Ministry of Agriculture and Rural Development

Forest Carbon Partnership Facility (FCPF)

Carbon Fund

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Note for Version 1.2: An extensive update is planned for mid August this could not be scheduled earlier due to operational reasons and this will include further work on: 1) the choice of reference period i.e. 2000 to 2010 or 2005 to 2015; 2) the economics – as this closley related to the possible change in the ref period (and closer synergy with the drivers and the buffer); 3) land use planning, 4) forest certification, and 5) BSMs.

	Acronyms and Abbreviation
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

	Acronyms and Abbreviation
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	Viet Nam 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 Certification
FSDP	Forest Sector Development Project

	Acronyms and Abbreviation
FSSP	Forest Sector Support Program
GAP	Gender Action Plan
GDP	Gross domestic product
GEF	Global Environmental Facility
GHG /I	Greenhouse gases / inventory
GIZ	Gesellschaft für Internationale Zusammenarbeit
GOV	Government of Viet Nam
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 Viet Nam)
M&E	Monitoring and Evaluation
MARD	Ministry of Agriculture and Rural Management
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 system
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

	Acronyms and Abbreviation
NPV	Net present value
NR	Nature Reserve (a SUF)
NRAP	National REDD Action Plan
NRF	National REDD Fund (of Viet Nam)
NTFP	Non Timber Forest Products
NTP-RCC	National Target Programme 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 Development and Protection 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	Roundwood 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-safe guards
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
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
VAFS	Vietnam Academy of Forest Sciences
VBSP	Viet Nam Bank for Social Policies
VCF	Viet Nam Conservation Fund

	Acronyms and Abbreviation
VFD	Viet Nam Forest and Delta Program (funded by USAID)
VFU	Vietnam Forestry University
VGGS	Viet Nam's/ National Green Growth Strategy
VHLSS	Viet Nam Household Living Standards Survey
VIFORES	Vietnam timber and forest product association
VNFF	Viet Nam Forest Protection and Development Fund
VNFOREST	Viet Nam Forest Administration
VNTLAS	Timber Legality Assurance System of Vietnam
VPA	Voluntary partnership agreement
VRO	Viet Nam REDD Office
VWU	Vietnam Women's Union
WB	World Bank
WD	Wood density
	Weights and Measures m = meters; ha = hectares
	Currency M = million; k =thousand Currency Unit = US$ Dollar US$1 = VND 22,000 GW = gigawatt; kWh =Kilowatt-hour; TWH= terawatt –hour

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Executive Summary

The proposed Emission Reduction-Program (ER-P) Accounting Area (Figure 1) encompasses the entirety of the North-Central Agro-Ecological Region, an area of land totalling 5.15 million ha (16% of the total land area of Viet Nam), 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.

Figure 1 The North Central Coast of Vietnam

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 on Viet Nam) living in 1,820 communes[1].

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, is 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.

Rational and ambition

- The ER-P would be the first broad scale REDD+ program in Vietnam integrating all REDD+ processes and interventions in six provinces,
- The program would pilot forest landscape management in six provinces including the reduction in emissions from deforestation and forest degradation, as well as conservation of biodiversity and sustainable management of forests, and enhancement of carbon stocks;
- The ER-P includes ambitious approaches to transform short term monoculture acacia plantations into long term and mixed plantations;
- Includes a multilayer approach to engage a multiple forest management entities and communities living around and inside the state forest areas;
- Improved forest and land use planning is included through the introduction of Provincial REDD+ Action Plans together with the existing provincial socio-economic development plan;
- The ER-P includes large scale pilot for community based forest monitoring systems (Provincial Forest Management System) which are to be integrated to the national Management Information System for Forestry Sector (FORMIS II).

[1] 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.

Drivers of deforestation and forest degradation

- The key drivers of deforestation and forest degradation tend to be very localised in the region, however, the impacts can be quite severe and in the case of infrastructure can be long lasting with the initial impacts being quite limited but the long term degradation has the potential to be much worse than the short term impact of the initial construction;

    - Infrastructure: mainly roads and hydro-power projects, even recent HPP suffer from poor supervision of mitigations;

    - Agricultural encroachment and conversion: an important driver crop is rubber which has seen a very high growth rate in all provinces and higher rates that all other agricultural drivers including the Acacia plantations and cassava crop drivers (they show a growth rate of about 2% and 4% respectively);

Details of the Emission Reduction Program

The economic benefits of the sustainable management of natural forests in the ER-P will be of particular importance to community forestry and biodiversity conservation. Reliable prediction of productive capacity, and thus income generation from natural forest areas will provide a clear incentive for communities to engage proactively in the program and contribute to provide improved livelihoods and help alleviate pressure on the areas of high biodiversity forest. In areas where productive capacity of community forests is still limited, REDD+ generated income will contribute to providing a secure income source for communities engaged in forestry work.

