparatively small overall and tends to be highly localized. Also, the ER Program will support local authorities in preparing proper forest conversion plans for infrastructure development.
Unsustainable legal and illegal selective logging for commercial and subsistence purposes	Low	Unsustainable legal logging is being addressed at the national level through the implementation of the logging ban of 2014 and illegal logging is being addressed by continuing improvement of national forest law enforcement. The ER Program's design will further mitigate this risk (see Table 10.2 below).
International		
Unsustainable legal and illegal selective logging for commercial and subsistence purposes (International displacement mainly Lao and Cambodia)	Medium decreasing to Low over time	Vietnam produces relatively little high-quality round wood, and its forest products industry imports 40–50% of its raw materials from Malaysia and Indonesia. By further reducing domestic supplies – through implementation of the national logging ban, and through activities that reduce illegal logging in the NCC – the ER Program may lead to increased imports from Cambodia and especially from Lao. Where these increased imports are sourced unsustainably, this would lead to an international displacement of emissions. A number of key policy development as well as aspects of the ER Program's design will reduce this risk over time (see Table 10.2 below).

Note: Categorized as high, medium or low

10.2 ER Program design features to prevent and minimize potential Displacement

Table 10.2: ER Program Design Features to Mitigate Displacement Risks

Driver of deforestation or degradation	Displacement risk mitigation measures
Planned conversion to agricultural land	The Program is expected to make available some underutilized degraded and bare lands in the accounting area; ACMA and work with forest MBs; PRAPs will consider this at the provincial level, models 1, 2
Unplanned forest conversion to agriculture (shifting cultivation)	Overall the ER Program is expected to lead to a reduction in shifting cultivation and encroachment by providing stable alternative incomes through allocation of, and investment in, production forests, through benefit sharing, and through support for sustainable farming, including cash crops. ACMA and work with forest MBs locally to address the issues of encroachment and availability of land; PRAPs will consider this at the provincial planning level; forest protection forest governance improvements under models 1, 2, 3
Planned and unplanned natural forest conversion to planted forest	While the ER Program is expected to reduce conversion of natural forests to timber plantations, it will also support the development of plantations on bare lands, thereby mitigating its impact on timber supply in the long run. Support from the ER-P similar to above, support from ER-P through models 1,2, 3, 8, 4, 9, 10 and 11
Planned and unplanned conversion related to infrastructure	The ER Program will support local authorities in preparing proper forest conversion plans for infrastructure development. Support from the ER-P similar to above plus model 5,
Unsustainable legal and illegal selective logging for commercial and subsistence purposes	The ER Program may further contribute to improved national law enforcement by providing collaborative management approaches to reducing illegal logging. By certifying production forests, some supply can be maintained within the Accounting Area, reducing the risk of both domestic and international displacement. Similar to above and support from ER-P through models 1, 2 3, 9, 10
Unsustainable legal and illegal selective logging for commercial and subsistence purposes (International displacement mainly Lao and Cambodia)	The risk of international displacement is expected to decrease over time for the following reasons: • Vietnam and neighboring countries are joining the Voluntary Partnership Agreement (VPA) with the European Union on the Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan. • An important issue in Vietnam's VPA negotiations has been Vietnam's ability to determine the legality of its own imports and/or to distinguish them from domestically produced timber and bilateral negotiations with Vietnam are under way to ensure Lao can meet Vietnam's VPA requirements for imported timber. • Customs officials at Vietnam's major importing ports and border points are being given training on how to implement new policies, including timber import and export controls. • In response to more stringent markets, there has been a concerted effort to invest in chain-of-custody (CoC) certification among larger processing companies in Vietnam, particularly in furniture manufacturing; as a result, the number of such certificates has grown rapidly in the last five years. • A number of international agreements committing Vietnam to coordination on forest management and protection, law enforcement and trade have been signed, including with the government of Lao in 2008 and Cambodia in 2012. • The FCPF readiness program has been supporting on going work on the establishment of memorandums of understanding (MoUs) with Lao and Cambodia aimed at improving cooperation to combat illegal logging • Work has been on going with the provinces which have border crossings in the NCC (Quang Binh, Qung Tri and Nghe An) • Similarly, action is also supported through other projects including UN-REDD II in Ha Tinh which also has a border crossing; GIZ which is providing technical support at the national level on timber legality, FLEGT and support to development and the development/implementation of a VNTLAS implementation road map and the EU has been supporting the NGO-FLEGT Network.

11 REVERSALS

11.1 Identification of risk of Reversals and ER Program design features to prevent and mitigate Reversals

Reversals of GHG benefits could result from fire, disease, illegal logging, unplanned agricultural expansion (responding to global commodity price increases), centrally planned infrastructure development, or climate change (particularly increased frequency and intensity of typhoons). The risks range from low to medium.

The overall risk mitigation strategy is to negotiate trade-offs between emissions reductions, economic, environmental and social objectives of land-use options through the participatory PRAP processes. Vietnam's NRAP does not offer any specific provisions for addressing the anthropogenic and natural risks of Reversals. Consequently, the ER Program will serve as a major influence informing the operationalization of the evolving NRAP with regards to reversals management mechanisms.

Table 11.1 provides an assessment of the anthropogenic and natural risks of Reversals that might affect ERs during the term of the ERPA and the corresponding mitigation strategies.

Table 11.1: Reversal risks, risk assessment and mitigation strategies

Risk	Level of risk	Mitigation strategies
Anthropogenic	***Categorized as High, Medium or Low***	
Expansion of commercial (particularly industrial crops) and subsistence agriculture due to responses to rising prices	Medium but localized	Livelihood improvement through production forestland allocation and development coupled with PFES and contracts for natural forest protection. Support from SEDPs, (through awareness raising) improved LUPs through feedback from FSDPs and PFMS, implementation of cross-cutting policies, and improved input to the land-use planning through the PRSCs and PRAPs, support from model 1, 2, 3
Infrastructure development risks		
HPPs – locally high risk due to inconsistent application and management of environmental safeguards and weak planning. Long term raised levels of economic activity give further rise to reversals	Medium but locally high in limited areas	Improved EIAs and ESMFs; Improved supervision of ESMFs and EMPs; raised as an issue (awareness rising) for SEDPs, feedback from PFMS and inputs to the FSPD and PRAP Improved cumulative impact assessments OMPs for SUFs under threat from HPPs Consistent donor policy (notably WB); Feedback from the ACMA, support from model 5
Roads - construction of new roads in forest area, e.g. roads in forested border areas and national parks	Medium but locally high in limited areas	As above Model 5
Small scale infrastructure including roads, small HPPs, water supplies, multipurpose irrigation/ HEP schemes etc.	Medium but locally high in limited areas	Participatory land-use planning through ACMA, improved SEDP process, and forestland allocation, Model 5
Illegal logging	Low overall impact, but can include selective logging of high value/ rare species	Improved accountability and 'ownership' over forest areas through collaborative management, and participatory forest monitoring; ACMA, PFMS and FPDPs/ PRAP and PRSC process. Models 1, 2, 3
Climate change (increasing temperatures and changes in precipitation and frequency and severity of extreme climatic events)	Medium – increased frequency or severity of typhoons could impact near coastal and coastal forests	Improve technical advice, appropriate selection of locations for future industrial tree crop plantations during ACMA to avoid exposure to typhoons; better selection of species that are able to withstand strong winds, planting wind breaks in coastal areas (within 50 km from the coast). MONRE will continue to monitor typhoon activity with international support, e.g. from CSIRO Australia.
	Climate change is likely to affect acacia plantations – vulnerability is	Continue to monitor conditions and likely impacts and identify plantations that are potentially at risk. Further research on planting material. Task of the Vietnam Academy of Forest Sciences

Risk	Level of risk	Mitigation strategies
	expected to be low until 2030 but could become medium in 2050 [84]	(VAFS) with international collaboration e.g. CSIRO Australia
Natural		
Typhoons Typhoons are normal part of life in the area and cause farmer to be risk averse, for example over with length of plantation rotations	Medium	As above -similar to mitigation measures under climate change;
Fire is historically a minor driver of deforestation and forest degradation, but could increase with climate change	Low	Monitored by VNFORESTS; implementation of fire prevention measures and fire-fighting infrastructure (Vietnam has a well-established and functioning fire prevention and management system in the FPD).
Pests and Diseases Currently acacia spp. are not severely challenged by pests or diseases in Vietnam. However, there are about 1.1M ha of acacia, and low levels of pest and disease problems are being reported, and include outbreaks of *ceratocystis sp.*[85] wilt (first discovered in 2001 and found in A. *mangium* A. *auriculiform* and A. hybrid and the most serious threat to-date) and has resulted in up to 20% mortality	Low but increasing over time	Normal approaches to disease control such as improved pruning and timing of the pruning (avoiding the rainy season), and longer term strategy to diversify species. Breeding for disease resistance. Task of VAFS with international collaboration e.g. CSIRO Australia.

11.2 Reversal management mechanism

Reversal management mechanism	Selected (Yes/No)
Option 2: ERs from the ER Program are deposited in an ER Program -specific buffer, managed by the Carbon Fund (ER Program CF Buffer), based on a Reversal risk assessment.	Yes

The ER Program will create a Buffer into which ERs from the ER Program can be deposited to cover any potential future Reversals in the ER-P Accounting Area, and which is managed by or on behalf of the Carbon Fund. This will follow the relevant Carbon Fund Methodological Framework Criteria, and the agreed negotiated requirements as set out in the ERPA. The buffer risk table (Table 2 from ER-P Buffer Guidelines) is shown in Table 4.1 of Annex 4, and all risks are assessed following the table guidelines.

11.3 Monitoring and reporting of major emissions that could lead to Reversals of ERs

In the course of ER Program implementation, any significant emissions in the Accounting Area or changes in ER program circumstances that the ER program considers could lead to reversals of previously transferred ERs by the next monitoring event, will be reported to the Carbon Fund within the timeline prescribed in the Carbon Fund Methodological Framework. A %age of the potential emissions under the proposed ER Program will be used as insurance against the occurrence of any reversals in the Accounting Area included in the Program. In addition to the buffer solution of reserving ERs, during the full ER Program's development, and integrated with national REDD+ fund design under the NRAP, other national non-permanence risk mitigation strategies - namely national/subnational compensation funds and formal insurance mechanisms - will be investigated.

[84] Planting domains of key species in a changing climatic environment; T H Booth, T Jovanovic and C Harwood; 2014, CSIRO Australia.
[85] *Ceratocystis manginecans* and other species are known to cause serious canker and wilt in other parts of SE Asia; report from VAFS (Forest Protection Research Centre) in collaboration with the Forestry and Agricultural Biotechnology Institute of South Africa; Pham Quang Thu, Dang Nhu Quynh, Ariste Fourie. Irene Barnes and Michael J. Wingfield 2014 conference proceedings.

12 UNCERTAINTIES OF THE CALCULATION OF EMISSION REDUCTIONS

12.1 Identification and assessment of sources of uncertainty

Uncertainty of Activity Data

Uncertainty sources:

The sources contributing to uncertainty of activity data is mainly the misclassification of land uses and forests. This is commonly associated with the quality of satellite data, interoperability of the different sensors, image processing, cartographic and thematic standards, location and co-registration, the interpretation procedure itself, and post-processing.

Assessment of uncertainty:

The accuracy assessment of the forest cover maps for 2000, 2005 and 2010 are made on the basis of existing data at more or less the same year, and based on the following:

- Satellite images with high spatial resolution;
- Aerial photographs; and
- Ground truth points: sample plots etc.

However, in the project area, there were no high resolution satellite images or aerial photos available for 2000, 2005 and 2010, thus the accuracy assessment cannot be achieved by applying the above remote sensing and aerial photo methods.

The ground truth points system using the sample plots were implemented at various times in 2000, 2005 and 2010 (during the NFIMAP cycles 2, 3 and 4) and have been fully utilized in the improvement of the quality of the forest cover maps in the project "National FREL/FRL construction", thus they cannot continue to be used in the assessment of the accuracy of those maps.

Consequently, the following steps are used for the accuracy assessment:

Step 1. Create forest change maps for the period 2000 – 2005 and 2005 - 2010

- By overlaying the forest cover maps in 2 points of time, the forest change map is created with 23 possible changes, 7 misclassifications (illogical change) and 6 stable forest and land use types;
- The forest change maps for 2 point of time will be revised and combined as a group of change to create the final forest change map with 6 main change categories as mentioned in Table 12.1;
- The vector maps of the forest change for the period 2000-2005 and 2005-2010 are rasterized with the pixel size of 30*30m to create the raster maps of forest change for these two periods.

Table 12.1: Combination of forest changes

Code	Category	Description
FD	Forest degradation (FD1, FD2, FD3, FD4)	All forest type changes from higher timber stock volume to lower timber stock volume.
DF	Deforestation (D1, D2, D3, D4, D5)	All changes from forest to non-forested type
FE	Forest Enhancement (FE1, FE2, FE3, FE4)	All forest type changes from lower timber stock volume to higher timber stock volume
AF	Afforestation (A1, A2, A3)	All changes from non-forested to forest type
SF	Stable forest	No change in forest type
SNF	Stable non-forest	No change in non-forest type

Step 2. Sampling design

- Determine sample size:
  - Calculate the areas of each change category on the final forest change maps;
  - The number of sample points required per change category is determined by three main parameters: 1) the level of precision required of the estimates, 2) the proportion of each mapped category in the map and 3) the expert-estimated, conservative map accuracy of each category;
  - If the total number of sample points of any change category is less than 30, then it will be given as 30 in order to be satisfied minimum sample size for that category. The sample points of other change categories will then be recalculated.
- Allocate sample points for each category of change
  - Based on the total number of determined sample points, the map of sample points will be stratified randomly created for each forest change category by applying ARC/GIS software. Sample points are separated by at least 400 m.

In this accuracy assessment, 536 sample points are made for 2000 – 2005 and 538 sample points are checked for 2005 – 2010. Details on sampling distribution can be seen at the Annex 11 Report on AD.

Step 3. Assess every sample point on Landsat images of "year X" and "year X+5"

- Landsat images covering NCC region for 2000, 2005 and 2010 will be downloaded from the Webpage: http://earthexplorer.usgs.gov/ . The details are shown in Table 12.2;
- Overlay the evaluation sample points on the Landsat images in 2000, 2005 and 2010;
- At each of the evaluation sample points, the forest changes were independently evaluated by three experts in the field of remote sensing and forest change monitoring and assessment by applying visual interpretation method.

Table 12.2: Metadata of Landsat images

Path/Row	Information	2000	2005	2010
125_48	LANDSAT_SCENE_ID	"LE71250482000311SGS00"	"LT51250482005140BKT00"	"LT51250482010186BKT01"
	DATE_ACQUIRED	06/11/2000	20/05/2005	05/07/2010
	CLOUD_COVER	0	0	0
125_49	LANDSAT_SCENE_ID	"LE71250492000311SGS00"	"LT51250492005124BKT01"	"LT51250492010042BKT00"
	DATE_ACQUIRED	06/11/2000	04/05/2005	11/02/2010
	CLOUD_COVER =	7	7	0
126_47	LANDSAT_SCENE_ID	"LE71260472000158SGS00"	"LT51260472005195BKT00"	"LT51260472009238BJC00"
	DATE_ACQUIRED	06/06/2000	14/07/2005	26/08/2009
	CLOUD_COVER =	2	1	1,63
126_48	LANDSAT_SCENE_ID	"LT51260482000310BKT00"	"LT51260482005275BKT00"	"LT51260482009238BKT00"
	DATE_ACQUIRED	05/11/2000	02/10/2005	26/08/2009
	CLOUD_COVER =	0	7	2
127_46	LANDSAT_SCENE_ID	"LE71270462000261SGS00"	"LT51270462004344BKT01"	"LT51270462010040BKT00"
	DATE_ACQUIRED	17/09/2000	09/12/2004	09/02/2010
	CLOUD_COVER	0	1	0
	LANDSAT_SCENE_ID		"LT51270462005314BJC00"	
	DATE_ACQUIRED		10/11/2005	
	CLOUD_COVER		10	
127_47	LANDSAT_SCENE_ID	"LE71270472000261SGS00"	"LT51270472005026BKT01"	"LT51270472010056BKT00"

Path/Row	Information	2000	2005	2010
	DATE_ACQUIRED	17/09/2000	26/01/2005	25/02/2010
	CLOUD_COVER	0	8	0
	LANDSAT_SCENE_ID		"LT51270472005314BKT01"	
	DATE_ACQUIRED		10/11/2005	
	CLOUD_COVER		16	
128_46	LANDSAT_SCENE_ID	"LE71280462000300SGS00"	"LT51280462005065BKT02"	"LT51280462010111BKT01"
	DATE_ACQUIRED	26/10/2000	06/03/2005	21/04/2010
	CLOUD_COVER	9	8	2
128_47	LANDSAT_SCENE_ID	"LT51280472005113BKT00"	"LT51280472005065BKT01"	"LT51280472010303BKT00"
	DATE_ACQUIRED	23/04/2005	06/03/2005	30/10/2010
	CLOUD_COVER	0	0	2

Step 4. Summarize the results and create errors matrix.

- The independent evaluated results of three experts will be combined as the consensus reference sample points which will be used to create the errors matrix.

Step 5. Accuracy calculating by applying Olofsson's method[86]

- This includes estimation of accuracy (User, Producer, and Overall), as well as unbiased estimation of actual areas for use as Activity Data. These changes in estimates will be assigned to the original forest cover classes in proportion to the area of forest contributing to each Activity.

Uncertainty of Emission/Removals Factors (EF/RF)

Uncertainty sources of EF/RF:

The sources for uncertainty of EF/RF closely relate to the uncertainty of estimation of carbon estimation for different types of forests. Table 12.3 below shows potential causes of uncertainties that may be associated with reference level construction and the application of uncertainties assessment in the context of development of the reference level for the NCC.

Table 12.3: Potential causes of uncertainties in EF/RF

Potential Cause of Uncertainty	Relevance for the NCC RL/REL?	Applied (yes/no) and explanations
Lack of completeness	Not believed to be relevant. The components of forest emissions and removals are generally known in theory significant unknown gaps are unlikely	Not applicable.
Effects of boundary issues in independent mapping for Activity Data	Relevant, believed (based on analysis of obvious errors) to be on the order of ~3% of area. Will be addressed in the next iteration of mapping, all maps will be registered to a common base year to eliminate inconsistent boundaries	Not applied.
Model	Relevant, significant. Uncertainty in statistical models used to estimate biomass as function of tree parameters, models to estimate aggregate biomass/ha, and models to classify forest type as a function of spectral signature	Applicable, errors of forest carbon stock estimation are assessed (see EF report, Annex 12)
Lack of data	Relevant, minor. Data do not exist to estimate contributions from several pools (litter, deadwood, soil) and gases (CH4, NOx) which are assumed to be small (< 10%) relative to contribution of C from AGB and BGB. Data currently do not exist for change in C stock for land remaining in the same class.	Not applicable. The proposed MMR system will provide future estimates of C change for land remaining in the same forest type class.

[86] Good practices for estimating area and assessing accuracy of land change

Potential Cause of Uncertainty	Relevance for the NCC RL/REL?	Applied (yes/no) and explanations
Lack of representativeness of data	Not believed to be relevant. Emission factors come from a statistical systematic sample across the whole NCC region. Activity data comes from wall to wall forest cover mapping.	Not applicable
Statistical random sampling error	Relevant, significant. Affects estimation of Emission Factors from forest inventory sample.	Not applicable as no data and information
Measurement error	Relevant, minor. Measurement of tree species group, DBH assumed to be with minimal error.	Not applicable as no data and information
Missing data	Not believed to be relevant. Sampling and forest cover mapping covers 100% of the area of interest. It is possible that some change may be missed given the five year cycle of measurement, but over time this change is expected to average out.	Not applicable as no data and information.

Assessment of uncertainty

Assessment of the uncertainty for the estimation of emissions and removals for the reference period follows the IPCC guidelines (Chapter 3, IPCC, 2006). A propagation errors of carbon estimation are used to estimate uncertainty of forest carbon estimation for forests. As the lack of data, the propagation errors are estimated based on 4 parameters that are: i) error of sampling; ii) error of equations used for biomass estimation; iii) error of converting BGB from AGB; and iv) error of using carbon fractions for converting biomass to carbon stock.

Uncertainty assessment of emissions and removals

Tier 1 approach is used to assess the overall uncertainty of emissions and removals is estimated following the formula below:

$$U_{total} = \frac{\sqrt{(U_1 * x_1)^2 + (U_2 * x_2)^2 \ldots (U_n * x_n)^2}}{|x_1 + x_2 \ldots + x_n|}$$

Where:

- U_1, U_2, U_3,…Un is the %age of uncertainty associated with each of the parameters;
- X_1, X_2, … Xn is the value of each parameter; and
- U total is %age uncertainty in the sum of the parameters.

12.2 Quantification of uncertainty in Reference Level setting

Uncertainty of Activity Data

Accuracy assessment of activity data are conducted for two time periods and are summarized in the following tables. The results indicate that the overall accuracy (at the confidence of 95%) for activity data is over 90%.