The ER-P project will introduce and mainstream REDD+ to the six ER-P provinces and will be the first major REDD+ program in Viet Nam and will build on and expand on progress in implementing participatory approaches to sustainable forest management introducing REDD+ activities to the forest sector by: 1) introducing and monitoring forest carbon emission reductions targets to the forest sector focusing on the Protection Forest Management Boards (PFMBs), Special Use Forest Management Boards (SUFMB) and State Forest Companies (SFC); 2) introducing performance payments for forest emission reductions through carbon sequestration; 3) further developing sustainable smallholder forest based livelihood options including access to follow-on funding from the Forest Sector Development Project (FSDP) for smallholder plantation development, and support for improvements to other forest based livelihood activities; and 4) improving inter-agency coordination at the landscape scale to improve forest management.

The total ER-P target area amount to 224,930 ha to be implemented by about 42 PFMB, 17 SUFMB and approximately 13 SFC[2] with additional inputs coming from smallholders. Avoidance of deforestation and forest degradation and enhancement of carbon stock in degraded natural forest will occur on 133,785 ha**.** Carbon stock enhancement activities such as the transformation of existing short-rotation plantation to long-rotation and native species forest is estimated on an area of 48,665 ha, while new planting on bare land is planned at 29,710 ha. All assumed models are profitable over a period of 25 years.

The ER-P includes two main investment targets: i) smallholders and ii) large forest owners, government forest management board and SFCs. The ER-P processes for working with the smallholders follow on from the tried and tested approaches with funding and links already in place with the Vietnam Bank For Social Policy (VBSP).

Emission Reduction Program is as follows:

[2] There are about 47 PFMBs, 17 SUFMBs and 16 SFC but not all may wish to participate – this is based on the FSDP project where not all eligible SUFMB applied for small grants (about 90% did) and not all eligible or identified smallholder communities whished to participate in the smallholder plantation forestry and collaborative follow up work with SFCs by the FSDP and the FCPF project.

- Main ER-P interventions target focuses on both government forest management entities, the private sector and smallholders, and includes a comprehensive programmatic approach over eight years in the six provinces and over 320 communes with forest cover, the program includes:
    - Eight models that: 1) improve forest governance to reduce forest degradation, 2) assist regeneration, 3) regeneration including enrichment planting, 4) two models on transformation of short term plantations to long term plantations, and 5) three models on afforestation and reforestation long term mixed Acacia and native species;
    - Support is provided to SUF (protected areas), PFMB (for watershed management), SFC and communities on improving forest protection and forest governance;
    - Institutional and capacity building activities in SUF, PFMBs, SFCs and communities;
    - Livelihood support for targeted forest dependent communities and designed to contribute to reducing the dependence on forest resources; and
    - Support for improvements to policy on access to forest resources and land use planning, and multi-sector planning at the provincial level.

The reference level

- The reference period is currently 2000-2010, but due to the recent changes to the Methodological Framework for the reference period a revised reference period of 2005-2015 is under consideration and Vietnam requires guidance from the Carbon Fund (CF) on this issue and this possible change is likely to cause some additional impacts to the detailed economics of the ER-P;
- Total net emissions for 2000-2010 are -11,697,551 tCO2e;
- Vietnam has five year national mapping program and national REDD+ program and has the national reference level (1995-2010);
- A key issue for the ER-P in Vietnam is the 661 Program and how this is accommodated within the process of agreeing the program and Vietnam requires guidance from the CF on this issue;
- The 661 Program was a one-time specific program outside of the long-term reforestation activities considered to be business as usual funded through the government budget. We therefore believe that the increases in plantation area associated explicitly with the 661 Program during the Reference Period should be removed from the Reference Level calculations, since otherwise the Reference Level will implicitly assume a continuation of a National program that is in fact no longer in existence.
- Failure to adjust the RL for the 661 Program will in effect penalize Vietnam by incorrectly crediting some of the future FCPF program increases to a non-existent ‘Business as Usual’ domestic program. Considering the specific circumstances of the 661 Program, the reforestation and forest restoration area of the 661 Program 1998 – 2010, (the main impact of the Program was from 2000-2010) has been removed from the estimates of plantation area changes used to derive the reference level.