Table 12.4: Accuracy assessment for forest change, 2000 – 2005

Map Class	Reference Class					
	SF	SNF	AF	DF	FE	FD
SF	0.3464	0.0265	0.0000	0.0020	0.0000	0.0041
SNF	0.0045	0.4760	0.0000	0.0000	0.0000	0.0000
AF	0.0000	0.0061	0.0626	0.0000	0.0000	0.0000
DF	0.0038	0.0000	0.0019	0.0279	0.0010	0.0000
FE	0.0012	0.0003	0.0000	0.0000	0.0082	0.0000
FD	0.0016	0.0016	0.0000	0.0000	0.0016	0.0227
Cond Ref Class Proportion	0.3576	0.5104	0.0645	0.0299	0.0108	0.0268
SE	**0.00872**	**0.00856**	**0.00364**	**0.00308**	**0.00161**	**0.00341**
95% CI	0.01744	0.01713	0.00729	0.00617	0.00323	0.00682
Adjusted area est. (ha)	1,838,234	2,624,236	331,557	153,705	55,530	137,794
95% CI	89.674	88.065	37.462	31.699	16.592	35.039
User accuracy	0.914	0.991	0.912	0.806	0.844	0.824
Producer accuracy	0.969	0.932	0.970	0.932	0.761	0.848
Overall accuracy	**0.944**					

Table 12.5: Accuracy assessment for forest change, 2005 – 2010

Map Class	Reference Class					
	SF	SNF	AF	DF	FE	FD
SF	0.3937	0.0184	0.0020	0.0000	0.0000	0.0041
SNF	0.0105	0.4207	0.0042	0.0021	0.0000	0.0000
AF	0.0000	0.0000	0.0772	0.0000	0.0000	0.0000
DF	0.0023	0.0000	0.0000	0.0210	0.0008	0.0000
FE	0.0000	0.0000	0.0000	0.0000	0.0176	0.0000
FD	0.0000	0.0000	0.0000	0.0017	0.0000	0.0238
Cond Ref Class Proportion	**0.4065**	**0.4390**	**0.0834**	**0.0248**	**0.0184**	**0.0279**
SE	0.008392	0.008357	0.003589	0.002821	0.000779	0.003110
95% CI	0.016783	0.016714	0.007177	0.005641	0.001558	0.006220
Adjusted area est (ha)	2,090,022	2,257,144	429,016	127,618	94,425	143,191
95% CI	86.290	85.935	36.902	29.004	8.009	31.982
User accuracy	0.941	0.962	1.000	0.871	1.000	0.933
Producer accuracy	0.969	0.958	0.925	0.847	0.958	0.854
Overall accuracy	**0.954**					

Uncertainty of EF/RF

The assessment results of uncertainties of forest carbon estimation are the propagation errors. The results show that the errors of forest carbon estimation vary from 22.8 to 34.1% (see Table 12.6).

Table 12.6: Uncertainty assessment of forest carbon stock for the NCC

Parameters	EBF-R	EBF-M	EBF-P	OFO	PLA
1. AGB error from sampling (calculated in EF report)	0.082	0.043	0.073	0.208	0.243
2. AGB error from biomass equation (UNREDD, 2015)	0.096	0.096	0.096	0.180	0.100
3. Root to shoot ratio error (GOFC-GOLD sourcebook 2015)	0.200	0.200	0.200	0.200	0.200
4. Carbon Fraction factor (IPCC 2006)	0.027	0.027	0.027	0.027	0.027
Total Error (SE, %)	**23.8**	**22.8**	**23.5**	**34.1**	**30.9**

Uncertainty of emissions and removals

The uncertainties of emissions and removals estimation associated with the uncertainties of activity data and forest carbon stock estimation. The results of uncertainty assessment for emissions and removals show that overall weighted uncertainty of emissions and removals is less than 30%, ranging from 19-22% (see Table 12.7).

Table 12.7: Uncertainty assessment of emissions and removals

Emissions and Removals	2000 - 2005		2005 - 2010		Weighted average uncertainty 2000-2010 (%)
	Amount (tCO2e)	Uncertainty	Amount (tCO2e)	Uncertainty	
1. Emissions caused by Deforestation	18,138,337	26%	14,940,876	26%	19%
2. Emissions caused by forest degradation	27,346,395	26%	24,436,968	29%	19%
3. Removals resulted from reforestation	-33,882,374	28%	-43,770,811	28%	20%
4. Removals resulted from forest restoration	-8,137,271	29%	-14,388,328	29%	22%

13 GHG EMISSION REDUCTION ESTIMATES OF ER-PROGRAM

13.1 Ex-ante estimation of GHG emissions reductions

- The estimated area of the ER-P site-level models is 359,942 ha, which represents 7% of the total land area of the six target provinces and 13% of total forest area in the NCC. Out of this area 131,520 ha are expected to be protected from further degradation and 64,500 ha subject to avoided deforestation activities.
- Further GHG benefits will occur due to the wider policy interventions that will reach beyond the investment areas. For policy benefit accounting, it is assumed that benefits from policy related interventions will increase the ER Program's impact from 0.36 million to 1.3 million ha, which is 47% of the total remaining 2010 forest area in the ER-P accounting area. For the policy benefit accounting C enhancement benefits are accounted for the models 1 (protection of natural forest - rich), 2 (avoiding degradation by assisted natural forest regeneration), 3 (enrichment planting in poor natural forests), 6 (improved Acacia management through lengthened long rotations) and 7 (introduction of native tree species into Acacia plantations), while spillover effects for the remaining models are conservatively excluded and not likely to occur.
- All assumptions are further described in the subsequent sections.
- In total, the ER-P is expected to generate **28.2 million tCO_2e** of emission reduction and removals (see Table 13.1). Excluding the calculated 4% uncertainty factor and the 18% buffer (as quantified under section 4.1 Table 4.1 of Annex 4), the net ex-ante estimated GHG emission reductions amount to **22 million tCO_2e** over 8 years (2018 – 2015), which excludes 6.2 million tCO_2e which are subtracted due to the uncertainty and buffer.

Table 13.1: Ex-ante GHG emissions reduction and removals of the ER-Program

ERPA term year t	Net Reference emissions level (tCO_2e/yr)	Reference level annual GHG emissions (tCO_2e/yr)	Reference level GHG removals (tCO2/yr)	Estimation of expected emissions under the ER Program (tCO_2e/yr)	Estimation of expected removals (tCO_2e/yr)	Estimation of total expected emissions (incl. removals) under the ER Program (tCO_2e/yr)	Expected set-aside to reflect the level of uncertainty associated with the estimation of ERs during the Term of the ERPA + buffer (18%) (tCO_2e/yr)	Total Estimated net Emission Reductions /carbon removal benefit (tCO_2e/yr)
2018	-1,531,621	8,486,258	-10,017,878	8,486,258	-10,027,715	-1,541,458	2,164	7,673
2019	-1,531,621	8,486,258	-10,017,878	8,006,049	-10,256,220	-2,250,171	158,081	560,469
2020	-1,531,621	8,486,258	-10,017,878	7,130,053	-10,523,515	-3,393,463	409,605	1,452,237
2021	-1,531,621	8,486,258	-10,017,878	6,098,725	-10,738,888	-4,640,163	683,879	2,424,663
2022	-1,531,621	8,486,258	-10,017,878	5,067,397	-10,903,412	-5,836,015	946,967	3,357,427
2023	-1,531,621	8,486,258	-10,017,878	4,036,069	-11,058,099	-7,022,029	1,207,890	4,282,519
2024	-1,531,621	8,486,258	-10,017,878	3,484,951	-11,212,786	-7,727,835	1,363,167	4,833,047
2025	-1,531,621	8,486,258	-10,017,878	3,329,619	-11,367,473	-8,037,854	1,431,371	5,074,862
Total	**-12,252,966**	**67,890,061**	**-80,143,027**	**45,639,120**	**-86,088,108**	**-40,448,987**	**6,203,125**	**21,992,897**

A detailed breakdown of the GHG emissions reduction and carbon stock enhancement estimates is provided below.

- The GHG emission reduction from reduced/avoided deforestation and forest degradation amounts to 22.25 million tCO2 (model 1-3) on an area of 195,720 ha. The remaining 5.95 million tCO2 occur due to carbon stock enhancement benefits in all land use intervention models (164,222 ha) and due to the policy interventions on a wider area of additional 930,036 ha.
- For policy benefit accounting, it is assumed that benefits from policy related interventions will increase from 0.36 million to 1.3 million ha, which is 47% of the total remaining forest area in the ER-P accounting area. For the policy benefit accounting, C enhancement benefits are accounted for the models 1 (protection of natural forest - rich), 2 (avoiding degradation by assisted natural forest regeneration), 3 (enrichment planting in poor natural forests), 6 (improved Acacia management through lengthened long rotations) and 7 (introduction of native tree species into Acacia plantations).
- For the natural forest models, avoided degradation and deforestation emission reduction benefits are not accounted for in order to avoid overestimates of ex-ante GHG benefits. This is justified by the fact that interventions may not only occur in deforestation and forest degradation hotspots, thus no degradation and deforestation related emissions and pressure occur where reduction can be claimed. Only carbon removal benefits are likely to occur on an area larger than where intervention due to improved forest management. Therefore, the annual C enhancement benefit for natural forests and existing plantations are assumed using the same approach as for the investment areas (see Annex 8 for detailed explanation).
- A detailed overview of the GHG benefit per intervention model is presented in the following table.

Table 13.2: GHG emissions reduction and C enhancement benefits on ER-P investment areas

Deforestaiton / Forest degradation driver	REDD+ activity	Targeted area (ha)	Percentage of total remaining land use class in ER-P accounting area in 2010 (%)	Effectiveness factor survival rates for GHG ERs (%)	ER category: Emissison reduction (ER) / Carbon stock enhancment (C+)	Total ERs (8 years) (tCO2) (excl uncertainty and buffer)	% of 10yr RL GHG emissions	% of 10yr RL GHG removals
Evergreen broadleaves forest rich to Evergreen broadleaves forest – rich to medium (degradation) due to illegal logging and overexploitation	Model 1: Forest protection of existing natural forest	61,260	27.0%	85%	ER	11,895,440	22.9%	0.0%
Evergreen broadleaves forest - medium conversion to Evergreen broadleaves forest - poor due to illegal looging and overexplitation	Model 2. Natural assisted regeneration of medium quality forest / avoiding degradation (no planting	70,260	15.5%	85%	ER	7,329,863	14.1%	
					C+	514,602		1.0%
Evergreen broadleaves forest - poor conversion to bare land for illegal agricultural land conversion	Model 3. Natural regeneration and enrichment planting of poor natural forest	64,200	4.9%	50%	ER	3,025,638	5.8%	
					C+	489,667		0.9%
Plantation area remains plantation area - Enhancement activitiy for production and reversal risk reduction and reversal risks	Model 6: Transformation of Acacia plantation to long Acacia rotation	40,780	6.4%	100%	C+	302,520	0.0%	0.6%
Plantation area remains plantation area - Enhancment activity - Enhancement activitiy for production and reversal risk reduction and reversal risks	Model 7: Transformation of Acacia plantation to long rotation mixed species	37,040	5.8%	100%	C+	596,648	0.0%	1.1%
Non-forest land - Enhancment activitiy	Models 4: Afforestation Reforestation with pure Acacia	21,180	0.9%	87%	C+	764,103	0.0%	1.5%
Non-forest land - enhancment activitiy to compensate for planned infrastrucutre development	Models 5: Afforestation Reforestation with pure Acacia and mixed species and offsetting of infrastructure and development	21,040	0.9%	87%	C+	791,412	0.0%	1.5%
Non-forest land - Enhancment activitiy	Models 8: Afforestation Reforestation with Melia	4,000	0.2%	87%	C+	145,804	0.0%	0.3%
	Model 9: Coastal /mangrove forest protection	26,864	19.4%	87%	-	0	0.0%	0.0%
	Model 10: Enrichment planting of degdraded coastal forest / mangroves forest	6,474	4.7%	87%	C+	130,084	0.0%	0.2%
	Model 11: Afforestation/Reforestation of coastal / mangrove forest	6,844	0.3%	87%	C+	165,023	0.0%	0.3%
Total		**359,942**				**26,150,803**	**42.8%**	**7.4%**

13.2 Key underlying assumptions

- The GHG emission reduction estimates were carried out according to the estimated scale of the ER-P (359,942 ha). Further we include additional carbon removal benefits from an additional 930,036 ha of forest area as a result of the policy related interventions (see chapter 8 for detailed description).
- The GHG estimates assume an 18% reversal buffer as calculated in the Annex 4 Table 4.1 and a 4% uncertainty factor as reported and quantified for the RL. Thus, only 78% of the estimated ex-ante emission reduction and enhancement are assumed to receive results based payment and are also counted in the financing plan assumptions.
- Only 85% of the ER-P investment in natural forest is assumed to generate emission reductions, which reflects the effectiveness factor of the REDD+ interventions. The remaining 15% are conservatively excluded from quantifying ex-ante GHG emissions reduction/carbon stock enhancement and are set to 0.
- For carbon stock enhancement activities on plantations and areas related to reforestation, it is assumed that 87% of the plantation will survive and generate carbon stock enhancements. This is the historical survival rate of the 661 program and is a reliable proxy for future plantings.
- The estimation of Carbon stock enhancement benefits for plantations adopts a long-term average carbon stock approach which takes into consideration the harvesting and respective reversal over time (Figure 13.1).

13.3 Assumption for estimating emission reductions and carbon stock enhancement

13.3.1 Emission reduction from reduced deforestation

- GHG emissions reductions from avoided deforestation are quantified based on the REDD+ intervention model 3 (Natural regeneration and enrichment planting of poor natural forest) which will prevent the conversion of the evergreen natural forest poor towards non-forest land use (agricultural land use). The target intervention areas for this model will be based on REDD+ Needs Assessments and Social Screening Reports at the inception of the ER-P implementation. The RNAs will identify the key deforestation/forest degradation hotspots for which investment and management plans and Adaptive Collaborative Management Approached will be defined to effectively tackle deforestation and forest degradation.
- The estimates assume that once the estimated intervention areas enter into the ER-P program, GHG benefits due to avoidance of deforestation start to occur. This will result in avoiding emissions of 138.6 tCO_2/ha (carbon stock of evergreen natural forest – poor in RL, aboveground biomass and belowground biomass[87]). However, the GHG benefits of each effectively protected forest area are accounted not immediately, but over a period of 5 years (138.6 tCO_2/5 years = 27.7 tCO_2/ha/yr), resulting in an annual emission factor of 23.1 tCO2/ha/yr over 5 years). This approach was selected to ensure a conservative approach and avoid overestimates of emissions reduction from deforestation and forest degradation in the first year after intervention start. Further, these 5-year conversion cycles have also been observed in the Activity Data reports used for the RL development, and thus is consistent with RL.
- In addition, due to the natural regeneration of the evergreen natural forest poor, aboveground and belowground biomass carbon stock enhancement benefits will occur. For this, we apply an annual growth emission factor of 3% of the total carbon stock of evergreen forest-poor, as reported by VFAS (Vietnam Academy of Science and Technology, prepared by Dien and Phuong, 2016; Report

[87] For quantification or belowground biomass an IPCC root to shoot ration of 0.2 is applied. This factor is consistently used by Vietnam for all forest types in the RL.

on Development of activity data). This is equivalent to 4.2 tCO_2/ha/yr (aboveground and belowground biomass).

- In the ER estimates it is assumed that 85% of the area subject to interventions will actually deliver results and will be effective, while 15% of the intervention area will not deliver results.

13.3.2 Forest degradation reduction

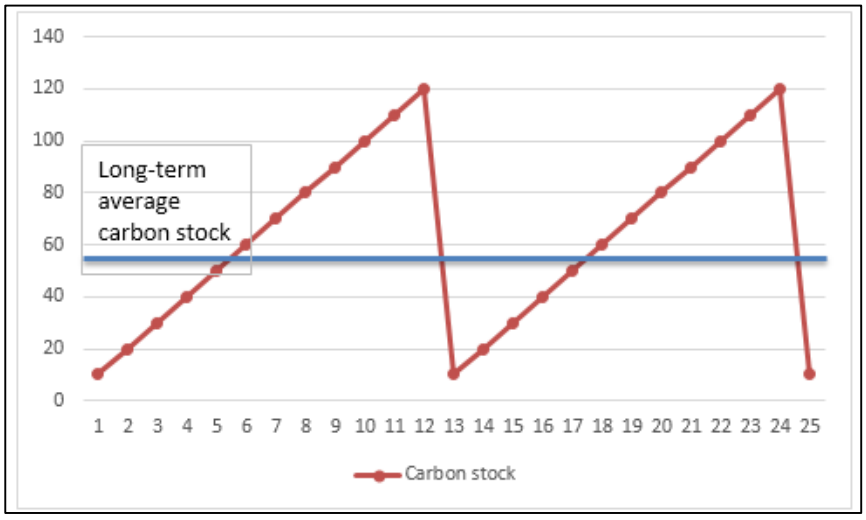
- GHG emission reduction from reduced forest degradation are assumed by the REDD+ intervention model 1 (Forest protection of existing natural forest) which prevents “evergreen broadleaves forest rich” to “Evergreen broadleaves forest medium” (degradation) (responsible for 24% of total historical forest degradation area).
- Reduction of emissions is calculated as the difference between the RL emissions factor (carbon stock) between evergreen forest rich and evergreen forest medium (652.2 - 317.9 = 334.3 tCO_2/ha aboveground and belowground biomass). This emission reduction is assumed to occur over a period of 5 years, after the natural forest area enters into the ER-P implementation resulting an annual emission factor of 66.9 tCO_2/ha/yr over 5 years (ABG+BGB). In this model, carbon stock enhancement benefits are not accounted for as the forest is conservatively assumed at a high carbon equilibrium (undisturbed or minimally disturbed).
- In the second reduction of forest degradation model 2 (Natural regeneration of “evergreen natural forest – medium” which prevent forest degradation to “evergreen natural forest – poor” – responsible for 51% of total forest degradation area in RL) emission reductions benefits are quantified as the difference between the carbon stock evergreen natural medium and evergreen natural forest – poor (317.9 – 138.6 tCO_2/ha = 179.3 tCO_2/ha). The accounting of GHG benefits is distributed over a period of 5 year, same as under model 1 and 3 (35.9 tCO_2/ha/yr over 5 years).
- For the quantification of the carbon stock enhancement benefits, the annual growth increment for this forest types is assumed for the RL assessment equivalent to 2.3% of the reported carbon stock (VFAS, 2016: Report on Development of activity data), minus the regrowth in the RL. This converts to 2.3 tCO_2/ha/year.
- For both models (1 and 2) the ER estimates are conservatively made assuming that 85% of the area subject to interventions will actually deliver results and will be effective, while the remaining 15% will no deliver emission reductions.

13.4 Assumptions for estimating carbon stock enhancement benefits (reforestation and plantation restoration models)

- Carbon stock enhancement models include Afforestation / Reforestation models to be implemented on bare land (Model 4,5,8) and restoration of existing short-rotation Acacia plantation (Model 6 and 7) towards a longer rotation period and mixed species.
- For the quantification of the carbon stock enhancement average growth data from Vietnam for respective species is used, that are based on conservative assumptions. The growth rates assumed are mainly based on: (1) Phan Minh Sang. 2011. Initial results, Study on growth and yield of FSDP plantations; (2) Ministry of Agriculture and rural development management boards for forestry projects, Review of forest Plantation Models by Marcelino V. Dalmacio, 2011; and (3) Kha et al, growth and wood basic density of Acacia hybrid clones at three location in Vietnam[88]
- In order to account for the risk of reversals, and taking into account that plantation model will be subject to harvesting leading to reversals, a long-term average carbon stock approach is used to account for the long-term carbon stock enhancement benefits (Figure 13.1). The long-term average carbon stock is an average value over more than 20 years taking into consideration planting, thinning and harvesting and replanting over more than one rotation period. The calculations assume that after harvesting replanting of the models occur.

[88] http://link.springer.com/article/10.1007/s11056-011-9263-y

Figure 13.1: Carbon enhancement accounting approach for rotation forestry models (4-8)



13.4.1 Plantation transformation models

- For the quantification of the annual carbon stock enhancement benefits of existing plantations (Model 6 and 7) the average RL reported plantation carbon stock of 89 tCO_2/ha (ABG) which is as a starting point for the calculations. The calculation is based on an in-depth feasibility assessment[89] of the growth performance of different plantation models in Vietnam for Acacia and native species. Further data basis used for the plantation model are the Acacia growth rates documented by Phan Minh Sang. 2011. Initial results, Study on growth and yield of FSDP plantations.
- A detailed description of the business models is provided in chapter 6.
- For model 6 (Transformation of short rotation Acacia to long-rotation Acacia (12 years)) the average long-term carbon stock is calculated as 112 tCO_2/ha. Thus, in the long-term benefit is 23 tCO_2/ha, the difference of the RL carbon stock of 89 tCO_2/ha and the 112 tCO_2/ha. Based on this long-term benefit an annual emissions factor is calculated as 23 tCO_2/10 yr = 2.3 tCO_2/ha/yr. This emission factor is used to account for the enhancement benefits of model 6) (For key input variables see Table 13.3 below).
- For model 7 (Short rotation Acacia transformation to long rotation mixed species (20 years)), average long-term carbon stock is calculated as the difference between 89 tCO_2/ha and a long-term average carbon stock (139 tCO_2/ha), equivalent to 50 tCO_2/ha/ 10 yr = 5.0 tCO_2/ha/year (Table 13.3 below).

Table 13.3: Transformation plantation models[90]

Parameter	Acacia long rotation	Acacia mixed species
Rotation length (Years)	12 years	Acacia 12 years and subsequently replaced by mixed Native species 20 years
Assumed management	Thinning in year 4 and 8	Acacia: Thinning in year 4 and 8 Native species: Thinning year 4 and 12

[89] UNIQUE forestry and land use and Climate Focus, 2016: Development of Business Models to Address Drivers of Deforestation: *Phase II – Feasibility Study* - Restoration of short-rotation Acacia plantations with high value native tree species in Vietnam.
This project is part of the International Climate Initiative (IKI). The German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) supports this initiative on the basis of a decision adopted by the German Bundestag.

[90] The calculations and data sources are based on an in-depth research of Acacia and native species in the frame of the International Climate Initiative (IKI) project ("Business models to address the drivers of deforestation"), supported by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) and implemented by UNIQUE forestry and land use.

Parameter	Acacia long rotation	Acacia mixed species
Average growth rate (MAI) (m^3/ha/yr)	30 m^3/ha/yr[91]	Acacia: 30 m^3/ha/yr Native species:16 m^3/ha/year
Biomass Expansion Factor	1.3	1.3[92] for Acacia 1.5[93] for native species
Wood density (tdm / m^3 fresh volume	0.47	0.47 for Acacia 0.6 for native species
Root to shoot ratio	0.2	0.2[94]
Carbon fraction	0.47	0.47
Conversion factor C to CO_2	44/12	44/12
Calculated average long-term carbon stock (tCO_2/ha)	112 tCO_2/ha	139 tCO_2/ha
Long term average accountable C enhancement benefit (tCO_2/ha)	23 tCO_2/ha	50 tCO_2/ha

13.4.2 Reforestation models

- The reforestation models assume "bare land" as the starting point equivalent to a carbon stock of 0 tCO_2/ha. For each model, average growth rates are assumed, as presented in Table 13.4, including the key input values. C enhancement benefit are accounted for once the intervention enters the ER-P, e.g. if the model 5 starts in year 3 after ER-P implementation start C enhancement benefits are accounted for from year 3-10.
- For the Acacia and Melia plantation models (Model 4 and 8) we calculated an annual average carbon enhancement benefit of 11.2 tCO_2/ha/year and 11.6 respectively (ABG+BGB), equivalent to a maximum accountable carbon stock of 112 tCO_2/ha and 116 tCO_2/ha above RL levels.
- For the Acacia and mixed species plantation model (Model 5), the long-term average carbon stock is higher, but growth rates are lower compared to pure Acacia and Melia. Therefore, over a period of 10 years, an average annual carbon stock enhancement benefit of 11.7 tCO_2/ha/year is accounted for.

Table 13.4: Reforestation plantation models

Parameter	Acacia long-term model	Acacia with mixed species	Melia azedarach
Rotation length (Years)	12 years	Acacia 12 years and subsequently replaced by mixed Native species 20 years	8 years
Assumed management	Thinning in year 4 and 8	Acacia: Thinning in year 4 and 8 Native species: Thinning year 4 and 12	No thinning
Average growth rate (MAI) (m^3/ha/yr)	30 m^3/ha/yr[95]	Acacia: 30 m^3/ha/yr Native species:16[96] m^3/ha/year	20 m^3/ha/yr
Biomass Expansion Factor	1.3	1.3 for Acacia 1.5 for native species	1.3

[91] Phan Minh Sang. 2011. Initial results, Study on growth and yield of FSDP plantation
[92] IPCC default factor for planted forests < 20 years broadleaf forest (minimum value)
[93] IPCC default factor for planted forests < 20 years broadleaf forest average value
[94] IPCC default factor used by Vietnam for all forest type
[95] Phan Minh Sang. 2011. Initial results, Study on growth and yield of FSDP plantations. Personal communication. October 1, 2011; Growth and Yield Study, FSIV, Personal communications with Dr. Phan Minh Sang, October 1, 2011
[96] Based on a summary of Vietnamese research papers

Parameter	Acacia long-term model	Acacia with mixed species	Melia azedarach
Wood density (tdm / m³ fresh volume	0.47[97]	0.47 for Acacia 0.6 for native species	0.5
Root to shoot ratio	0.2	0.2	0.2
Carbon fraction	0.47	0.47	0.47
Conversion factor C to CO_2	44/12	44/12	44/12
Calculated average long-term carbon stock	112 tCO2/ha	117 tCO2/ha	116 tCO2/ha

13.4.3 Mangrove and coastal forest models

- For mangrove forest and coastal forests the assumptions are based on the RL data under the category Other Forest with an average aboveground biomass of 128.3 tCO2/ha (or 154 tCO2/ha) (ABG+ BGB).
- For the protection model (model 9), not GHG benefits are accounted because coastal forest and mangrove are not subject to deforestation. Thus protection will maintain existing carbon stocks.
- For the coastal forest /mangrove forest enrichment planting model (model 10), the starting situation in terms of carbon stock per ha is assumed at 50% of the report RL "Other forest" levels. In the REDD+ scenario enrichment planting will result in annual increment of 2.5% as reported by the RL report by Dien et al, 2006. This equals to an annual carbon stock enhancement benefit of 3.8 tCO2/ha/year.
- For the reforestation model, the starting situation is assumed to be bare land with a carbon stock per ha of 0. Same as under the enrichment planting model, the annual increment of 3.8 tCO2/ha/year. The annual increment is assumed over the entire ER-P implementation phase.

13.4.4 Cross-cutting interventions and policy benefits

At this stage a robust and fact-based quantification of the benefits resulting from the recent and currently modified policies and cross-cutting intervention is difficult as it is not clear by when existing and planned policies will be fully implemented and operational. However, it is reasonable to assume that both, carbon and non-carbon benefits will significantly exceed those that are expected to directly accrue in the identified intervention areas for the different activities in the program area: if effectively implemented the policies will unfold effects for key REDD+ activities in the remaining forest areas of the ER-P as well as outside the program area and throughout Vietnam.

To estimate the additional policy benefits a conservative approach was chosen with a scenario for the policy impact. The GHG benefits of the policy benefit scenario are accounted for in the ex-ante estimation of GHG emission reduction benefits. As the listed policies are expected to positively affect the land use change within and outside the ER-P intervention areas the relevance of the policies was assessed for the 11 models. The polices are expected to impact in particular models 1 (protection of natural forest - rich), 2 (avoiding degradation by assisted natural forest regeneration), 3 (enrichment planting in poor natural forests), 6 (improved Acacia management through lengthened long rotations) and 7 (introduction of native tree species into Acacia plantations). To avoid an overestimate and to keep a generally conservative approach to benefit estimation no additional policy benefits were calculated for the remaining models.

For the policy benefit scenario, it was assumed that the policy benefits unfold only on part of the areas for the respective models. If for example the described policies result in effective forest protection (model 1) instead of 27% of the total areas for this model protection will occur on 92% (see Table 13.5). This would lead to additional mitigation of 2.05 Mio tCO_2 that are accounted for in the total ex-ante emissions reduction and removal benefits of the ER-P (excl. buffer and uncertainty). In terms of total area, the benefits would occur on an additional 47% of the entire remaining forest land of the ER-P accounting area.

[97] Growth And Wood Basic Density Of Acacia Hybrid Clones At Three Locations In Vietnam: Le Dinh Kha1, Chris E Harwood2,Nguyen Duc Kien1*, Brian S Baltunis3, Nguyen Dinh Hai1 and Ha Huy Thin

Table 13.5: Policy benefit carbon removal benefit in the ER-P accounting area (in tCO_2)

Forests	Models	Proposed ER-P		Policy related ER benefits			
		ER-P accounting area investment area (ha)	%age of land use class in ER-P area in 2010	Effect on additional area (ha)	Additional C removal benefits (tCO_2)	Total area ER-Program (ha)	% of total remaining area in the forest class of 2010
Natural forest	Model 1	61,260	27.00%	147,024	341,337	208,284	91.9%
	Model 2	70,260	15.50%	168,624	391,484	238,884	52.7%
	Model 3	64,200	4.9%	154,080	640,665	218,280	16.6%
Plantations	Model 6	40,780	6.4%	97,872	226,310	138,652	21.7%
	Model 7	37,040	5.8%	88,896	445,423	125,936	19.7%
Total		**273,540**		**656,496**	**2,045,218**	**930,036**	

Additionally, further policy benefits will be generated beyond the program's lifetime and area – this estimation does not include the potential benefits created in other REDD+ pilot provinces and the rest of Vietnam.

14 SAFEGUARDS

14.1 Description of how the ER Program meets the World Bank social and environmental safeguards and promotes and supports the safeguards included in UNFCCC guidance related to REDD+

The Program is expected to trigger the following Operational Policies (OPs): related to environmental safeguards OP 4.01, OP 4.02, and OP 4.04; related to indigenous peoples (referred to in Vietnam as ethnic minority peoples), OP 4.10 and BP 4.10; related to physical cultural resources OP 4.11; related to involuntary resettlement OP 4.12 and relating to forests OP 4.36. Operational policies, notably those relating to gender and development (OP 4.20) are not safeguard policies *per se* but rather cross-cutting issues to ensure the social inclusiveness of projects wholly or partially financed or supported by the World Bank. Additionally, the Cancun Safeguards also apply to this Program and promotes and support safeguards that are not explicitly articulated through the above-mentioned OPs of the World Bank will be utilized accordingly. The Safeguards as they apply to this Program are included in Table 14.1 below.

Table 14.1: Summary of triggered World Bank Operational Policies[98]

World Bank Operational Policies	Updated status (Result of SESA phase 1 Investigations)	Proposed approach
Environmental Assessment OP 4.01 UNFCCC	Triggered	The ESMF will establish the modalities and procedures to address potential negative environmental and social impacts from the implementation activities identified in the PRAPs, including the screening criteria, procedures and institutional responsibilities.
Natural habitats OP 4.04 UNFCCC	Triggered	The PRAPs include activities in SUFs, and High Conservation Value (HCV) forests (natural habitats and critical natural habitats). Any crucial issues pertaining to natural habitats and critical habitats arising from the PRAPs will be addressed through the SESA and potential negative impacts addressed in the ESMF.
Forests OP 4.36 UNFCCC	Triggered	The PRAPs include activities affecting management, protection, or utilization of natural forests and/or plantation forests. Any critical issues pertaining to forest related to the PRAPs will be addressed through SESA and potential negative impacts addressed in the ESMF.
Pest Management OP 4.09	Triggered	Unlikely to see any large increase in use of pesticides increase as a large scale intensification of agriculture is not a program activity and an integrated pest management approach would be preferred do to the proximity of some potential sites to protected areas.
Physical and Cultural Resources OP 4.11 UNFCCC	Triggered	Considering that ethnic minority people often have close connection with forest areas, including spiritual connections, it is possible that in isolated cases REDD+ activities could interfere with villager defined sacred sites such as special groves. Expected not to occur on anything but a case-by-case basis.
Indigenous Peoples OP/BP 4.10 UNFCCC	Triggered	The implementation of the PRAPs with PFMBs SFCs and SUFs MB can be expected to affect ethnic minorities and other forest dependent communities, PRAP implementation may also catalyse restrictive land zoning processes throughout the area that may put ethnic minority livelihoods at some risk. The ESMF will include an Ethnic Minority Planning Framework (EMPF). The proposed mechanisms will help address the underlying problem of adequate consultations with specific communities in specific locations for proposed interventions through process plans (REDD+ Needs Assessment and a management plan and a Social Screening Report) requiring the development of an impact and mitigation and to avoid or address potential undesirable effects.
Involuntary Resettlement OP/BP 4.12	Triggered	It is unlikely that involuntary resettlement or land acquisition will take place in the ER-P areas (e.g. out of SUFs or PFMBs), but there is higher potential for an involuntary restriction of access (for example, NTFPs/ fuelwood collection) to legally designated production and protection

[98] This table updates the 2012 “Integrated Safeguards Data Sheet” prepared by World Bank for the FCPF Grant.

World Bank Operational Policies	Updated status (Result of SESA phase 1 Investigations)	Proposed approach
		forest areas and protected areas resulting in adverse impacts on the livelihoods of affected persons. The ESMF, including detailed Policy and Process Frameworks will be prepared accordingly and will include the above mechanisms for processes ensuring adequate consultations with specific communities in specific locations for proposed interventions through the preparation of process plans (REDD+ Needs Assessment and a management plan and a Social Screening Report) when working with the management board entities and with a benefit sharing agreement mechanism for the natural resources use. The forest sector already has experiences of this type of process and agreement.
Safety of Dams OP 4.37	Not Triggered	
International Waterways OP 7.50	Not Triggered	
Disputed Areas OP 7.60	Not Triggered	
Piloting the Use of Borrower Systems to Address Environmental and Social Safeguard Issues in Bank-Supported Projects OP 4.00	Not Triggered or Applied	

There are World Bank financed infrastructure projects in several of the six ER-P provinces, most notably hydropower projects, but also transport projects including intra-provincial highways. The hydropower projects trigger more significant environmental and social safeguards than the transport infrastructure projects because all are located in close watershed areas that are originally forested and are located very close to protected area nature reserves with international levels of biodiversity. However, it is assumed because the World Bank has safeguards in place to monitor the impacts of such projects it will be unnecessary to include these projects (or those of other providers of ODA infrastructure, notably the ADB which has similar although not identical safeguard policies to those of the World Bank) in the ER-P. Similarly, it will be assumed that such projects financed by the Government of Vietnam or under the tutelage thereof have complied with relevant laws and policies taking into account these have changed somewhat although not significantly such as the Land Law of 2013 compared to other laws.

As the Program is being supported by the World Bank a Strategic Environmental and Social Assessment (SESA) this a two step process: a SESA Phase 1 for the ER-P NCC region and a Phase 2 national SESA and an Environmental and Social Management Framework (ESMF) in similarity a two phase approach is is also followed for the ESMF, and the Phase 1 document is in the final process of being prepared. This is to ensure specific program activities during implementation comply with the ESMF. The ESMF *inter alia* includes the following sections and conforms to ESMF required by the World Bank:

- Background and Program Description (to include components);
- Purpose and Processing of ESMF (purpose and rationale for ESMF and institutional and implementation arrangements);
- Methodology Utilized (detailed in-depth literature review, interactive discussions, field visits, and preparation of ESMF);
- Baseline Social and Environmental Data (location, physical characteristics, and socio-economic background;
- Policy and Regulatory Framework (to include both WB and GoV policies that will contribute to the regulatory framework);
- World Bank and GoV Safeguard Policies (To include identification of gaps and proposed gap-filling measures between World Bank and GoV policies);

- Potential Positive and Negative Impacts (Positive impacts, potential adverse environmental impacts, social impacts, environmental and social management processes, program environmental and social screening, environmental and social instruments, monitoring plans and indicators, and monitoring roles and responsibilities);
- Coordination and Implementation (REDD+ review, environmental and social screening, compliance and reporting); and
- Capacity Building and Technical Assistance (Implementation and management capacity for developing ESIAs and ESMPs); and Consultation and Disclosure (ESMF disclosure, public consultation, feedback and grievance redress mechanism, and establishment of grievance redress committee).

There will also be annexes associated with Minutes of public consultations and meetings; Screening Checklist, Operational Positive and Negative Matrix; Template for ESMP Checklist; Minimum Contents of ESIA; Sample E&S Clauses for Land Acquisition; and, Detailed Program Description.
There is a draft new National REDD+ Action Program currently being developed and this is expected be finalized next year. Once the NRAP Decision is issued by the Prime Minister, the national SESA/ESMF will be prepared/finalized, and as necessary, the ER-PD and the associated safeguard documents will be updated/supplemented with additional policies and measures and the resulting potential environmental/social impacts and mitigation measures and as part of the national SESA (Phase 2).

Currently there is no finalised Feedback and Grievance Redress Mechanism (FGRM) that has been specifically developed for this Program, however, a joint approach is under development with UNREDD II in Vietnam and a program that is currently piloting technical support is under way in 18 sites, including one of the ER-P province (Ha Tinh) and results of the pilot exercise are due in November 2016 and these will be used to finalize the FGRM approach. MARD needs to ensure it is consistent with FGRMs that are currently being utilized in Vietnam and it fully encompasses the need for Free, Prior and Informed Consultation (FPIC) of not just affected ethnic minority peoples in Vietnam but also the majority Kinh people. It can be noted at this juncture any aggrieved affected person has the full legal right without cost to themselves to pursue grievances in a court of law and there are detailed grievance mechanisms already contained with a number of laws, for example, the Land Law 2013. It can also be noted that if grievance redress requires a court of law judgment this must be completed within 6 months of the aggrieved person lodging their grievance at the lowest administrative level in Vietnam (Commune People's Committee). However, ideally all grievances should be resolved at the local level (and are often resolved for example at the commune and District level) and based on consultations to date for this Program and the past experience of MARD at the project level most affected people prefer grievance resolution at the local level (see following sections on the current systems).

As there are a number of program interventions in different dispersed locations and it is expected to involve the improved management of PFMBs, SUF MBs, SFCs which may create opportunities for local people through the participatory and sustainable management of local resources and forest investments, but it may also result in reduced access of local people to forest products and land or the program interventions may include minor construction of infrastructure such access tracks or village based infrastructure.

A resettlement plan or an abbreviated plan cannot be prepared since the numbers and location of displaced persons are not known at this stage. Instead, a Resettlement Policy Framework is needed to address the various types of land acquisition and resettlement that may occur during the program. The Resettlement Policy Framework lays down the principles and objectives, eligibility criteria of displaced persons, modes of compensation and rehabilitation, participation features and grievances procedures that will guide the compensation and potential resettlement of these persons. It further describes the planning and documentation requirements for such activities under the program.

For involuntary resettlement impacts (defined as both physical and economic displacement), the proposed Resettlement Policy Framework includes a Process Framework. The Process Framework will particularly help to assess and address restrictions in access to natural resources and remedies to these restrictions on

a case-by-case basis. It addresses two World Bank safeguard policies: OP 4.12 on involuntary resettlement and OP 4.10 on indigenous peoples (referred to in the country context as ethnic minorities).

In the ER-P the six larger ethnic minority groups constitute about11.5% of the total population, although in forested areas of upland districts the %ages are much higher (up to 95% of the population. The EMPF that has been prepared and a range of positive impacts are proposed as follows:

- Protection and development of natural forests to ensure the sustainability of water resources used by local ethnic minority communities;
- Longer harvesting cycle to increase the value of production forest products through producing higher-value forest products;
- Cash and non-cash benefits based on the enhancement of forest carbon stocks to improve both the living standards of ethnic minority groups and facilitate greater levels of participation; and
- Improve the capacity of ethnic minority groups to sustainably manage forest land that has been allocated to them.

Negative impacts that will have to be mitigated include the following:

- Restricted access to forest land will be overcome with training courses on how to increase production on remaining forest land;
- The longer harvesting cycle will result in deferred income but the costs of deferment can be overcome through micro-financing; and
- The longer harvesting cycle also impacts negatively on local waged employment and reduced incomes but specific measures to offset these impacts will be introduced with ethnic minority group concurrence

Ethnic minority households who are not forest owners will not benefit from cash payments made to forest owners but will benefit from demand-driven non-cash benefits to improve livelihoods.

The presence of ethnic minorities in the ER-P area is clear, but the location and involvement and circumstances for each proposed intervention could not be determined until the interventions programs/subprojects are identified during program implementation so an EMPF is prepared. This EMPF provides guidance on how EMDP for the program/subproject should be prepared to ensure consultation with affected ethnic minorities in the subproject areas and help affected ethnic minority peoples receive culturally appropriate social and economic benefits and when potential adverse effects, the impact are identified, avoided, minimized, mitigated, or compensated for.

While resettlement is not envisaged there may well be instances of restricted use to existing forest land that will result in some resettlement of small communities of forest dwellers or some may be proposed from the SUFs or PFMBs and such resettlement is not eligible for program funding which is regulated already by government Decrees. The cost of compensation and other allowances will be met by the GoV and not this Program. Similarly, reforestation or afforestation may result in the loss of existing productive agricultural land. Compensation for such activities will be met by the GoV and not the Program.

Plantation development and the protection of natural forests

An environmental concern is the perceived risk of plantation development leading to the clearing of natural forests. However, this risk is believed to be moderate and will be limited to a small area. The site-level activities are expected to cover around 360,000 ha, of which the development of new plantations covers only approximately 53,000 ha (of which around 7,000 ha will be attributable to the World Bank's coastal forests program). The ER Program will work through the ACMA to ensure that plantation establishment follows SFM practices, and does not replace natural forests. This will include support for mapping of remaining forest areas, awareness and capacity building, linking plantation development to FSC certification, and tying benefit sharing to the protection of natural forests.