Implementation and monitoring

- A comprehensive approach to MMV that includes information sharing in the a national forest management information system (FORMIS), a pilot commune and community based provincial

forest management system (PFMS) operational in five of the six provinces and which will link to the national FORMIS to greatly improve forest monitoring.

- A critical issue for the success of the proposed ER-P is that program receives an advance payment, this is critical for starting the program in the provinces for starting the institutional and budgetary processes and as a general business approach of good faith to the provinces.

Safeguards and environmental and social management

The ER-P builds on experience of previous forest sector projects and widens the use of collaborative forest management approaches and includes results based and performance based, improved management planning approaches to encourage deeper and more community orientated stakeholder consultations and more emphasis on M&E (including the PFMS, and MRV) and includes the FGRM process.

Benefits and non-carbon benefits

- The draft Benefit Sharing Mechanism (BSM) is under preparation as part of the consultative, transparent and participatory processes for the ER Program. It reflects inputs by all relevant stakeholders at the village (representatives of all ethnic groups residing in the six Project provinces have been consulted, consultations of a participatory nature have been with PFMBs, SUFMBs, SFCs, consultations have also been undertaken with local communities and international civil society groups. These consultations began in October 2015 and will continue through to the end of August 2016.

- It has also been prepared based on the quantitative survey undertaken as part of the Strategic Social and Environmental Assessment (SESA) for the ER-P that was started in November completed in July 2016 and takes account of households with economically active members involved in forestry and forestry related activities including NTFPs, the cultural value of forests and respondents opinions on a variety of issues (such as the awareness of boundaries, prevalence of illegal logging, decline in availability of NTFPs and which stakeholder groups are the most competent to manage forests).

- A comprehensive benefit sharing approach that involves community based collaborative management of forest approaches and the BSMs will be designed to facilitate the delivery of monetary and non-monetary benefits, with the emphasis more on the latter than the former, to promote successful ER Program implementation;

- The approach to carbon titles is under discussion, it is likely that the carbon right can be implemented within the existing formal legal framework. According to the Vietnamese Constitution all land and forest resources belong to the people. The state acts as their representative and manages the resources for stable long-term use. Carbon rights have the potential to be a new property interest, but the carbon right does not confer a right to “own” the specified land. Carbon rights do not involve the taking of any naturally occurring produce, and carbon right holders do not remove any produce from the land, although the stored carbon and potential carbon storage may create economic benefits for the interest holder. Carbon rights, which are verified as separate property interests, and enforceable against or over the land, are more readily tradable; they are not encumbered by the management associated with the transfer of full ownership of the land so potentially this may fit within the legal system.

1 Entities responsible for the management and implementation of the proposed ER Program

1.1 Emission Reduction (ER) Program Entity that is expected to sign the Emission Reduction Payment Agreement (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. Dr Cao Duc Phat
Title	Minister
Address	No. 2 Ngoc Ha Street Hanoi Viet Nam
Telephone	+84 4 7332263
Email	vuxuanthon@yahoo.com
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
Name of organization	Viet Nam REDD Office
Type and description of organization	Government organisation
Organizational or contractual relation between the organization and the ER Program Entity identified in 1.1 above	The VRO is under the Viet Nam Administration of Forestry which is part of the Ministry of Agriculture and Rural Development
Main contact person	Ms Nguyen Thu Thi Thuy
Title	Director of Viet Nam REDD+ Office
Address	Viet Nam REDD+ Office Viet Nam Administration of Forestry No.10 Nguyen Cong Hoan St., Ba Dinh District Hanoi, Viet Nam Tel.: +844 37286513/17/20 Fax: +844 37286514
Telephone	Tel: 0983070876
Email	thuy@kiemlam.org.vn
Website	www.Viet Nam-Redd.org

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		
Ministry of Agriculture and Rural Development	H.E. Dr. Cao Duc Phat Tel: 0913227455	Managing entity
Ministry of Natural Resources and Environment	H.E. Tran Hong Ha	Managing entity
Ministry of Planning and Investment	H.E. Nguyen Chu Dung Nguyenchidzung@mpi.gov,vn	Managing entity
Ministry of Finance	H.E. Đinh Tien Dung	Managing entity
Management Board of Forestry Projects	Mr Vu Xuan Thon vuxuanthon@yahoo.com Tel: 0913211306	Manage activities of the ER Program
Viet Nam REDD+ Office (cum chair of safeguards Technical working group)	Ms Nguyen Thi Thu Thuy thuy@kiemlam.org.vn Tel: 0983070876	Coordinating the ER Program preparation process and the design, safeguards
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 Rural Development of Ha Tinh	Mr. Nguyen Huy Loi Vice Director Tel: 0913294136 E: huyloihatinh@gmail.com	Provincial representative
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: Viet Namvina@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	Hoang Quoc Viet Vice Director	Provincial representative