The small-holder plantation component has the potential to contribute to closing the gap between domestic demand and supply of wood products, and thus reduce pressures on remaining areas of natural forest, providing that the respective products are substitutable in the market. With provision of adequate extension services, proper choice of species, and environmentally sensitive cultural practices, this component could also lead to the rehabilitation of many degraded lands and to real improvements to the welfare of local communities.

Furthermore, simple codes-of-practice will contribute towards ensuring viable, sustainable and environmentally compatible plantation management among plantation owners, particularly when linked to eventual FSC certification. To this end, the ER Program will build on the Environmental Protection Guidelines for Plantation Management that were developed as part of the EIA for the FSDP. These guidelines prescribe environmental impact management measures in nine main areas: site selection, species selection; management regime, plantation establishment; plantation tending; integrated pest control; fire prevention and control; access and harvesting; and monitoring and evaluation

Gender in the program area

The 2013 Constitution of Vietnam upholds women's equality, and there is a 2006 Law on Gender Equality, and the 2013 the Land Law consolidates that women's names also be included on Red Books rather than simply "head of household." Additionally, there are national and provincial strategies to 2020 to promote women's rights. Among the mass organisations, the Vietnam Women's Union (VWU) promotes gender equality and women's participation in development. Despite this, however, gender equality has not yet been mainstreamed in reality. Rural women's concerns, whether Kinh or ethnic minority, are not yet taken seriously enough in areas that greatly impact their livelihoods: land, agriculture and forestry. These remain male-dominated professions where gender mainstreaming has yet to take place and for example, in some of the provincial DARD or forest protection offices, the only women working there are the accountants. Cadastral officers are, more often than not, male.

The first legal reference to husbands' and wives' equal rights to property was Decree 70/2001/ND-CP detailing the implementation of the Marriage and Family Law of 2000. It stated that all documents registering family assets and land use rights must be in the names of both husband and wife. The Land Law of 2013 also enshrined women's usufruct rights to all types of land. Nonetheless, women's rights remain less than men's. There are several reasons for this. The Vietnamese system of household registration identifies a "household head." This has unfortunately resulted more or less in men automatically being named the "head" of the household except where there are women-headed households (generally through widowhood, abandonment and/or divorce). In the past, this automatic naming of one person as head of household led to thousands of Red Books being issued in the names of men only; those issued already have never been updated to include women's names on them.[99] In the ER-P area, for example, many Red Books issued before around 2005 do not have wives' names on them in contravention of Decree 70 because local land authorities lacked both awareness and capacities to carry out the provisions in this Decree.

Another issue related to women's land use rights is that when they have been allocated agricultural or forest land it is often less than that which men are allocated because a female-headed household likely has less labour than a male-headed household.[100] This is because in some localities, land is allocated based on the available labour in the household at the time of allocation. The less the availability of labour can result in less the land the land being allocated to households with more labour to undertake labour intensive wet rice production.

[99] Among some of the ethnic groups that are particularly patriarchal in their orientation (Hmong and Dzao are examples), this results in a doubled disadvantage for women in that they have no customary or hereditary rights to land and neither do they have a legal right if their name is not on the LURC.
[100] See USAID (2013) *Country Profile. Property Rights and Resource Governance, Vietnam,* p. 11.

As mentioned above, common property rights are not formally recognised in Vietnam with the emphasis towards individual and household property rights that suit the Kinh majority but not large numbers of ethnic minority communities. This also has a negative effect on women, as with their still reduced land rights, they rely more heavily than men do on common property rights to meet livelihood needs for themselves and their families. Women, for example, maintain a greater interest in forest in terms of NTFPs. More women than men will go to the forest to search for NTFPs, whether for sale or for domestic use. Ethnic minority women are more likely to have knowledge of different forest foods compared to men or to Kinh women. Thus, women are more concerned about reducing availability of both NTFPs and of firewood in their areas. While NTFP collection is fairly arduous work, and does not result in large incomes, as mentioned women require steadier sources of income to make food purchases for their families. In the areas visited there are few such steady sources of income available, as cropping is generally done on a once yearly basis, and most small livestock such as poultry are not raised for income generation purposes.

Gender inequality vis-à-vis land use rights, including forest land rights, has the potential for serious negative implications for women's abilities to benefit under REDD+ on the same scale as men. Under PFES-type schemes that require formal land tenure arrangements, women are sure to be disadvantaged. Additionally, to this, a woman-headed household may be left out of forest protection contracting because of labour shortages in the family (or indeed unwillingness/ unavailability to go on forest protection patrols. When women are represented to a much lower extent on land titles, it also may mean a reduced availability of credit for productive investments (this does not apply to VBSP loans which are based on group joint liability). If REDD+ payments are excessively delayed (performance-based), then there is almost no way for women-headed households, or poor households in general, to participate equally with households that can afford to wait for delayed payments for labour outlays.

At the local level, it is noticeable that women tend to speak up less in mixed gender groups than when they are in women-only groups. This tendency is less marked among the Kinh than among the ethnic minority women because of the language factor-fewer labour-aged ethnic minority women have had the opportunity to go beyond primary school (if that) compared with the Kinh. Thus, ethnic minority women feel much shier to speak up, partly because of gender relations and expectations and partly because of their command of the Kinh language. Official meetings, however, are virtually always conducted in Kinh. Moreover, there is still a tendency to call "heads of household" for village meetings. If women are to attend, it needs to be explicitly mentioned. Otherwise, if written information is provided on a CPC signboard for example, it is nearly always in Kinh.

This language barrier has many implications for ethnic women's access to information and services and their ability to participate actively in consultations. It also has implications for their active participation in local planning, and other discussions, that may have strong impacts on their livelihoods., They may attend a village meeting but be unable to give an opinion (without anyone really noticing because it is usual for men to speak up more than women). A lack of confidence in use of Kinh language skills will also affect ethnic minority women's mobility and their willingness to attend, for example, commune-level meetings or training sessions. This has especially serious implications for female-headed households which were identified to the SESA team as being among the poorest in the villages visited.

The objective of the Gender Action Plan (GAP) is to promote women's participation in the program and share in the benefits, maximize positive gender equality impacts as well mitigate possible risks and negative impacts. The GAP has three approaches: (1) provide opportunities for and strengthen the role of women in local economic activities; (2) disseminate information about environmental sustainability and social risks to men and women; and (3) increase female representation in the sector and in decision making positions. An important strategy for empowering women will be ensuring that each ACMA entity has one women elected from each village to serve on the management board and for women via the Vietnam Women's Union to also be represented on these management boards. These strategies seek to address limited availability of sustainable livelihoods and gender equality in livelihood opportunities, unequal impact from the poor environmental sanitation due to female higher exposure and gender defined responsibilities, low female representation in government institutions and decision making processes.

14.2 Description of arrangements to provide information on safeguards during ER Program implementation

The overall program has adopted a number of participatory approaches and held consultations with the different stakeholders and forest land owners. The SESA Phase 1 included social and a qualitative socio-economic assessments, carried out through consultations with the various local stakeholders and a quantitative baseline socio-economic survey which has resulted in updating of the safeguards that will be expected to be triggered and an approach that fits with the dispersed and localised interventions and with different forest management entities.

Overview of the monitoring and evaluation system including safeguard information collection

Progress towards achievement of the program development objectives including providing information on safeguards will be measured through a monitoring and evaluation (M&E) system that will be supported by the program and will be an integral part of the program management and decision-making processes. M&E at higher levels will be developed as a routine function of government agencies at those levels, rather than as project-specific M&E and site based program performance monitoring, and safeguard monitoring will also be undertake to feed lessons learned quickly into revising systems, safeguard guidelines and procedures, as well as the training program and, for example, awareness raising on safeguards. The performance monitoring will be used to determine the progress in program implementation against established benchmarks (including safeguards) and milestones indicated in the program document and work plans.

- M&E will cover both project performance monitoring and effectiveness monitoring and MMR which is handled separately (see Section 9) and includes community forest monitoring which will be undertaken through the PFMS commune based forest monitoring system (this is being introduced as a pilot in all ER-P provinces (with funding from JICA, FCPF and VFD) and will use a tablet based approach that will allow information to be sent to FORMIS;
- Participatory M&E tools will be used at the village level, to encourage broad-based participation and to particularly target the poor and vulnerable, and participation will be monitored and disaggregated in terms of gender, ethnicity, and household socio-economic status.
- The following guidelines will be considered when developing the full M&E system which includes safeguard monitoring, updating the draft Results Framework and for identifying potential indicators:
    - Disaggregate information by gender, ethnic group, and household socio-economic status;
    - Involve villagers in designing the monitoring program, collecting data, and drawing conclusions from the data;
    - Continue feedback meetings after fieldwork and incorporate recommendations into systems development;
    - Keep disaggregated records of involvement and participation in different activities at village level and also in the databases;
    - Note successful and unsuccessful strategies for future reference in curriculum development, field implementation, and other project areas; and
    - Identify indicators and tools to measure the project's impacts on women, ethnic groups, and the poor.

Monitoring of safeguards

The government has prepared draft social and environmental safeguards that are compliant with GoV laws and policies and World Bank and Cancun Policies and will be monitored to ensure that were there are negative impacts they will be mitigated in accordance with the policy instruments as required by the World Bank and these include the ESMF (this includes a Resettlement Policy Framework, Process Framework, Ethnic Minority Process Framework and a gender action plan). Monitoring of safeguards was discussed and documented in the consultations with communes and districts during the preparation of the PRAPs.

Social safeguards will be monitored to ensure that negatively affected households/ communities are no worse off as a result of possible restrictions on natural resource use. This will include, if necessary, monitoring of possible compensation payments and livelihood restoration measures to ensure negative impacts are mitigated and affected persons are compensated either on a land-for-land basis or via cash compensation for loss.

In relation to ethnic minority households and communities, measures proposed in the EMPF will be monitored to ensure that free, prior and informed consent was obtained for culturally appropriate measures that will be designed to mitigate adverse impacts.

Similarly environmental impacts that trigger environmental safeguards will be monitored to ensure that they are mitigated and conform to the processes that are described in the ESMF.

Safeguard monitoring documentation include the RNA, SSR, management plans of PFMBs and SFCs and operational management plans of the SUFs, and the ACMA processes, which have been designed to ensure a more socially inclusive approach by all stakeholders to natural resource management, will be the major socio-economic monitoring process and will be combined with the PFMS. In addition the SUFs are required to undertake management effectiveness tracking tool assessments that will help in the monitoring of biodiversity and conservation issues and environmental safeguards. The ESMF includes a Policy Framework which includes a Process Framework (which will assess and address restrictions in access to natural resources and remedies to these restrictions on a case-by-case basis. It addresses two World Bank safeguard policies: OP 4.12 on Involuntary Resettlement and OP 4.10 on Indigenous Peoples) and the Policy Framework requires that the preparation and implementation of Abbreviated Resettlement Plans (and of consultation and participatory management activities with PFMBs and SUFs MB) and the following will be integrated:

- Use of village meetings to explain the interventions and possible impacts and any mitigations that may be required, and diagrams of designs of plantation transformation or new plantations will be shared with the villages;
- The potential impacts will be identified early on in the proposed REDD+ Needs Assessments. These assessments, as well as the identification of forest investments will also as necessary look at different natural forest resource management approaches, and all activities will require to be conducted through consultation with local people, and with a view to promote participatory natural resource management involving the local people;
- The implementation of this Policy Framework will be carried out in accordance with the EMPF throughout program implementation. Representatives from these communities will participate in local program management boards; and
- Social Screening Reports will be developed as part of project preparation and will identify potential local safeguards issues (see Section 5 on Consultations).

Monitoring of safeguards at the program level the central program management unit organisational structure will include a socio-economic and environmental monitoring and evaluation unit to undertake all monitoring of the implementation and reporting of the RNA/ SSR and ACMA processes. The main responsibilities of the socio-economic and environmental monitoring and evaluation unit will include: (a)

checking and overseeing compliance, including supervision and monitoring, of all environment and social aspects; (b) dealing with the subproject/ intervention owner for all matters related to the project safeguards; and (c) have overall responsibility for the coordination of subproject/ intervention environmental and social safeguard implementation. To ensure consistency and transparency the ER-P will, in addition to the central PMU monitoring work, will monitor the management plans and operational management plans and ACMA activities at random to ensure safeguard policies are being implemented. Such monitoring should be undertaken by the program and will be supported by an independent monitoring entity with knowledge of safeguards in Vietnam. Information related to the safeguard measures and performance would be periodically disclosed to the public.

Monitoring of safeguards at the provincial level the RNA and SSR, contribute to the Management plans and operational management plans and, will include an assessment of their potential impact and risks, and this will help establish a socio-economic (impact) monitoring system and be well placed to document relevant changes over time and will feed into the M&E set up by the management plan or operational management plan for the management of the effectiveness of the PFMB, SFC and SUF MB and help to monitor the social impact of ER-P and REDD+ induced activities, and also keep record of any outside changes that have an impact on the livelihoods of local people living either inside the PFMBs, SFCs, and SUF (or in the buffer zone of the SUF).

The monitoring of the environmental concern that plantation development may lead to the clearing of natural forests will include monitoring environmental impact mitigation measures in nine areas: site selection, species selection; management regime, plantation establishment; plantation tending; integrated pest control; fire prevention and control; access and harvesting; and monitoring and evaluation.

The SESA phase 1 includes the identification of safeguard issues and sets out safeguard mitigations and these are included in the ESMF relating to monitoring of safeguards and conforms to an ESMF as required by the World Bank and includes:

- Background and Program Description;
- Policy legal and administrative framework;
- Potential project impacts and mitigations measures;
- Procedures for review, clearance and implementation of the safeguard instruments including implementation supervision, monitoring and reporting;
- Implementation arrangements;
- Capacity building training and technical assistance;
- ESMF implementation budget;
- Grievance and redress mechanisms; and
- ESMF consultation and disclosure.

The draft Safeguard Information System (SIS) for Vietnam is under preparation, which will help provide information on existing systems and sources of safeguard information, and this will provide a system for providing information on how the Cancun safeguards are being addressed and respected.

Safeguards at the national level with other matters will be further addressed in the national SESA Phase 2 (due in 2017) and national ESMF (the final draft is due in 2017), and it is expected to include the results from the national SIS, and further capacity strengthening initiatives on REDD+ for the community, especially ethnic minorities and vulnerable groups.

14.3 Description of the Feedback and Grievance Redress Mechanism (FGRM) in place and possible actions to improve it

It is possible that some of the interventions that will be proposed by the ACMA may result in one or more households being adversely affected by the intent of these interventions. For instance, a possible scenario might be that in the interests of a more sustainable approach to forest management the ACMA might agree that hitherto original forest land that has been converted to agricultural cropping uses with, or without the approval of the local authorities, need to be reforested. Individual households, villages or even local authorities who may have consented formally or more likely informally oppose such a move because they believe existing livelihoods will be threatened and the decision made does not reflect the reality on the ground: people and their stomachs before trees and carbon emissions being reduced. This might occur even though the criteria for the BSM excludes such practices. Hence this is an instance where a group of stakeholders do not accept the decision of the ACMA and are seeking to overturn its ruling. Conversely a majority might decide that more forest land is required for agricultural cropping purposes because the short-term gains from agricultural cropping outweigh the benefits from longer-term sequestration of carbon emissions.

To ensure that scenarios such as this if they occur in the ER-P are to be addressed a Process Framework will be prepared to ensure that in instances where households or communities are adversely affected they will be compensated in accordance with the WB's OP:4.12 on Involuntary Resettlement and Government of Vietnam Laws and Policies relating to Involuntary Resettlement. This is important because at the sub-provincial level except where districts have had experience with infrastructure projects involving involuntary resettlement there is very little knowledge of required compensation measures. For instance, there is not much awareness that even if land is illegally utilized and is not able to be legalisable (such as land allocated to the SUFs) those who have utilized the land are eligible to be paid compensation for lost production, but not for the land. Measures outlining the approach to the payment of compensation in such instances are included in the Resettlement Policy Framework (RPF).

Safeguard measures in relation the Free, Prior and Informed Consultation (FPIC) of Ethnic Minorities in the ER-P are included in the Ethnic Minority Policy Framework (EMPF). These measures are deigned to ensure ethnic minority peoples derive as many benefits from ER-P as non-ethnic minority persons although in the ER-P provinces in the upland areas where ACMA will be implemented most of the villages in the buffer zones are peopled by ethnic minority groups. Nevertheless, there are some villages that include more than one ethnic minority group and the stated intent of the WB's OP:4.10 on Ethnic Minorities and Vietnam's own Laws and Policies relating to Ethnic Minorities are designed to ensure all ethnic minority groups are included. The principles enshrined in FPIC do not imply that every single stakeholder has to agree with an action or series of actions but there has to be informed consensus that such actions are acceptable. By informed this also includes ethnic minority women, and poor and vulnerable persons. The Process Framework will be translated into appropriate languages if necessary, designed in ways that functionally illiterate and people suffering from physical impairments such as visual or audio impairments will be able to understand.

In relation to disputes and grievances in Vietnam there are established mechanisms that commence at the rural village or urban neighbourhood level whereby all grievances wherever humanely possible be resolved at this level on an informal basis. If the aggrieved parties cannot resolve their grievance/s at this level on an informal basis they can then take their grievance to the Commune People's Committee. The CPC has 15 days to respond and if it cannot resolve the grievance the aggrieved party/s next course of action is to lodge the grievance with the District People's Committee. As with the CPC the DPC is required to respond in 15 days. Should the grievance not be resolved then it can be lodged with the Provincial People's Committee which has 30 days to respond. If the grievance has not been resolved by the PPC the aggrieved party/s can seek recourse in a Court of Law. It is required to hand down a judgement within 60 days from date of lodgment. Now depending on workloads at all levels of the GRM there may be some slippage but the rule-of-thumb is that all grievances should be resolved within 180 days of being initially lodged with the CPC. In the case state investments supported by ODA financing the investor whether public or private or where there is a partnership between the public and private sector is legally obliged to pay all costs associated with seeking grievance redress.

Therefore, it is proposed in line with the joint FCPC/UN-REDD+ Program for Vietnam that taking into account FRGM processes that are commonly understood in the Vietnamese context that there should be four relatively simple steps as follows:

1. Receive and Register Grievance by the elected village representative from the aggrieved party where village level constituent is seeking grievance redress for grievances that can be linked to Project activities. This can be undertaken at the monthly meeting proposed or on an informal basis and where a written grievance is to be prepared the elected village representative or a literate member of a village level organization is to assist the aggrieved party if the latter requires a written grievance be lodged. However, ideally all grievances where possible should be resolved at the village level but for reasons stated above this might not be possible. The GRM referred to by the joint FCPF/UN-REDD+ Program is very unrealistic when it suggests grievances can be lodged by email or fax. Such facilities simply do not exist in most upland villages.

2. Acknowledge, Assess and Assign involves acknowledging receipt (this assumes it cannot be resolved at the village level) by the ACMA and it is the responsibility of the elected village representative to ensure it is received by this entity. Although given that a representative of the ACMA from the PFMB, SUFMB or SFC should be proactive and visit each village at least once every 4-6 weeks the aggrieved party at the village level could also lodge their grievance during this visit. In acknowledging receipt of the grievance, the ACMA must clearly state how the grievance will be processed, assess the eligibility of the aggrieved party to lodge the grievance (although this should be initially undertaken by the elected village representative), and assign organizational responsibility for proposing a response. For instance, if the grievance involves a land allocation issue and the subsequent issue of a LURC the ACMA must assign organizational responsibility to local authorities (legally existing forest management entities are not legally authorized to allocate forest land to any group). Similarly, if the grievance revolves around land conversion than the appropriate authority (namely Department of Natural Resource and Environment must consider the grievance because this is outside the purview of the ACMA.

3. Propose a Response will involve one of four actions as follows: (1) direct organizational response or action, which may be to CPC, DPC or line agency such as DARD or DONRE; (2) stakeholder assessment and engagement, which would involve assessing the efficacy of the aggrieved party's grievance and then engaging with the stakeholder; (3) if not able to be resolved within the existing BSM, such as when involuntary resettlement impacts triggered by infrastructure projects are the cause of the grievance refer to that specific project GRM; or (4) based on the agreed criteria BSM decided whether the grievance is ineligible.

4. Agreement on Response is either to agree to the party seeking grievance redress and implement the agreed response resulting in either the grievance being resolved successfully and closed to the satisfaction of the conflicting stakeholders or the grievance unable to be resolved. In this latter instance the grievance staff will be required to consider whether the aggrieved party/s should revise their approach for reconsideration or the grievance closed without further action. Opting for the latter course of action should result in the aggrieved party/s being able to have their grievance if it is considered very important to them adjudicated on in the District Court, which would provide a judgement that would be legally binding on all parties to the dispute or grievance.

It needs to be noted that the FGRM has to be readily accessible to all stakeholders including older ethnic minority people who are not competent in the use of the Vietnamese language, poorer village persons who cannot afford expenses associated with the cost of seeking grievance redress including litigation in a court of law, and on an individual, group or collective village basis. To ensure that the elected village representative is not co-opted by the ACMA to the detriment of the village-level constituents s/he is elected to represent if village-level constituents deem their representative to be generating poor outcomes they will have the right to replace this representative. How the latter deals with grievance redress will be an important litmus test for her or his performance as the elected representative. However, the elected representative must be afforded the opportunity to assess whether constituents seeking grievance redress actually have a legitimate grievance.

15 BENEFIT-SHARING ARRANGEMENTS

15.1 Description of benefit-sharing arrangements

15.1.1 Background

After a series of iterative actions extending over nearly 12 months involving all potential stakeholders for the poorest and most vulnerable of ethnic minority forest dependent households, the FCPF readiness preparation project has been able to prepare a draft outline of what the benefit sharing mechanism (BSM) and plan (BSP) should look like. Initially stakeholder consultations, especially at the national and provincial level revolved around issues as to how benefits would be shared based on benefit flows of a monetary nature from the national level to the six provinces. There was in essence more attention paid to "mechanisms" that would reach out to and include all stakeholders.

The discussion revolved around who would be entitled to these benefits and initial discussions, including three project workshops in Hanoi, Thua Thien Hue and Nha Trang, revolved around most of the monetary benefits would be shared by all stakeholders involved in forest management activities (PFMBs, SUF, and community groups or individual households). Some consideration was paid to such stakeholders being entitled to share in non-monetary benefits but for the most part the latter were poorly defined.

Apart from the issues surrounding the distribution of benefits all six provinces stated that the design of the BSM was very complicated and they could not understand the mechanisms.

By mid-April after considerable discussion the Project, including other stakeholders, proposed to adopt an ACMA that would not only more effectively ensure that a workable BSM could be developed but would serve to ensure all stakeholders[101] be included.

15.1.2 Adaptive Collaborative Management Approach

The ensuing discussion of the ACMA is based on four important principles as follows: (1) value-adding approach whereby all people with interests in the forest agree to act together to plan, observe and learn from the implementation of their plans while also recognizing that sometimes plans do fail; (2) characterized by conscious efforts among such groups to communicate, collaborate, negotiate, and seek out opportunities to learn collectively about the impacts of their actions; (3) working with a given group of people requires involving other people operating on other scales – PFMBs, SUFs and SFCs to produce sustainable outcomes that all stakeholders buy into; and, (4) recognition that effective facilitation can act as a catalyst to empower stakeholder groups, especially those hitherto disempowered such as forest-dependent communities without legal access to allocated forest land and NTFPs, to improve their own contributions, human, social, financial, environmental or institutional.

The possibilities have been discussed among stakeholders, in particular, the institutional capital benefits (especially mitigation of conflicts between owners, managers and users and more effective stakeholder engagement), social and human capital benefits (especially more sustainable approach to harvesting of NTFPs and logging), and natural, physical and financial benefits (especially local efforts to increase value or condition of forests through sustainable activities) are considered to be major benefits. Stakeholders consulted include most importantly forest-dependent stakeholders including village communities, SUFs, PFMBs and SFCs, as to how ACMA could result in a much more effective BSM that stakeholders would be able and willing to buy into and a summary of these responses are included below:

[101] Including those in systemic conflict with one another (e.g. State Forest Companies and forest-dependent ethnic minority communities who were involved in "zero-sum" activities such as attempts to restrict access to the harvesting of NTFPs by the companies and over-exploitation of these NTFPs by these communities) could possibly be resolved It was clear that from the series of participatory consultations FCPF had with both these stakeholders that unless the situation were to improve there would be little opportunity for REDD+ to contribute to the more sustainable management of forest and contribute to a reduction in carbon emissions.

15.1.3 Institutional capital benefits

- Improvements in access to (influence on) decision-making by women and marginalized forest-users, both in representation and participation, which at present is very limited at both horizontal and vertical levels in Vietnam;
- More explicit attention to equality in rules, regulations and distribution of resources than exists in other benefit sharing arrangements such as PFES;
- Significant increases in multi-directional information flows among users and between forest users and other agencies, which at present is largely unidirectional with little or no upward flow of information below the commune level;
- Increases in transparency and accountability and supporting mechanisms beyond those that mass organizations like the Fatherland Front are capable of effectively facilitating to the fullest extent possible at present;
- Development of increased internal capacity to manage conflicts that occur both between forest management entities and local communities and within both the forest management entities and local communities;
- Increased engagement of more forest users and mechanisms for sharing leadership and ownership, which at present suffers from ineffective stakeholder engagement strategies; and
- Social learning and collaboration can be seen in the context of co-learning and treating co-learners as people with specific knowledge based on their own experiences, including traditional knowledge and initiating dialogue whereby technical experts can learn from villagers and villagers can learn from technical experts.

15.1.4 Social and human capital benefits

- Incidence of conflict between different stakeholder groups could be reduced, which is a concern expressed by many forest-dependent communities especially those that have not been allocate forest land;
- Reciprocity amongst community members for livelihood-related activities, including forestry-based livelihood activities increased that would see the revival of the more positive features of traditional forest management activities;
- Existing asymmetrical poor relationships among and between stakeholder groups can be improved, a benefit that has been expressed not simply by forest-dependent communities but in the more forward thinking forest management entities;
- Relationships with neighbouring communities can be improved, which while not affecting every forest-dependent community is an issue raised by a significant minority of these communities;
- Collective knowledge developed within stakeholder groups (e.g. among women) because of improved relationships that would transcend traditional gender relations in many local communities where women were often marginalized;
- Sharing of information and knowledge increased among stakeholder groups, which is quite difficult for some forest management entities because they have not been required in the past to share information;
- Social networks and platforms developed both within communities and between communities and also with forest management entities;
- More sustainable approach to harvesting of NTFPs and logging (e.g. greater scope for FSC where relevant), which both local forest-dependent communities and forest-management entities either explicitly or implicitly acknowledge is an endemic problem;
- Community representation mechanisms as evidenced by involvement of settlers and women in village decision-making begin to work better that would represent an advance not only on the existing situation but also the culture of representation that existed in the past;

- Management of village affairs can be adjusted and structures and processes related to decision-making at the village level improved;
- Community leadership shifting towards institutions developed by the community rather than simply relying on top-down institutions imposed by higher levels of government;
- Marginalized people – even where still living in poverty and facing related barriers such as lack of time to be involved – can be better represented and more engaged in decision-making;
- Communication within the user group can be enhanced via more socially inclusive practices that group members would be prepared to accept;
- Equity in decision-making and benefit sharing receives more emphasis, something that has been lacking from existing BSM and has proved quite difficult for forest management entities to accept;
- Access to decision-making, training and other opportunities more open to women and the poor, which are key benefits of the ACMA; and
- Individuals and the group as a whole likely to develop more confidence in taking up challenges, whether at the level of the forest management entity or local community level.

15.1.5 Natural, physical and financial capital benefits

- Such capitals do not need to suffer as a result even though relatively high transaction costs seem to favor better-off members of communities;
- Local efforts to increase value or condition of forests through sustainable activities (e.g., planting of herbal or medicinal gardens or fruit trees) can lead to a reduction in the illegal or over-extraction of forest products;
- It is possible to resolve boundary disputes that reduce behaviour leading to over-exploitation and the “tragedy of the commons”; and
- Linkages to stronger markets and market infrastructure together with adequate organization in the production and value chains can be better developed.

However, it is acknowledged that ACMA will work best where: (1) forest-dependent stakeholders have at least de-facto access to, and some control over forest resources; (2) policy and institutional frameworks provide sufficient space for local stakeholders to create and managed their own community forestry programs, by adapting existing government policies and frameworks to better accommodate stakeholder’s needs and perspectives; (3) government programs support the development of human and social capital not linked only to forestry programs; and, (iv) need to be open to incorporating a learning attitude in programs and activities and building adaptiveness in policies, programs or projects.

Forest-dependent communities were especially interested in engaging with the SUFs, SFCs and PFMBs in a non-confrontational manner to have forest land allocated where possible without high transaction costs, establishment of realistic and sustainable targets for the collection of NTFPs and logging, and the sharing of any monetary benefits that might accrue from the program.

Women in particular, who are often excluded from many forms of stakeholder engagement including, expressed a high degree of enthusiasm for the ACMA because as regular users of the forests they would like their voices to be heard. Post the Nha Trang Workshop on BSMs in April 2016 the Program has intensified its efforts to ensure that women and other vulnerable groups are included in the participatory processes associated the preparation of the BSM. This has also resulted in male stakeholders, whether at the institutional or the community level, being more accepting of the voices of women being heard and a consensus is emerging that unless women and other hitherto excluded groups (e.g. aged, youth and poor) are included in the ACMA it will not be successful.

15.2 The Adaptive Collaborative Management Approach and Benefit Sharing

A Benefit Sharing Plan, referred to here in the first instance as the Benefit Sharing Mechanism (BSM) that will incorporate individual Benefit Sharing Plans (BSP) for stakeholders at that manage and use the forests has been prepared. This draft BSM is incorporated into a process-driven structure based on collaborative management and referred to as the Adaptive Collaborative Management Approach (ACMA) that is based on the following four important principles:

1. A value-adding approach whereby all people with interests in the forest agree to act together to plan, observe and learn from the implementation of the BSPs;

2. It is characterized by conscious efforts among these groups to communicate, collaborate, negotiate and seek out opportunities to learn collectively about the impacts of their actions;

3. That working with a given group of people involving people operating on other scales (Protection Forest Management Boards: PFMBs; Special Use Forests: SUFs; and, State Forest Companies: SFCs) to produce sustainable outcomes that all stakeholders are able and willing to buy into;

4. A recognition that effective facilitation can act as a catalyst to empower stakeholder groups, especially those forest-dependent communities or households within such communities where some households have been legally allocated access to forest land or the right to harvest non-timber forest products (NTFPs) to improve their own contributions: human, social, financial, environmental or institutional or ideally a combination of all five livelihood capitals.

At present, there is an understanding in Vietnam of the co-management of forest resources that can be traced back to 2008 when the precursor to co-management and benefit sharing arrangements involving SUFMBs and local forest dependent communities was developed at the Song Thanh National Park in Quang Nam Province near the border with the Lao PDR. In the almost six years following this original initiative there have been numerous examples of co-management structures be put in place and benefit sharing arrangements developed.

Thus, while there is a precedent for cooperation between forest management boards (at least historically the SUFs and more recently the PFMBs) the emphasis has been on co-management, which was designed to promote both vertical networks (including consulting and learning processes among actors in vertical linkages and with local people) and horizontal networks (including local people collaborating with management boards), the outcomes have not been wholly successful. The Government of Vietnam based on an assessment of these outcomes and a preliminary study of the ACMA principles is in the process of concluding collaborative management processes rather than co-opted management processes are likely to be more successful in developing and implementing equitable but also effective benefit sharing arrangements.

Hence ACMA does not involve management boards surrendering or sharing control over an administrative entity but instead management boards with support from the PPC, DPC and CPC being able to collaborate with local forest-dependent communities to more effectively manage and improve upon existing forest resources. Buy in from these local forest-dependent communities will be based on elections held in each of the villages considered to be the most at-risk through deforestation and forest degradation. An adult male and adult female representative from each of these villages elected in accordance with established principles of grassroots democracy in Vietnam will serve on the management entity. The management entity will also consist of the management board representatives, the provincial REDD+ coordinator, nominees of the PPC and CPC, and mass organizations.

This management entity will deal with ER-P issues and will be funded to ensure it can undertake its activities. These activities as explained elsewhere will include livelihood investments to address the main drivers of deforestation and forest degradation, especially the conversion of forest land into agricultural land,

the over-exploitation of NTFPs, and illegal logging. The poorest and most vulnerable households will be targeted in those villages considered most responsible for deforestation and forest degradation, the rationale being that poorer households (also based on evidence from the SESA quantitative study) are more likely to be directly dependent on the forests for their livelihoods than non-poor and better-off households. The interventions to be discussed below are examples of interventions most likely to make at least a modest contribution to poverty reduction in the ER-P provinces.

The Government of Vietnam hopes that linking benefit sharing with collaborative management will go beyond simply incentivizing individuals and communities to sustainably manage and protect their forests through just providing compensation for their efforts. It wants to narrow the divide between the managers and users of forests and recognize the veracity of both “indigenous” and “technical” knowledge. It recognizes that the management of forests cannot be managed in isolation from land not utilized for forestry purposes and that local forest-dependent persons have livelihoods that include both forest and non-forest based resources and land use. The Government of Vietnam also wants to facilitate the empowerment of local communities in their relationships with managers of forests through the greater participation of ethnic minority women and poor and vulnerable villagers that to date have been largely excluded from any meaningful forms of participation. Finally, in many development programs such linkages dissipate following the cessation of external financing but in relation to ER-P insofar as carbon monetary benefits are derived from the Carbon Fund or other purchasers of carbon credits the benefits of ER-P should go beyond simply the implementation phase.

15.2.1 ACMA Structure and Processes

The ACMA structure is not designed to replace the existing management structures of the forest management entities but rather to complement them by facilitating far greater levels of collaboration between managers and users that generally exists at present. The six provincial REDD+ coordinators in the ER-P will over the next six months explain to forest management entities how they can benefit from ACMA and what processes they need to follow to ensure that the principles of ACMA will be deeply embedded in the BSMs and BSPs. Eligible and prescribed activities need to be discussed with these forest management entities. For instance, most activities already budgeted for in ODA projects and programs, significant infrastructure development, procurement of major expense items, basic staff salaries and office-running expenses, poverty reduction programs, physical displacement and resettlement of households, academic studies or activities that involve modification to the natural habitat are to be prescribed. Permitted activities would include BSM resource surveys and agreements, participatory boundary demarcation, community communication activities, awareness-raising activities, village-based forest protection teams and small-scale, demand driven livelihood improvement activities that address the major drivers of deforestation and forest degradation.

Each of the forest management entities buying into ACMA will work with the Provincial REDD+ coordinators and the local DPCs and CPCs to ensure that the processes described in the next section from the initial land use resource survey to the actual sharing of benefits can be implemented. The Provincial REDD+ Coordinators will be the link between ER-P at the ACMA level and both the provincial and national level. This Coordinator will also be represented on the ACMA and would have the power of veto over ACMA decisions if they were contrary to the objectives of the ER-P agreed upon by each ACMA.

As a first step the ACMA will include 2 to 3 representatives of the forest management entity including the person responsible for outreach to the villages identified by the CPCs as being most responsible for deforestation and forest degradation, Secondly the ACMA will include 3 representatives of the DPC – the chairperson or his or her nominee, the officer tasked with agricultural and forestry issues, and the cadastral officer – and at least one CPC official (preferably the member with the best “hands-on” experience of deforestation and forest degradation. Working on the assumption based on the average of 10 villages in each of the buffer zones, a woman and man from each of these villages will be elected by other adult villagers. It is also likely that mass organizations, especially the Vietnam Women’s Union and Fatherland Front together with an Ethnic Affairs Officer (if one is appointed), will be represented. This means that each ACMA will have up to 31 members who will meet at least once monthly or more often if required to discuss and approve ER-P related activities. While a female quota is disavowed given that there will be 10 women representatives from the villages and at least one VWU women will be much better represented than they are at present.

The chairperson of the ACMA will be the DPC chairperson or his or her nominee. This person will not be responsible for the day-to-day activities of the ACMA but as the designation implies to chair meetings. The reason for this is that the existing forest management entities have no legal jurisdiction over agricultural land unless it has been “legally” or otherwise forest land that was converted into agricultural land since at least when the first Land Law was passed in 2001. Because ER-P activities involve both forestry and agricultural land the DPC has to be involved. Of equal importance if existing forest land is to be allocated to individuals and households at the village level only the DPC, which acts on behalf of MONRE, is legally empowered to issue LURCs. Therefore, the linkage between the ACMA and DPC is very important. In relation to the CPC it is also very important because it will identify villages that are most responsible for deforestation and forest degradation and also in terms of payments for forest environmental services it is the lowest administrative entity (unless villages establish legally incorporated cooperatives) that payments from national or provincial government can be made.

At the village level, as explained above a woman and man representative will be elected by other villagers to serve on the ACMA. These two representatives will be the link between the ACMA and the village and will be mandated to bring to the attention of the ACMA the concerns of their constituents in the village and discuss with their constituents, decisions that were made or will be made by the ACMA. The ACMA will also have at its disposal one participation expert who will spend most of her or his time in each of the 10 villages providing outreach services on matters relevant to ER-P concerns. Villagers will also be able to hold formal or informal meetings with this participation expert to also raise any concerns they have and to consider any feedback this expert might provide. This is actually a very innovative approach that ACMA is offering because on an iterative basis it means each of these villages will be visited at least once every 6 to 8 weeks as part of the ER-P, which is something that has not occurred in the past with traditional rural development projects and programs. Moreover, it requires that villagers who were less likely to be consulted in the past including most women and other vulnerable persons must be consulted.

The day-to-day activities of the ACMA will be managed by the existing forest management entities but they will be bound by the decisions reached at ACMA meetings in relation to activities that have been agreed upon. For instance, the forest management entity cannot fund activities targeted at the non-poor households in a specific village where pre-existing criteria exists, as it will be, to target the poorest 25 households, nor can it fund activities that have not been approved by the ACMA. It can also not make a unilateral decision not to fund a specific village because it has received reports that activities meant to be regulated such as the over exploiting NTFPs or poaching wildlife or engaging in illegal logging. At present the PFMBs and SUFMBs can take unilateral action against both individual households within such villages or the whole village. With ACMA it is necessary to raise such issues at both the village and ACMA meeting level because based on the individual village BSA it is likely that an agreement had been reached in relation to quotas on NTFP harvesting, a moratorium on wildlife poaching, and under what circumstances is logging permitted.

The ACMA will be required to make financial decisions consistent with activities permitted within the scope of the BSM. For instance, the ACMA cannot make significant public infrastructure investments such as investments in energy generation projects, procure major expense items such as vehicles, generators or air conditioners or pay for basic staff salaries and office running expenses (with the exception of the salary of the participation specialist and expenses directly related to ACMA and BSM. The estimated budget for each ACMA on an annual basis is US$10,000, which includes the salary, travel expenses and board and lodging for the participation specialist and costs associated with the monthly ACMA meetings that includes participation fees for elected village members and DPC, CPC and mass organization’s representative’s participation fees. These are to be paid in accordance with cost norms that prevail in each ER-P and are also designed to ensure that opportunity costs for village members are included. The last provision is important because otherwise it would be very difficult for poor villagers to present themselves at the village level for election to the ACMA.

15.2.2 The Negotiated Benefit Sharing Plans

Vietnam already has templates for BSPs such as the BSP that was prepared by the Bach Ma National Park (SUFMB) seven buffer zone villages in Thuong Nhat Commune, Nam Dong District, Thua Thien Hue, which

is one of the six ER-P provinces. To develop the BSPs over a period of three months the SUFMB and the seven villages undertook joint investigations into the status of forest land (rich, medium and poor forest, rehabilitated and regenerated forest, and forest land that was now effectively grass-land) and decided what areas should be included in the BSP taking into account the flora and fauna of the forested areas. It was decided by both the SUFMB and the villagers that different types of forests required on different types of use, ranging from rich forest (47.3% of forest land) where only forest protection activities should be undertaken and the hunting of wildlife prohibited to rehabilitated and regenerated forest (constituting 30.4% of forest land): grassland in the SUF was infinitesimal at only 0.2% of forest land.

The household demand for NTFPs and estimated quantities and at what time of the year were discussed and agreed upon between the SUFMB and households (not simply the village head) on an individual basis. Because women based on the joint survey were the main collectors of NTFPs on an almost daily basis they were encouraged to actively participate in all process driven activities leading to the formulation of the BSPs although they were identified as Benefit Sharing Arrangements but the terminology per se is not an important issue. The end result was a BSP that defined agreed upon quotas for the collection of NTFPs, the name of each individual or household that signed up to the agreement (unfortunately the name of the female spousal partner was not included but would be included in the BSPs prepared for the ER-P. These BSPs included what months of the year would beneficiaries be involved in the collection of NTFPs (e.g., rattan months 3-9 and 11-12 or honey months 3-7) in relation to flora NTFPs and for fauna NTFPs (e.g., wild pig months 11-12 or forest snail months 1-9) but there were also variations from one village to the next (rattan in another village it was agreed would be collected from months 1-9 and honey months 6-7) or in some instances between different beneficiaries of the same BSP.

To ensure that there would be sustained buy-in from all beneficiaries a series of meetings were convened to discuss such issues as to how the BSP could be supervised and monitored and what level of reporting would be deemed necessary. During these meetings, it was recognized that conflicts might arise during the implementation of the BSP and it was considered necessary to discuss the negative impacts (identified during the preparation of the BSPs as the over-exploitation of NTFPs despite the agreed upon quota, local people or illegal loggers taking advantage of the more “open” policy to undertake logging without permission and the hunting of other species not agreed by the BSP participants to be hunted). Such issues would also be raised and discussed with BSPs prepared for the ER-P because ACMA is based on the principles of free, prior and informed consent. Beneficiary agreement also required a shared responsibility for avoiding or mitigating negative activities.

One of the essential differences between the BSMs that were prepared as part of the pilot BSMs targeted at the SUFMBs and buffer zone villages is that the ER-P involves not only these SUFMBs but also the PFMBs and SFCs. This of course is a far more complex undertaking. Additionally, the BSPs that will be designed as part of the ER-P will also be required to identify the poorer and more vulnerable households that will benefit from the commune-managed livelihood interventions that are also non-forest based. However, the most substantive difference is that the BSM of the ER-P, as pointed out above when discussing carbon monetary and non-monetary benefits provide challenges but also opportunities that were not possible with the earlier BSMs. There is a more holistic approach to sustainable forest management based on explicitly recognizing the linkages between agriculture and forestry and why sustainable agricultural activities are also very important to ensure sustainable livelihood developments of forest-dependent households.

Thus, while the BSPs will be in part based on the templates prepared for the earlier BSMs because they have proved to be very good at quantifying at least in the context of preventing the over-exploitation of NTFPs, the templates will require more detail. This will need to include the names of all individuals and households (and that includes gender, age and ethnicity), what agricultural and forest land they own (defined by the issuance of a LURC) or utilize legally or “illegally”, whether they have utilized, exceeded or need to utilize the 10m2 forest timber ethnic minority groups are permitted for household construction purposes. The BSPs will also need to include what forest environmental services beneficiaries are provided, how much they will be paid and when they will get paid. The BSPs also need to clearly specify how benefits intra-household will be shared not just on a household-by-household basis. Elite capture at the village level is one important

social exclusion issue but gender-capture benefits at the household level is a gendered issue within the context of the BSP that should and can be avoided.

15.2.3 Proposed modalities for the BSM and experiences

Funds for the BSM from REDD+ will be based on agreed upon reductions in carbon emissions that can be directly attributable to the activities of the ACMA Stakeholder Group and which can be monitored and verified in such a way that these reductions meet the performance-based results of the Carbon Fund. The most important criteria will include the demonstrated ability and willingness for all stakeholders to buy into ACMA and accept the responsibilities therein to ultimately benefit from the agreed upon activities, which will include scope for adjustments during actual project implementation. It should be stressed that the buy-in process has to be undertaken at the national, provincial, district and commune levels and with the management entities.

However, many SUFs MBs (from 2007-2013) have experience of the type of BSM issue and the ACMA process[102] all worked with and had support from the DPCs. How long this will take depends on whether the momentum gained by April 2016 as reflected in the Nha Trang workshop can be maintained and all stakeholders are requesting that a draft implementation manual be prepared so it can be reviewed and the ACMA processes understood more clearly.

The other technical criteria for the BSM (and BSP) will be: (1) the actual size of the forested area based on current satellite data provided by an independent source not simply provincial level data to ensure a more equitable and transparent sharing of benefits; (2) the quality of the forest with better quality forest attracting higher levels of funding although if during project implementation the ACMA can demonstrate through their own investment in planting, tending and nurturing that these activities will add to a quantitative reduction in carbon emissions it will be eligible for greater levels of funding; and, (3) on a per capita basis to ensure ACMAs established in project areas with higher population densities are entitled to receive benefits based on a level of effort that will benefit all stakeholders. There is currently some dispute at the provincial level vis-à-vis the first technical criteria but the GoV is insisting that independent verification of different forest types be undertaken and accepted at the provincial level.

To ensure that these ACMA will be financially sustainable on the one hand but not a fiscal burden on provincial budgets on the other hand sufficient funds will be made available on an initial basis to ensure that agreed upon activities can be implemented. It will be a condition of subsequent Carbon Fund payments that these ACMA ensure that the poorest beneficiaries are compensated immediately either in cash or in kind for any services they render. Opportunity costs are sometimes difficult to quantify but the criteria that the Program will utilize will be based on what participants would earn engaged in wage labour or other income-generation activities. However, based on the participatory principles of the ACMA this should be more likely than under the present system where payments are problematic and there is a disinclination on the behalf of local community members to participate in forest protection activities. It can also be noted here that where local households are already receiving PFES payments they would be entitled to continue receiving these benefits. The ACMA are not designed to replace or undermine the achievements of PFES and it is recognized in the context of the unknown carbon credit payments households currently enjoying benefits under PFES must be permitted to retain their eligibility for PFES.

It is proposed that 94% of the funds available will be allocated by the provinces to each of the participating ACMA – 0.5% already being deducted at the national level to cover the cost of managing the program nationally and 5.5% at the provincial level to cover the cost of managing the program at the provincial level – but only ACMA that demonstrate a very clear commitment to include all forest users (not just users that have been allocated actual forest land) will be entitled to participate in the program.

[102] Bach Ma NP in the ER-P was one of three long term national pilots under Decision 126, in addition most of the other SUFs in the NCC did introduce their own smaller scale benefit sharing approach, including Xuan Lien Pu Hu, Pu Luong, Pu Mat, Pu Huong, Ke Go, Dak Rong, and Ben En SUFs even introduced a provincial Decision

15.2.4 Roadmap to comply with FCPF Carbon Fund Methodological Framework

The FCPF Carbon Fund Methodological Framework is very explicit on BSM:

- The ER Programs should use clear and transparent benefit-sharing mechanisms;
- The design of the benefit-sharing mechanisms should respect customary rights to lands and territories and reflect broad community support, so that REDD+ incentives are applied in an effective and equitable manner; and
- The status of rights to carbon and relevant lands should be assessed to establish a basis for successful implementation of the ER Program.

There are of course some differences in the context of Vietnam – notably issues surrounding customary rights to lands and territories – but activities that will proceed to meet Carbon Fund Methodological Framework Requirements including: (1) public disclosure to all stakeholders; (2) continuation of design that uses the quantitative data from the SESA and qualitative data from stakeholder-based consultations; (3) ensuring that any BSP is transparent; and, (4) benefit-sharing arrangements reflect the legal context of Vietnam are underway.

MARD is aware that other benefit-sharing arrangements, notably the PFES made to households affected by hydropower projects is being implemented although there is not a real consensus that PFES is wholly transparent, equitable, or effective. Thus, while it serves as an example it should not be the only exemplar for benefit-sharing arrangements for this Program.

It is recognized that forests in Vietnam have different values for different actors, such as economic and social development, income derived from sustainable livelihoods, enhanced forest cover, greenhouse gas emissions reductions, improved recognition of rights, sustainable forest management, and biodiversity and conservation. These values are potentially compatible with REDD+ and objectives are sometimes shared across different interest groups but not always. MARD is attempting to balance the involvement of a larger and more diverse set of beneficiaries, which can increase transaction costs and complicate the administration of benefits with community-level benefit sharing and what effective arrangements can be leveraged to ensure local representative institutions have a voice, gender impacts are considered, elite capture avoided and enabling equitable participation.

The identification of the potential beneficiaries that may include Forest Management Boards, State Forest Enterprises, local forest-dependent communities and actors outside forests who impact forest cover is a very important concern. A major concern is to reduce the number of intermediaries to increase the portion of benefits that arrive to end beneficiaries. However, the generally favored mechanism in Vietnam is that the national government, especially where carbon payment benefits are envisaged, disburses available funds to provincial governments who will then decide whether end-beneficiaries (e.g. local communities or individual households) will be paid directly by the province or through sub-provincial government at either the district or commune level. Consultations to date indicate that both districts and communes would seek to be intermediaries, but there are concerns whether such mechanisms will reflect transparent, equitable and effective outcomes. A range of possible eligibility criteria have been discussed including:

(1) Tenure rights;
(2) Carbon rights;
(3) Revenue sharing rules;
(4) Sharper focus on poverty;
(5) Social needs and priorities;
(6) Cultural rights;
(7) Ecological/biodiversity values;
(8) Ability to deliver emissions reductions and removal credits;
(9) Agreement to measure, monitor, report and verify results; and
(10) Capacity to govern.

Local communities by-and-large stress (1), (3), (4) and (5), while sub-national organizations stress (3), (9) and (10). At the national level all criteria are being considered although there is somewhat less emphasis on (4), (5) and (6) and more emphasis on (2), (3), (7), (9) and (10). A major concern is the tradeoff between the more effective targeting of beneficiaries, who could include those most essential to achieving performance-based results versus those with the greatest need for support. Attempts are being made to balance performance considerations with broader conservation and development priorities as well as equity. At the national level and to a lesser extent the sub-national level there is more emphasis on performance-based results whereas at the local community level equity results are considered more important. Equity in the Vietnamese context has often implied that irrespective of one's individual efforts everyone should be rewarded equally and this approach is very strong among many forest-dependent ethnic minority groups. Thus, the ACMAs will need to address linkages between equity and effectiveness in relation to this Program.

There is a consensus evolving in Vietnam whatever model it finally chooses it will be: (1) necessary to integrate with non-monetary development needs (beneficiaries prioritize needs such as health, education and infrastructure); (2) enabling adaptive management (participatory M&E enables benefit arrangements to evolve with changing community needs; (3) effective dispute settlements (there is the need to develop "fair" benefit-sharing arrangements; (4) prioritizing beneficiaries based on objectives and equity (uniform rules for benefit distribution might ignore local contexts but also need to have a set or predictable formula to establish payments from limited benefits); (5) there is the need for participatory decision-making (both benefit providers and recipients alike should be involved in design and administration of benefits); (6) careful consideration of rights and obligations (can local communities claim some customary rights that until now they have not been able to except on a *de facto* basis; and, (7) structuring of benefits to accommodate near-term needs (adoption of a hybrid approach that combines direct performance incentives with input-based disbursals).

15.2.5 Categories of beneficiaries

The current laws of Vietnam define clearly the beneficiaries of forest resources, including forest owners as organizations, households, individuals, communities – those who sign contracts with the State or lease land and forest for long term utilization. The beneficiaries also include people who sign contracts on forest protection, regeneration zoning and afforestation in the state forestry entities (PFMBs, SFCs).

Beneficiaries should also include communities living inside or near the forests, who rely on the forests, but they do not directly work in forest protection and development work (direct involvement in emission reduction/enhancing forest carbon stock, but their activities may indirectly affect emission reduction/enhancing forest carbon stock. This is an additional point as compared to the on-going PFES, accordingly, the revenue from PFES, is mostly to paid for forest owners, forest contractors. It can be said that beneficiaries of REDD+ are those who have legal right and contribute to emission reduction, which have indirect impact on emission reduction.

Recently, the policy on PFES defines the beneficiaries, which include the organizations who are not forest owners, but are authorized by the State to manage the forests (CPC, political and social organizations at commune and village levels). Therefore, within the current legal framework, beneficiaries are the organizations, households, individuals, communities participating FPD. Communities if living inside and near the forest, if not involving in FPD, are not the beneficiaries, however, these entities benefit from other state programs and projects (Program 30a (high priority districts for poverty alleviation) and Program 135 (rural development and poverty alleviation), Poverty Reduction Program etc.). This is one of the issues that need to be considered in proposing beneficiaries of ER-P.

The uncertainties in the legal status of the local communities in Vietnam need to be addressed. According to the Law on Forest Protection and Development, the local communities assigned with forests are considered a forest owner, and be capable of receiving carbon payment. However, the Civil Code 2015 has not recognized the local community as a legal entity. It means that the local communities lack formal legal status, although the role of rural communities has been emphasized in a number of legal documents in recent years, such as the Ordinance on the exercise of democracy in communes, wards and townships (2007), the Law on Mediation (2013). Where the payment of monetary benefits has been agreed upon by the ACMAs and it is

agreed that the community or individual households or a combination thereof should receive benefit payments for individual households there are no legal problems at present as per PFES or other government programs[103]

15.3 Summary of the process of designing the benefit-sharing arrangements

As noted there have been a series of iterative consultations at the local level involving individual households and community groups, mass organizations, and CPCs. There have also been consultations the DPC and PPC level in an attempt to understand more clearly the priorities and suggestions made in the physical and social locales whether the actual Program impacts will be experienced. At the PPC level there has been the attempt to understand such benefit-sharing arrangements in the specific provincial context taking into account that there are intra and inter provincial differences and even differences within communes and among villages. However, the purpose of these consultations has been to understand what stakeholder groups have in common and possible divergences among and between these different stakeholder groups even when belonging to the same group (e.g., different ethnic minority groups or even similar ethnic minority groups but domiciled in different localities or DPCs in one province versus DPCs in other provinces).

At the national level the attempt is being made to avoid a standard total view for all of the Program area and recognize there are differences. Such approaches have included multiple benefits such as sustainable agro-forestry and supply chain development, improving agricultural output in areas of high forest encroachment, supporting agricultural vale added initiatives such as bamboo processing, bundling and stacking carbon payments under payments for forest environmental services and promoting sustainability standards for key agricultural and forestry commodities. This has been based on an understanding or REDD+ in other countries (e.g., Indonesia, Ghana and Costa Rica) but MARD also is recognizing that benefit-sharing arrangements need to reflect the socio-economic, environmental and political reality of Vietnam. This has been based on an understanding or REDD+ in other countries (e.g., Indonesia, Ghana and Costa Rica) but MARD also is recognizing that benefit-sharing arrangements need to reflect the socio-economic, environmental and political cultural realities of Vietnam.

The penultimate benefit-sharing arrangements, which will be one of the outcomes of the SESA and reflected in the ESMF, will reflect a benefit sharing plan that will include: (i) categories of beneficiaries; (ii) types and scale of monetary and non-monetary benefits that may be received from the Carbon Fund; (iv) benefit distribution criteria, process, and timelines; and, (iv) the monitoring process during the implementation of the BSM, including an opportunity for beneficiaries to participate (as appropriate) in the monitoring and/or validation process.

15.4 Description of the legal context of the benefit-sharing arrangements

Within the Vietnamese law system, FPD directly and foremost implements the legislation on forest protection and development through the Law on Forest Protection and Development and organizations and individuals involved in forestry are also regulated by other relevant legislation which include: the Land Law, Environment Protection Law, Biodiversity Law, Investment Law, Regulations on credit, finance, and tax. Between the Law on Forest Protection and Development other laws, there is a close relationship to create a legal framework for the implementation of FPD activities in Vietnam, which is generalized as follows:

[103]The main issue relating to being a legal entity is that a village (or a community) would be unable to open a bank account, payments to individuals/ households are not problematic. However, in relation to payments on a community basis the ACMAs ideally would assist local communities in establishing such cooperatives thereby helping to legalizing payment of benefits, for example, into a bank account - if that is agreed by the community for the local community.

Land Law

The Land Law 2013 affirms that land belongs to all peoples, with the State representing on behalf of all peoples the ownership and management of this land. The State authorizes the land use rights to the land users through land allocation, land lease, recognition and management of land use. According to this law, natural land areas are classified into three types: agriculture land, non-agriculture land and unused land. Agricultural lands include agriculture production land, production forestland, protection forestland, special-use forests, aquaculture land and salt making land. For the allocation of forestland the Land Law provides that allocation of production forestland, protection forestland, special use forestland for organizations, households, individuals, community; however, each type of forestland allocated for different user has different rights. Those being allocated by the State are called “land users”. Land Law prescribes that land users are issued with land use certificates, entitled to products from the investment on the land. Households, individuals allocated by the State for production plantation land have the right to transfer, convert, lease, inherit, mortgage and joint venture the value of the land area; forest allocated communities are not able to transfer, convert, lease, inherit, mortgage and joint venture the value of the land area.

Law on Forest Protection and Development

Law on Forest Protection and Development (2004), targets and classifies the forests into three types: (1) Protection forests; (2) Special-use forests; (3) Production forests. Forest classification is the basis for establishing Forest Management Units (SFCs, households, individuals, community), interventions and mechanism and incentive for every forest type (investment, harvesting and entitled from forest). This law affirms that the State manages and decides on natural forests and plantations developed by the State funds.

The State grants the forest use right for the forest users through forest allocation, leasing and certification. Households, individuals with natural forests allocated can only utilize the forests without having forest ownership, regarding plantation, the forest owners invest in the forest and have the forest ownership. FLA is allowed for households, individuals, and a community. According to current laws on land, FPD, FLA is one of the basic forms of transferring ownership of forest and forestland for users which creates "forest owners". Law on Forest Protection and Development 2004 (Article 3) stipulates that “forest owners” are organizations, households and individuals that the State allocates/leases forest and forestland for afforestation. According to this law (Article 5), there are eight forest owners: (1) Economic organizations; (2) Households, individuals; (3) PFMBs, SUFMBs; (4) People Armed Forces; (5) Science and Technology, vocation training institutions on forestry; (6) Overseas Vietnamese investing in Vietnam; (7) Overseas organizations, individuals investing in Vietnam, Furthermore, communities having forest use rights (FLA) are also considered as forest owners, although these communities are not considered by Civil Code as legal entities and less entitled than the forest owners who are households, individuals, i.e. cannot transfer, convert, lease, inherit and joint venture by forest and forestland use right. Therefore, there is a gap between the Civil Code (basic law) and Forestry Law (specialized law), this relates to legal entity of community while joining REDD+ and benefiting from REDD+. Households, individuals and community who sign contracts on protection, regeneration zoning and afforestation are not “forest owners”, but hired “contractors” by the forest owners and contract terms can be one or several years, this limits the long-term investment of the REDD+ forest contractors.

Biodiversity Law

Biodiversity Law (2008) stipulates that organizations and individuals entitled to exploitation and utilization of “biodiversity” should share the benefits with stakeholders, equalize the State benefits and organizations/individuals', combine biodiversity conservation, exploitation and utilization and poverty reduction, ensure the livelihoods for households, individuals who legally reside in the conservation areas; stipulating rights and benefits of households, individuals legally reside in the conservation areas i.e. they can exploit legal benefits in the conservation area, participate and enjoy benefits from business and service activities in the conservation area, organizations, individuals use the biodiversity environment services should pay for the organizations and individuals providing the services. Therefore, the Biodiversity Law creates favorable legal framework for communities living inside and near the forests, taking part in FPD activities in SUF and can share benefits while these forests are included in the REDD+ programs or projects.

Environmental Protection Law

Environmental Protection Law 2014 stipulates that the climate change management agencies are responsible for providing information, organizing activities to increase the community awareness and create good conditions for the community to take part in coping with climate change; one of the activities to manage GHG emission is sustainably manage forest resources, restore and improve forest carbon stock; establish and develop a carbon credit market in the country and participate international market[s], returning the bio-diversity, and establishing environment protection Fund. However, the transferring and purchasing of GHG emission credit from Vietnam is regulated by the Government. In other words, while the organizations and individuals dealing with international carbon credit buyers, they are required to follow Government's regulations. This also means that the implementation at local level is legally difficult since the Governmental specific regulations on payment for carbon service in forestry are currently missing.

The Environmental Protection Law stipulates those households, individuals producing or trading products causing long term negative impacts on environment and human health should pay an environment tax. Individuals and organizations who dump waste to the environment or impact on natural resources should pay environmental protection fees. Strategic environmental evaluation for any land use planning, FPD planning, environmental impact assessment for any projects using land or causing negative impacts on Nature Reserves, National Park is a requirement.

State Budget Law

According to the State Budget Law, royalties is for the local budget, forest owners do not have to pay any amount for local communities and authorities (except when the forest owners voluntarily contribute). Forest owners exploiting plantations are required to pay land use tax 4% of the timber selling prices (except in cases of tax-exemption) and this revenue is for the local budget. Therefore, according to the current law, all the revenue from timber and NTFPs, first comes to forest owners, the forest owners pays the contractors (if any), part of the revenue will pay tax to the local budget for management and utilization (together with other revenues) according to the current regulations on State Budget.

Communities living inside or near the forests will not receive the money, if they receive benefits from other State programs and projects i.e. livelihood improvement, infrastructure, capacity building. Since 2011 with PFES this is to pay forest owners, forest contractors, a management fee, contingencies, to local communities living inside and near the forest, however, if they do not have forests [protection] contract, they will not get benefits from this revenue, but they can benefit from other State programs and projects.

Entitlement

From a legal perspective, the BSM entitlement should be attached to a legal mechanism (such as FLA, of forest [protection] contracts). The law is important for clarifying who will benefit from REDD+ and is the official basis to request the entitlement. From the current law, it is identified that REDD+ beneficiaries are people who are participate in forest protection and development, since they are the ones who bring about the emission results. This is suitable with the ‘result based payment principle’ and people involved in forest protection and development include forest owners, forest contractors, those who participate in designing and operation of REDD+ programs and projects.

If ACMAs prove to be as participatory as is envisaged there is no reason that any household which contributes to a reduction in emissions cannot benefit. For instance, where a household or a group of households or even a village community agree to participate in some emission-reduction activities such as restricting the free forest grazing of their livestock, or the non-clearing of forest land for agricultural cropping purposes or agreeing to a quota per household based on agreed upon equity principles than such stakeholders should benefit from REDD+ benefits and there are no legal constraints to such stakeholders benefiting. One of the most important putative advantages of these ACMAs should be the elimination of the “freeloader” from REDD+ benefits. Nevertheless, it is also very important and this is one of the underlying principles of the ACMAs but also importantly FCPF is that safeguards must ensure that local village households are no worse off as a result of the Program and preferably better off.

Management and transaction cost

BSM management requires transaction and operational fees and transaction costs of the relations between the emission reduction and specific actions of each stakeholder, operation costs include management fees of the National REDD+ Fund, FGRM, auditing fees, etc. These costs will be financed from REDD+ revenue, there is also a need ensure that the largest part of the revenue will be paid for the emission reduction, for example, result based payments to relevant stakeholders.

Managing forest harvesting and benefit sharing

The forestry law sets up a legal framework on forest utilization and harvesting in several legal documents such as Decision 186/2006/QD-TTg dated 14 August 2006 of the Prime Minister issuing forest management regulations and Circular 35/2011/TT-BNNPTNT dated 20 May 2011 of MARD providing guidance on the harvesting and salvaging wood and NTFPs and elaborates the forest harvesting for each forest owners (organizations, households, individuals and communities), by forest functions (natural forests or plantations) and by investment sources (State, forest owners, international projects). These documents regulate the use of barren land for agro-forestry production in protection forests, production forests, ecotourism based on forest ecosystem.

More recently Prime Minister issued Decision 2242/QD-TTg dated 11 December 2014 allowing the enhancing the management and harvesting of natural forests period 2014-2020, regulating the closure of timbers from natural forests in the whole country (except internationally certified SFCs). Households with natural forests allocated can extract timber for themselves, the maximum volume is 10m3/household/ton, but should not overuse the forest resources. Since 2011, PFES has been applied nationwide and provinces with hydro-power projects have been the first and capitalize on the PFES approach, provinces with little or no hydropower are mostly still developing processes on how to benefit from PFES.

There are some additional Decrees which have potential impact on REDD+ including Decree 75/2015/ND-CP dated 9 September 2015 of the Government on FPD mechanisms and policies, associated with fast and sustainable poverty reduction and assisting ethnic minorities for the period 2015 – 2020. This introduced a Forest protection contract rate of 400,000VND/ha/year, whether revenue from selling carbon credits is fully used or in part, should be carefully reviewed to avoid conflict with other non-ER-P forests.

Some examples from PFES

Decree No. 99/2010/ND-CP on the Policy on PFES is the primary legislation regulating PFES in Vietnam. The decree identified the forest services for which charges must be paid (including carbon sequestration and storage), and clarified state management of PFES as well as the rights and responsibilities of forest service users and providers. This policy has been considerably discussed as a possible example mechanism to incentivize REDD+ interventions in Vietnam.

The main source of PFES financing comes from hydropower schemes and account for about 98% of total funds, PFES payments are aimed at watershed protection through the provision of forest ecosystem services reduction of erosion and sedimentation of reservoirs, rivers and streams; and regulation and maintenance of water (Pham et al. 2013). In this system, hydropower and water companies represent the buyers and the forest owners are the suppliers and PFES payments are based on contracted forest area, i.e. within the watershed of the hydropower scheme, and the amount of money obtained from the water companies and hydropower services forest service buyers; the provincial forest protection and development fund (FPDF) calculates payment for the beneficiaries. The beneficiaries (sellers) are the forest owners within the watershed who are paid per hectare of forest under protection services.[104]

The main underlying factors that drive villagers to decide on a payment distribution model are the local communities' perceptions on equity, the size of the PFES funds and their trust in local authorities'

[104] Lesson on the perceptions of equity and risks on payments for forest environmental services (PFES) fund distribution: A case study of Dien Bien and Son La provinces in Vietnam; N L Yang, P T Thuy, Dieu Hang, G Wong, Le Ngoc Dung, J S Tjajadi and L Loft; CIFOR; 2015.

accountability and capacity.[105] Local people have a limited understanding of how the PFES funds are distributed; they are unsure of their eligibility, the payment amount, the timing of payments and the conditions attached to the payment. Enhancing information dissemination, availability and transparency about payment conditionality and distribution is important to support both effective decision-making on resource use and PFES overall. There are currently five payment distribution models implemented in Dien Bien and Son La provinces under the national payment for forest environmental services (PFES) program for community forests: (1) equal distribution to all households within a community; (2) payment for forest protection groups; (3) building infrastructure; (4) community investments, and (5) livelihood development options e.g. microcredit schemes. Each of these models has pros and cons for achieving the outcomes of effectiveness, efficiency and equity. Current payment distribution models focus on the equality aspects and overlook the equity.

From a legal perspective, key questions include how benefits are defined, how beneficiaries are determined, how benefits are distributed, and how safeguarding principles can support benefit sharing arrangement and in the context of REDD+, benefit sharing is a mechanism to identify the outcomes (financial or non- financial) from a REDD+ activity and then distribute them between stakeholders. Effective benefit sharing systems will create incentives for broad stakeholder participation and support for REDD+ programs.

Following the Law on Forest Protection and Development (2004), Decree 05/2008/ND- CP establishes the Forest Protection and Development Fund to protect and develop forests, raise awareness and responsibility towards forest protection, and build capacity and efficiency in forest management and utilization, and financing sources include initial investment from the state budget and now, as mentioned, particularly hydropower schemes.

Transparency

The transparency issue in Vietnam is defined clearly in some legal documents such as: Anti-corruption law prescribes clearly the publicity of all managed sectors; Land Law 2013, Public Investment Law 2014, Investment Law 2014, Corporate Law 2014 etc., have been issued to make all management transparent. The Law on Forest Protection and Development 2004 mentions publicity and transparency in publication of FPD plans and planning, list of wild animals and plants permitted to be imported, prohibited to for export or conditional exporting. However, some important laws directly relate to the publicity and transparency are under the discussion and development, i.e. State Budget Law (amended), Law on the Rights to access to Information.

- Transparency is a key stakeholder participation requirement in terms of access to information, and legitimate/inclusive decision making processes; and
- Creating incentives for stakeholders to participate in REDD+, in terms of a REDD+ system's ability to deliver promised benefits and channel finance effectively. If confidence in the system is low, the incentives to participate in the initiatives that will reduce emissions in the forest sector will be reduced.[106]

15.5 Participatory design of the benefit sharing mechanism and linking to ACMA

The following procedural steps will be followed by the management entities to link with other ACMA stakeholders and BSP beneficiaries and are partly based on procedural steps many SUFMBs are aware of based on how managers of the SUFs were linked with village users of the SUFs. The essential difference being is that the emphasis is on collaborative management not co-opted management:

[105] As above.
[106] Defining the legal element of benefit sharing in the context of REDD+; REDD+ Law Project working paper; S Chapman; M Wilder; 2014; Baker & McKenzie and the Cambridge Centre for Climate Change Mitigation Research (University of Cambridge).

- DPCs agree to participate in the ACMA and identify the communes that are considered to be the hotspots for deforestation and forest degradation. It is unlikely that DPCs will know which villages in the buffer zone are actual hotspots but they will certainly know which communes can be considered hotspots.
- It is assumed that CPCs will agree to participate in the ACMA and identify the villages that are considered to be the hotspots for deforestation and forest degradation. CPCs agree to participate in the ACMA and identify the villages that are considered to be the hotspots for deforestation and forest degradation
- Local villages identified as hotspots for deforestation and forest degradation also need to buy into ACMA and because there are greater numbers of village level stakeholders involved (women and men, aged and young, poor and non-poor, and different ethnic minority groups but also some Kinh ethnic village communities) to secure free, prior and informed consent (for environmental, displacement and ethnic minority development issues) the most participatory consultations (e.g. such as focus group discussions and village transects) at times convenient for all village people need to be facilitated.
- BSM Resource Survey and subsequent agreement on issues such as forest boundary demarcation, access to forests by users including whether quotas for collecting NTFPs are necessary and limited logging for housing structure purposes will need to be undertaken. The outcome should involve forest management entity staff in BSM preparation and principles of ACMA for natural resource use, BSM baseline survey on resource needs and existing resource availability that will serve as a forest resource inventory survey, documenting the status of the forest resources and results disseminated through a process of negotiation.
- BSM Social Screening undertaken to identify the poorest and most vulnerable households based on degree of forest dependency that identifies ethnicity, demographic features, health and education indicators, access to physical and social infrastructure, ownership of agricultural land and income and expenditure patterns.
- Elections in each village community to be facilitated to ensure the two most popularly elected village members (to ensure the participation of at least one-woman representative per village as well) represents the village at the monthly, bi-monthly or extraordinary meetings of the ACMA entity.
- Initial Benefit Sharing Plans drafted outlining how village households will be compensated for opportunity costs associated with the provision of forest environmental services or rights to collect unlimited quantities of NTFP are foregone, provision of both monetary and non-monetary incentives, how legitimacy and support for conservation will be achieved, reduction in the risk of non-delivery of agreed benefits, fulfilment of obligations and reducing elite capture of benefits.
- Any Benefit Sharing Agreement that identified monetary and non-monetary benefits should be prepared within 18 months of Entity Board establishment based on agreed interventions targeted at the poorest and most vulnerable households but in line with the flexible approach of ACMA this BSA can be amended where necessary on condition that it does not propose prescribed activities.
- In line with the ACMA activities to do with reflection on interventions, the actions themselves and what subsequent actions are necessary is not time-bound, with the exception of the interventions targeted at poor and vulnerable households and will depend on negotiated agreements with all ACMA stakeholders.

It is important to stress that the linkages will be maintained on an iterative basis because of the regular meetings of the ACMA and the activities of the ER-P financed Participation Specialist in each of the 10 villages.

15.5.1 Legal Basis for Collaborative Management

There were a number of earlier Decrees (117/2010/ND-CP) and Decisions (147/2007/QD-TTg and 66/2011/QD-TTg) that either addressed some form of co-management of SUFs or production forests. These decrees and decisions are only tangentially relevant although for plantation forests Decision 66 regulates that beneficiaries of plantation forests are required to pay to the CPC in which the plantation forest is located

a sum equal to 80 kilograms of milled rice per hectare of the plantation forest for commune development purposes. Half of this sum is to be utilized for other forest development services. However, these Decrees and Decisions do not provide the legal basis for either the BSM/BSA or the ACMA that will incorporate benefit sharing arrangements. For the ACMAs this is not a major legal issue but for the BSMs/BSPs it is an important legal issue because monetary disbursements or access to government programs must be grounded in Vietnamese law.

The first legal reference to the nexus between benefit sharing and co-management (as against ACMA) was made in the Prime Ministerial 2012 Decision 57/2012/QD-TTg on Forest Protection and Development for the period 2011-2020. The Management Boards of the PFMB, SUFMB and SFE (now referred to as State Forest Companies (SFC)) were authorized to enter into co-management arrangements with local communities to co-share the responsibilities of forest protection, management and development and share benefits based on the quantifiable contribution of both the Management Boards and local communities. However, the first explicit legal reference to benefit sharing although not to co-management was made in Prime Ministerial Decree 99/2010/ND-CP, which resulted in the 2011 policy on Payments for Forest Environmental Services (PFES) that requires users of forest environmental services to make payments to the suppliers of these services. The suppliers of the forest environmental services are defined as forest owners (individuals, households, communities or organizations who hold forested titles) or those contracted by the forest owners (can be an individual, household or village or community group. (individuals, households, communities or organizations who hold forested titles).

Nevertheless, it was Prime Ministerial Decision 126/2012/QD-TTg in 2012 on Pilot Benefit Sharing in the Management, Protection and Sustainable Development of SUFs that clearly outlined implementation plans for both co-management and benefit sharing. But the official pilot was limited to three SUFs: Xuan Thuy (Nam Dinh province), and Bach Ma (TT Hue Province, and Hoan Lien Sapa was added later – although by the end of 2013 there were 63 SUF sites throughout Vietnam of which 39 were recognized as “BSM” sites. Decision 126 allowed for the inclusion of participatory processes envisaged by ACMA such as co-learning although it was not explicit as to whether customary knowledge would be integrated into co-learning approaches that included scientific and technical knowledge.

Prime Ministerial Decision 07/2012/QD-TTg later in 2012 introduced policies to strengthen forest protection whereby MARD would take the lead in collaboration with other relevant ministries to further develop policies related to the co-management of forests and benefits that would be shared by all forest managers and users. Decision 07 is very explicit about the types of benefits that should be shared: forest products that do not have a negative impact on existing forests, agricultural and forest products originating under the forest canopy, and revenue from forest environmental protection services. Decision 07 identified the three principles for benefit sharing that included the direct and voluntary agreement among stakeholders that decisions of the Management Council would be respected, equity and transparency in actual benefit sharing arrangements, and such arrangements should ensure there are no negative impacts on existing forests.

Prime Ministerial Decision 24/2012/QD-TTg on the Policy for Development Investment for SUFs for the period 2011-2020 provides regulations on how the GoV will introduce policies to support investment and create a benefit sharing mechanism for all village communities involved in the protection and development of SUFs. Specifically, this Decision 24 provides from the state budget VND 40 million per annum to villages in the buffer zones of these SUFs. The SUFMB manages the fund on behalf of each village in its buffer zone and what interventions are to be funded from this annual grant are made by each village under the tutelage of the CPC and facilitated by the SUFMB. Monitoring of these annual grants is undertaken by each village to ensure they are implemented according to the agreed upon implementation plan.

Prime Ministerial Decision 17/2015/QD-TTg in 2015 issued regulations on Protection Forest Management that are to apply to all PFMBs. These regulations included provisions for contracting forest protection activities, implementation of stable and long-term co-management of forests with local village communities and benefit sharing mechanisms. Decision 17 provides for the PFMB receiving the value realized from the sale of NTFPs and sharing these benefits with individuals, households and village communities who co-manage the forests. Any risk that poorer and more vulnerable ethnic minority households would not have

access to payments generated from the provision of forest environmental services would be mitigated by the Process Framework. There are actually no legal constraints on such beneficiaries being entitled to REDD+ benefits. The processes embedded in ACMA will ensure that if these beneficiaries are able and willing to be involved in such activities the lack of an existing contract prior to the establishment of the ACMA or lack of title to forest land would not disqualify any of these beneficiaries. The ACMA actually empowers such beneficiaries in ways that they are not necessarily fully empowered at present and will go a long way to resolving what conflicts currently exist and would also undermine to a very large extent charges that such forest protection services can be highly exploitative in nature.

It needs to be noted that there are no legal mechanisms on management structures or benefit sharing arrangements in Vietnamese laws that in the past provided for State Forest Companies to enter into such arrangements with local villages. However, this does not prevent the type of arrangements here applying also to State Forest Companies and they will be encourage to adopt similar processes to the SUFs and PFMBs.

15.5.2 Current legal constraints facing benefit sharing mechanisms

- Most benefit distribution programs in Vietnam target payments to individual households, SOEs, and PFMBs. There are problems with this approach, including unclear, contested or overlapping rights to forest carbon and the possibility of conflicts resulting from some households receiving benefits and others not. Many of these problems of rights can be avoided by targeting benefits to village communities, however, currently targeting communities faces a legal constraint as the community is not a legally recognized entity under the Civil Code 2015 Therefore, the community cannot open a bank account or be responsible for settlement of forest contracts. Since a village is not considered as a legal entity, it is unclear to-date whether a village can receive REDD+ payment. For example, village cannot open a bank account or sign a contract with partners. Any person in the village cannot take responsibility for contract infringement with regard to the contracts signed by the community.[107]
- It is the fact that, in some localities, local communities manage forest effectively and save costs. REDD+ payment to the community will ensure the equitable benefit sharing, because of the participation of members of the community on the principle of consensus. Moreover, with limited revenues, the benefit sharing for community is better than distributing directly to individuals or households. Specifically, disbursement at community level can avoid corruption. Therefore, the amendment, supplement and completion of the legal framework relating to community are essential. Some forms of forest community management such as cooperatives, cooperative groups, and forest co-management should be clearly defined in legal documents to facilitate the benefit sharing.
- Unclear legal status of the forest contractors - who signed a contract for forest protection, regeneration zoning and afforestation also needs consideration. According to the Law on Forest Protection and Development, they are not considered as forest owners. They do not have a voice when it comes to negotiation, forest contracting. This can lead to difficulties to share benefits for them or do not ensure the fairness and transparency in benefit sharing between forest contractors and forest owners. Therefore, there is a need to amend or supplement regulations on forest allocation, such as objects of allocation, allocation time, liability of the assignor and the assignee, benefit sharing mechanism, including revenues from REDD+.
- The legal position is not clear even for the forest protection contractors on whether they should be considered or not as participants. According to the Forest Protection and Development Law, these people are not forest owners, this may cause difficulties in distributing benefits for them. However, as a first step via both social screening and a BSM baseline survey forest management entity staff will work with local communities to assess resource needs and current availability, documenting the status of the forest resources and disseminating the results through a process of negotiation. The

[107] An Approach to designing pro-poor local REDD+ Benefit distribution systems: lessons learned from Vietnam; A. Enright, E McNally T Sikor November 2012 SNV.
Models for incentivising Multiple benefits: Options for the Lam Dong Province PRAP A Enright 2014 SNV.
Decision /QD On piloting positive incentive delivery under the framework of UNREDD II.

logical outcome will be the finalization of BSM agreements and monitoring and control mechanisms established.

- Specific legal issues to be addressed include the rights to carbon, land and forests, particularly forest allocation and associated land use rights. In Vietnam, rights of land users are among the fields with insufficient legal basis, since future REDD+ strategy involves the rights of land users, and forest owners related to the rights to convert, transfer or mortgage the land use right value and benefit distribution. The concepts of such rights directly relating to identification of carbon ownership and transfer with REDD+ is required, as carbon rights and the entitlement of carbon credit trading is a new issue, and currently without any legal definitions. This may hamper the design and implementation of the benefit sharing mechanisms, since it remains unclear who is eligible for receiving REDD+ payments.
- Without more effective forest law enforcement, the risk exists that stakeholders who are successful in reducing emissions go unrewarded due to the non-performance of others who are responsible for illegal activities.
- The coordination of the action of the government authorities involved with REDD+, in particular MARD and MONRE, and ensuring that all legitimate beneficiaries are recognized, and in particular addressing the legal status of local communities.
- Participatory monitoring[108] may add value the BSM system and forest management and eventual ER generated, however, currently the formal role of communities or contribution to participatory forest monitoring approaches is not recognised; and
- A suitable FGRM is not yet in place (planning and development is underway in cooperation with UNREDD II and VRO).

[108] Participatory monitoring; bringing the advantages of community engagement and ensuring the involvement of a critical stakeholder at the local level.

16 NON-CARBON BENEFITS

16.1 Outline of potential Non-Carbon Benefits and identification of Priority Non-Carbon Benefits

In line with FCPF guidelines monetary and non-monetary benefits[109] and non-carbon benefits[110] are shown in Table 16.1 below. However, a concern is that if non-carbon benefits are not to be reported on in BSMs, how, for example, can the improvement of local livelihoods be set apart from the non-monetary benefits of REDD+ activities. The problem is that if Vietnam wholly accepts the distinction drawn in FCPF guidelines it may be saddled with the intractable task of differentiating between benefits that are in practice indistinguishable. Nevertheless, leaving this issue to one side, it is possible to outline potential benefits and priority benefits.

Forest-dependent communities look towards non-carbon benefits generically related to a sustainable improvement in their existing livelihoods. The poverty rate among such communities as per the SESA and other earlier studies is in excess of 80% (which partly reflects the new multi-dimensional poverty criteria to be adopted by the GoV). The non-carbon benefits identified by most of these communities includes the allocation of titled forest land on either an individual household or community basis, the unfettered right to gather NTFPs from forest land under the control of PFMBs, SUFs and SFC or other private sector investors, tree felling for domestic use (houses and other physical structures, the right to gather firewood, and infrastructure improvements in health, education, rural water supply and connectivity (roads and bridges). Generally, these forest-dependent communities with little or no access to productive agricultural cropping land (typically less than 1.5 hectares of irrigable land per household) are also seeking either leasehold or long-term tenure of land suitable for production forestry. In relation to issues such as building transparent and effective forest governance structures these local communities are seeking to avoid being prosecuted for exploiting natural forest controlled by the state and for the latter to take action against illegal tree felling by outsiders.

The priorities of these communities are largely shared by local CPCs and to a lesser extent DPCs. Members of the CPCs are largely from forest-dependent communities themselves and this is not surprising. Some CPCs via their mass organizations (Fatherland Front, Vietnam Women's Union and Farmer's Association) have allocated some forest land to these mass organizations although not to the exclusion of local communities but in other communes there are no such instances. At the DPC level there is more emphasis on infrastructure development and a generally marked reluctance to divest those DPCs that control unallocated forest land to individual households or community groups. DPCs also prioritize forest governance structures to a greater extent than local forest-dependent communities and to some extent the enhancement or maintenance of biodiversity. However, it needs to be stressed here that largely dependent on the local context CPCs and DPCs sometimes have different priorities (e.g., some DPCs support improved land tenure for individual households, others for community groups and yet others not at all).

At the provincial level priorities are somewhat different. Generally, PPCs do not want to surrender forest land under their control (or for example, a SFC) to local communities. They accept that there is considerable room for improvements in the efficiency of the Forest Management Boards which they control and also a greater degree of transparency in how they function. But on the other hand, PPCs also argue that the Forest Management Boards are under-resourced and although they are seeking carbon monetary benefits rather than non-carbon monetary benefits. The PPCs are supportive of forest-dependent communities improving the livelihoods of their members, but are quite clear that while this Program can assist it will not, unless leveraged with other GoV or ODA initiatives reduce poverty significantly. At the PPC, level there is also greater emphasis on not simply maintaining but enhancing biodiversity and in provinces where PFES operates, because of benefits derived from HPP to other ecosystem services.

[109] Defined as "goods, services or other benefits related to payments received or funded with REDD+ payments, or any other benefits that are directly related to the implementation and operation of a REDD+ program, provide a direct incentive to implement it, and can be monitored in an objective manner".

[110] Defined as "benefits produced by or in relation to the implementation and operation of an emission reduction program, such as the improvement of local livelihoods, the building of transparent and effective forest governance structures, progress on securing land tenure, and enhancing or maintaining biodiversity and/or other ecosystem services".

At the national level there is greater emphasis on the building of transparent and effective forest governance structures and maintaining or enhancing biodiversity and/or other ecosystem services. This is not to imply that at the national level that there is no concern with the allocation of forest land to forest-dependent households or local communities or social and physical infrastructure developments that would contribute to an improvement in the livelihoods of these communities. However, it needs to be recognized that there are different priorities. The one common priority that all stakeholders from the village to the national level can agree upon is that the forest cover should not be reduced and there must be coordinated action to ensure this does not occur. Yet on the other hand households living in poverty or near poverty do prioritize an improvement in their living standards. Community-based consultations clearly suggest that without legal or legalizable access to forest resources the poor and the near poor cannot afford to be effective stewards of the forest.

The ER Program recognizes five broad categories of non-carbon benefits Table 16.1 identifies the main NCBs, indicative scale of potential impact, and the most immediate beneficiaries, anticipated from ER Program interventions. (Note some interconnectivity between the NCBs).

- Improved forest governance;
- Sustainable/ improved livelihoods;
- Biodiversity conservation;
- Climate change adaptation (includes better preparedness for natural disasters); and
- Involvement of ethnic minorities (respect).

The ER-Program interventions are likely to yield, directly and indirectly, multiple NCBs. Indeed, they are selected for their NCB, as much as their emissions reduction (enhanced removal), potential.

Table 16.1: Non-carbon benefits

Non-carbon benefit	Types of benefit	Future investments	Notes and quantification	ER-P example potential numbers of beneficiaries
Improved forest governance	Multiple benefits across different populations and sectors	Provincial and District PFMS, SUFs	Reduced incidence of illegal logging and transport of illegal logs	Difficult to quantify
(i) Increased domestic demand	Improved domestic forest demand and prices	Forest sector policy, FLEGT work		
(ii) Improved policy	Feedback and links to policy	Investment in the PFMS, MRV, Forest sector policy, FLEGT work		
(iii) International cooperation	Improved cross boarder cooperation	More contacts; national and international	Reduced transport of illegal logging; MoUs in place with Lao and Cambodia	Useful forum for dialogue; Difficult to quantify;
Sustainable rural livelihoods including:	Improved livelihoods	Communities in and around PFMBs, SUFs SFCs;	Poverty alleviation, empirical figures,	321+ communes
(i) Improved livelihoods	Value chains, NTFPs, (but note contributions of CFM)	Collaborative approaches	Value of NTFPs and other crops	Value of NTFPs in region
(ii) Improved land tenure	Secure tenure through provision of LURCs	Expansion of LURC	Value of forest land LURC ~ VND35M;	From FSDP project
(iii) Improved forest tenure	More secure access to forest resources	Improve policy; Communities in and around PFMBs, SUFs SFCs		
Biodiversity conservation and enhanced ecosystem services	Ecosystem services	Investment on establishing value (total economic value - TEV) of SUFs in the landscape (investments from VFD and GIZ)	SUFs; PFES	17 SUFs core and buffer zone population is about 91,529 hh; people inside core zone is about 5,126 (about 1,075 hh)
Climate change adaptation	Sustainable livelihoods; feedback and links to policy;	Access to different types of loans; IFAD Climate Change work in Quang Binh and Ha Tinh; VFD climate change work in Thanh Hoa and Nghe An; and investments from provincial CCAPs e.g. investment in mangrove, coastal forest areas	Investment and benefits from Climate Change Action Plans	Population potentially affected by climate change (areas at greatest risk from climate change are coastal areas of TT Hue, Thanh Hoa);
Better awareness and preparedness for natural disasters /reduced impact	Avoided or reduced cost for disasters floods, landslides	Investment in forest management. Forest wind breaks as defense against Typhoons; Watershed management		Large benefit value through avoided or reduced impacts from floods and reduced losses from typhoons
Better involvement of ethnic minorities	Indirect more mainstreaming of ethnic minorities; direct benefits to livelihoods; collaborative forest management	Technical options available for forestry;	(Poverty figures from the quantitative survey soon to be available)	Contribution to reducing some aspects of poverty that blights ethnic minority hhs

16.2 Approach for providing information on Priority Non-Carbon Benefits

As per the Consultation and Participation Strategy adopted by the Program systemic efforts have been made and will continue to be made to engage stakeholders at all levels to ensure that the Program has evidence-driven prioritization of non-carbon benefits. Every attempt has been made to date to ensure vertical stakeholders at the national and sub-national level do not define for local forest-dependent communities what the latter's priorities can or should be. Both quantitative data collection and qualitative information sharing based on consultations with horizontal stakeholders (ethnic minority groups, women, poor and near poor and other vulnerable persons) have been embedded in the SESA and qualitative information to assess benefit-sharing arrangements has also been utilized by the Program. These priorities have been discussed at the commune, district, provincial and national level and to triangulate with the Program's findings discussions with other providers of ODA in the forestry sector and CSOs and NGOs has been undertaken and will continue to be undertaken. By the time a draft ESMF has been prepared and disclosed to all stakeholders, the Program will have a much clearer understanding of priority non-carbon benefits that stakeholders have reached consensus on.

Through participatory subnational planning and decentralised forest sector interventions, improved governance will be the focal NCB of the proposed ER Program, noting that governance failure is an underlying cause of other NCB (sustainable livelihoods; biodiversity and ecosystem services, etc.) loss.

16.3 Benefit Sharing Arrangements for Monetary and Non-Monetary Benefits

In preparing the BSM a concerted attempt has been made to place less stress on the monetary benefits that might be derived from the Carbon Fund for two important reasons. The first reason is that in accordance with good development practice it is considered necessary not to unrealistically raise beneficiary expectations that ER-P will provide substantial monetary benefits on an individual basis. Secondly, it is still unclear as to what are likely to be the indicative amounts available for distribution under any benefit sharing arrangement that is agreed upon in Vietnam.

However, the first principal is to clarify what stakeholders would be entitled to quantifiable monetary benefits and in Vietnam it is considered that any individual, household, group or entity that provides forest environmental services irrespective as to tenure status would be entitled to receive such benefits. This is the principal of PFES and is incorporated in Decree 99 that PFES is based on. But the Carbon Fund requires carbon title over the forest land that is included in the ER-P and therefore only legal or legalisable owners (as indicated by the issuance of a legally valid LURC as stated within the 2013 Land Law) would be entitled to receive monetary benefits. There is nothing to prevent LURC holders that sell their carbon credits to share benefits with non-LURC holders: this is not the concern of the Carbon Fund insofar as results based carbon emissions have been achieved.

The problem with the payment of monetary benefits to all legal and legalisable LURC holders in the ER-P to begin with this would involve 24 PMUB, 14 SUF and 13 SFC, which together with the 30.4% of households that have to date been issued with LURCs would see payments being made to an estimated 3,130,551 separate LURC holders based on 2013 official statistical data. The transaction costs would simply outweigh the monetary benefits and most likely LURC holders, with the possible exception of the existing management boards would have little or no incentive to participate in the ER-P. Rather to ensure that ACMA and the associated BSM has a good chance of being successfully implemented MARD as the representative of the Government of Vietnam will assume ownership of the carbon titles, as it is legally entitled to do because all land is in the eminent domain, and distribute the monetary benefits from the sale of the carbon credits to the 51 management entities (excluding its transaction costs and those at the provincial level). It will then be up to these management entities in accordance with the ACMA processes to decide how the monetary benefits from the sale of carbon credits will be distributed.

Evidence to date suggests apart from some of the management entities that have yet to buy into ACMA the consensus is that these monetary benefits should be aggregated and used to equitably and effectively address the drivers of deforestation and forest degradation. The funding of the livelihood investments and poverty reduction measures will be provided from these monetary benefits as will be payments for forest environmental services. Carbon emission derived monetary benefits are not likely to be paid to individual households that will benefit from livelihood investments but rather to the eligible group but monetary payments would be made directly to an individual, household or group providing forest environmental services. This might include a lump sum on an annual basis to a village to distribute among its members who are providing such services but the exact nature of this BSM will depend on what is agreed as a result decisions reached by the ACMA. In this context, it should also be noted that ethnic groups in the ER-P vary as to how they think payment for providing forest environmental services should be made: some ethnic groups think all villagers irrespective of their contribution should benefit (especially older or physically impaired villagers).

While households targeted for investments are benefiting from carbon derived monetary benefits by being able to participate in livelihood activities that are designed to remove or at least attenuate the reasons why they are involved in activities leading to deforestation (clearing of forestry land for agriculture and/or illegal logging) and forest degradation (especially the over-harvesting of NTFPs), they are being paid a combination of performance and input based benefits (even if payments are made in-kind). Thus, performance based and input based benefits for ER-P participants at the village level are not mutually exclusive. Similarly, if the same villagers or other villagers agree to provide forest environmental services it is most unlikely based on the FCPF-REDD+ consultations in the ER-P area to date that villagers either individually or collectively will be prepared to provide such services unless some input based benefits can be derived.

This is important if activities such as tree planting or patrolling refraining from destructive activities such as the setting of snares. There is a very significant consensus among villagers and other stakeholders that the opportunity cost of providing such services and the risk that they cannot meet agreed quantifiable outcomes is totally unacceptable. There will be little or no buy in if villagers perceive there are no upfront payments: indeed, all stakeholders share this perception. MOLISA, Vietnam's ministry concerned with poverty reduction issues has labelled the Carbon Fund approach as being excessively biased against the poor. The Government or Vietnam is determined that groups, including and especially upland ethnic minority groups, still living in poverty must move out of poverty not stay living in poverty or moving back into poverty.

Non-carbon derived benefits that can be associated with ACMA and BSM can be conceptualized as indirect benefits. For instance, improved forest governance through the elected representation of village representatives is an indirect benefit. At one level conflicts and misunderstandings between existing management boards and forest-dependent villages will be substantially reduced. ACMA provides very clear channels of communication. At another level an indirect benefit of improved forest governance is it contributes not simply to the empowerment of ER-P villages but also of equal importance women and vulnerable groups that were hitherto excluded from non-household-based decision-making processes. The possibility for greater empowerment, especially of women and other vulnerable groups, also impacts upon other social and economic aspects of villagers' lives. Being able to accept the veracity of customary knowledge and according it recognition that has been denied where simply technical narratives have dominated. Likewise coming to terms with environmentally sustainable but economically productive agricultural technologies are steps forward where synergies with ER-P create more socially inclusive and sustainable communities.

17 TITLE TO EMISSION REDUCTIONS

17.1 Authorization of the ER Program

The Minister for MARD is already authorized to act on behalf of the Prime Minister for the Government for the ER-P and has already signed the LOI.

17.2 Transfer of Title to ERs

In Vietnam, the current law does not have specific provisions on forest carbon rights. Forest carbon rights can be understood as right to benefit or even risk to carbon sequestration of forest on a certain area. Some questions need to be answered: Who owns the carbon rights? Who verifies carbon sequestration? Who are the beneficiaries of a forest carbon program and benefit sharing mechanism from the trading of carbon credits? Who will be liable if carbon forest fails? Have carbon rights been transferred?

The law stipulates that the State is the owner's representative of natural forests and plantations developed using state funds. The State disposes the right to use forests to forest owners in the form of allocation or lease. Carbon benefits are considered as the yields of forest. According to the Civil Law, carbon benefits belong to those who have rights to use forest, while the property rights belong to those who own these assets. Therefore, clarification in the carbon rights is clarifying the relationship between the State - the owners of natural forests and forest owners - who have the right to use the forest.

In addition, some other issues need to be addressed such as the relationship between forest owners and forest contractors, forest co-management and communities living in and near the forests. In Vietnam, forests are classified into three categories according to use (SUF, protection and production) and each type of forest has a different forest management requirement (as described under the Law on Forest Protection and Development), and using and benefits. The determination of carbon rights needs to consider such factors. For example, under the current legal framework, the forest owner has no right to transfer natural forests (regardless of special use forests, protection forests or production forests), but the question is can they transfer the carbon rights to the natural forests assigned by the State? (i.e. are the Carbon rights an intangible assets). Therefore, there is a need to study and develop a legal framework for forest carbon rights, trading and transfer forest carbon credits.

The normal and expected way to address any gaps in the legal framework to make the arrangements for the required carbon title (including making titles internationally transferable), will be through a formal Decision from the Prime Minister. The Decision is legally binding and is a normal way to introduce a potential amendment to a Law and overrides the Law. Decisions are often used to introduce a pilot action then after a review of the success of the action, an amendment to the Law can be made.

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Reference to the decree, law or other type of decision that identified this entity as the national authority on REDD+ that can approve ER Programs	Approval of the National Action Plan for Reduction of Green-house Gas Emissions through Efforts to Reduce Deforestation and Forest Degradation, Sustainable Management of Forest Resources, and Conservation and Enhancement of Forest Carbon Stocks; Prime Minister's Decision 799/QD-TTg 27 June 2012 [111]

[111] Relevant section includes Section V "Ministry of Agriculture and Rural Development (MARD) shall be liable to act as the REDD+ leading agency" and …. "…Leading the negotiations with international partners on REDD+, presiding over and coordinating with relevant ministries, departments and local authorities to mobilize international fund for Program implementation."

18 DATA MANAGEMENT AND REGISTRY SYSTEMS

18.1 Participation under other GHG initiatives

The government has approved the building of a national GHG inventory system with the aim of creating a legal foundation for GHG inventory accounting in the country.

The system, which is expected to be put into operation next year, also aims to enforce the country's current regulations relating to the climate change response, meeting the requirements and obligations under the UNFCCC.

MONRE will be the lead role in organizing, coordination of all actions with other ministries and environmental organizations will be responsible for undertaking GHG inventory tasks as part of the creation of national reports on climate change. It will ensure the role of the steering committee for the implementation of the UNFCCC and the Kyoto Protocol in the assessment and approval of national reports on climate change, including periodical GHG inventory. MPI will co-operate with the MONRE in guiding other ministries and local authorities of all levels - including the city, provincial People's Committees and business enterprises - to provide adequate data and relevant information for the compiling of the GHG inventory every two years. The MPI will then sum the data to provide to the coordinating agency of the system every two years.

The national greenhouse gas inventory system working plan for 2016-20 includes reviewing and revising policies and documents relating to the GHG inventory, completing the GHG inventory and creating technical reports on GHG inventory for 2014 and 2016.

The plan also includes the development of a database on GHG inventory and an assessment of the effectiveness of the National Greenhouse Gas Inventory System.

After 2020, the system will be completed, and the management and supervision of GHG emission will be strengthened. The system will measure, verify and report the country's GHG emission reduction to serve the implementation of Vietnam's Intended Nationally Determined Contribution for the UNFCCC.
The Prime Minister has recently approved the Vietnam Renewable Energy Development Strategy to 2030, outlook up to 2050[112].

According to the Renewable Energy Development Strategy, to 2020 most households will have electricity and to 2030 most households will approach modern, sustainable and reliable energy services with reasonable prices. Development and use of renewable energy sources continues to contribute to implementing the sustainable environment and green economy development goals.

By this strategy, hydropower generation will increase from 56 TWh in 2015 to 90 TWh in 2020 and 96 TWh since 2030.

The priority is to use renewable energy resources for energy and electricity purposes especially biomass, biogas, wind and solar energy sources for energy and electricity purposes. According to this strategy the goals for using the types of renewable energy sources are as follow:

- For biomass and biogas resource: The rate of using redundancies of industrial and agricultural plants for energy (electricity) purpose increases from about 45% in 2015 to 50%, about 60% and 70% respectively in 2020, 2030 and 2050[113].
- The rate of handling the bio-wastes for energy purposes increases from about 5% in 2015 to about 10%, 50% and nearly 100% in 2020, 2030 and 2050.

[112] Decision 2068/QD-TTg from the Prime Minister Approving the Vietnam's Renewable Energy Development Strategy up to 2030 with an outlook to 2050.
[113] Circular 29 /2015/TT-BCT Prescribing contents, sequence and procedures for preparing, appraising and approving the Biomass Energy Development and Utilization Plan(s).

- For wind and solar energy resources: The strategy recommends priority to develop wind power resources in the mainland to 2030, to study wind power ability on continental shelf and offshore for developing it after 2030.
    - Wind power generation expects to increase from about 180 GWh in 2015 to about 2.5 TWh, accounting 1% total mix generation, 16 TWh – 2.7% and 53 TWh – 5% respectively in 2020, 2030 and 2050.
    - Solar power development to supply electricity for the national power system and islands, border and remote areas where the electricity supply by the national grid will be impossible. The solar electricity expects to increase from about 10 GWh in 2015 to about 1.4 TWh, accounting 0.5% total mix generation; 35.4 TWh – 6% and 210 TWh – 20% respectively in 2020; 2030 and 2050.

18.2 Data management and Registry systems to avoid multiple claims to ERs

As part of the Land Law the government has extensive and long experience of a national government backed computer based and Title Registration system (which includes forest land and forest plantation assets) run through MONRE; in addition, MONRE also has experience of running CDM projects.

The government will create and run an emission reduction carbon title system. It most probable that the eventual emission reduction carbon title will be attached to the land as an asset as in a number of countries that use a land title Registry, then it would need to be entered into the land Registry and as part of the land attached assets to the parcel of land. To do this requires full documentation of the ownership and other land related data that is required for land and land asset ownership including:

- Land parcel/plot data (including a unique number/ reference);
- Data on land user and the owner of land-attached assets, including:
    - Full name of the organization according to documents on the establishment, accredited or registered business certificate of the organization;
    - For foreign invested enterprise, implementing investment projects in Vietnam, it is expressed the full name of legal entity implementing investment projects under the investment license or business licenses of such legal entity;
    - For the community, showing name identified by community certified by the commune People's Committee;
- Land use right data;
- Features of the assets, for forest land this includes:
    - Species of trees: Specifying the dominant species mainly planted; in mixed-planted forest, it is shown all name of main species of forest;
    - The area of forest: Specifying forested area owned by the land user with land use certificate issued m^2 units; and
    - Origin of forest land: "allocated forest by the State with collection of land use fee according to the forest allocation file number..."; "allocated forest land by the State without land use fee according to the forest allocation file number..."; "Plantation forests"; If forest is formed from multiple origins for each different areas then it is required to show separately each type of origin and areas attached.

- Data on the legal status of land use rights, land management rights, ownership of land-attached assets; and
- Data on changes in the land use right and ownership of land-attached assets.

This is standard information and the processes of Registration Offices are national, standardized, well organized and carefully monitored and they have the functions of registering land and other land-attached assets; compiling, managing, updating and uniformly revising the cadastral dossier and land databases; making land statistics and inventory; providing land information to organizations and individuals at their request under legal regulations. The land Registry is administered by MONRE and would provide the ultimate administration of the indefeasible carbon title[114]. The experience and fully legalized administrative set up that MONRE brings to the program makes it highly unlikely that duplicate carbon titles could be issued.

The government will also create and run a REDD+ Registry, and this will provide cross reference to the carbon title Registry, and the type of data required as following the Methodological Framework: (i) The entity that has Title to ERs produced; (ii) Geographical boundaries of the ER Program; (iii) Scope of REDD+ activities and Carbon Pools; and (iv) The Reference Level used would be similar to some elements of the existing Registration system together with similar levels of record keeping, a separate computerized system open to public view Registry would be required, and this is expected to be a sub set of FORMIS.

[114] Vietnam follows a Torren's title system and so operates on the principle of "title by registration" and the State guarantees the title.

19 ANNEXES

The Annexes are separate documents. Annexes 1 to 12 are collated in a single document, while Annexes 13 to 16 are individual documents.

Annex 1: Summary of the Financial Plan

Annex 2: Plan for updating the RL for 2005 - 2015

Annex 3: Priority areas for site-level interventions in the ER-P Accounting Area

Annex 4: Determination of reversal set-aside in the buffer

Annex 5: Methodological Framework criterion and cross referenced to the ER-PD

Annex 6: Additional data for the analysis of deforestation and degradation in the ER-P

Annex 7: Stakeholder consultations

Annex 8: Analysis of deforestation and forest degradation patterns in the REL and linkage to the proposed REDD+ intervention models

Annex 9: Design, scale and underlying assumptions of the ER-P intervention models

Annex 10: Financial and economic performance of the intervention models

Annex 11: Business models and feasibility for Acacia plantation restoration / transformation

Annex 12: Cost and benefits of the Collaborative Management Approach

Annex 13: Activity Data Report

Annex 14: Emissions Factor Report

Annex 15: Reference Level Report

Annex 16: MRV Report