Name of partner	Contact name, telephone and email	Core capacity and role in the ER Program
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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 Viet Nam Phase II Programme	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	In charge of strategic and rational for the ER Program; providing information about the FCPF readiness project
JICA	Mr. Hiro Miyazono Chief Technical Advisor Tel: 0986683204 E haskimiyazono@gmail.com; Miyazono.Hiroki@jica.go.jp	Technical and financial support for the development of technical issues
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
Viet Nam 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)

Name of partner	Contact name, telephone and email	Core capacity and role in the ER Program
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 (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 Viet Nam Landscape Manager for all CarBi (Viet Nam) Quoc.Nguyenanh@wwfgreatermekong.org	The Carbie 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) mid 2016 and shows the overall progress of readiness for REDD+ in Viet Nam, consultation workshops and self assessment have been held in all Emission Reduction Program (ER-P) provinces in a selection of other REDD+ provinces and at the national level. Consultations were also held with the sub technical working groups and other REDD+ projects and non-government organizations (NGOs) involved with REDD+.

The calculated GHG emissions/removals for the Land Use, Land Use Change and Forestry (LULUCF) sector in 2010 and projections for 2020 and 2030 are shown below in Table 2.1:

Table 2.1 GHG emissions/removals for forest in the LULUCF sector in 2010 and projections for 2020 and 2030

GHG Source and sink category	Total thousand CO_2e		
	2010	2020	2030
Forest land	-22,543.84	-50,373.79	-53,146.90

Table note: Source MONRE 2014

2.2 Ambition and strategic rationale for the ER Program

2.2.1 Ambition

In the 2021-2020, forest protection and development is a national priority, focusing on sustainable forest management and development and increasing forest coverage to the level of 45% (equal to 15 million ha forest). The goal is to sustainably manage 13.4 million ha of forest, with subsequent increases to 14.3 million ha by 2015 and 15.1 million ha by 2020[3] and the NCC ER-P region is central to this goal. The NCC region contains most of the remaining broadleaf evergreen forest in Viet Nam and the NCC region some of the best sites of international levels of biodiversity). The level of expectation and ambition attached to the ER-P represents a investment in forward planning and commitment to forest sector development as a broad scale pilot for a number of far and reaching activities and tested approaches including:

- The program would be the first to implement wide scale REDD+ activities through participatory sustainable forest management in priority areas;
- Pilot forest landscape management in six provinces including the reduction in emissions from deforestation and forest degradation, as well as conservation of biodiversity and sustainable management of forests, and enhance of carbon stocks;
- Piloting of ambitious approaches to transform short term monoculture acacia plantations into long term and mixed plantations;
- A multilayer approach to engage a multiple forest management entities and communities living around and inside Special Use Forests (SUFs), Protection Forest Management Boards (PFMBs) and State Forest Companies (SFCs) and smallholder plantations with the program area is set to

[3] Forest protection and development plan in the period of 2011-2020.VNFOREST

widen experience on piloting how benefits can be directly linked to the forest governance by community stakeholders on forest protection;

- Regeneration of natural forests, many of the remaining areas of natural forest outside of the SUFs are in a relatively poor state and there is considerable potential to improve overall forest quality;
- The program supports the government policy for the transformation of current short term Acacia plantations into long rotations and for further investments in diversified long term mixed plantations;
- The introduction of improved forest and land use planning through PRAPs together with the existing provincial Socio-economic development plan (SEDP)[4] and Climate Change Action Plan (CCAP) which will pilot the national response to climate change which must be associated with sustainable development and a transition towards a low-carbon economy; and
- The proposed activities include an ambitious pilot for in improving the monitoring and verification and reporting of forest cover and includes pilots for six tablet based commune based provincial forest management systems (PFMS) which are to be integrated to the national Management Information System for Forestry Sector (FORMIS II).

2.2.2 Policies and other developments contributing to conservation and enhancement of carbon stock

The NRAP, approved in Decision 799/QĐ-TTg dated 27/6/2012, includes support for long standing government policies for forestry sector which directly and indirectly contribute to conservation and enhancement of carbon stock as mentioned in, the Government has issued a range of policies relating to climate change and commitments to support greenhouse gas mitigation and adaptation measures.

Climate change was mainstreamed into the National Socio-Economic Development Strategy (2011-2020) and Socio-Economic Development Plan (2011-2015) and the economic sectors and provinces have developed Action Plans to respond to the challenges of climate change.

The Green Growth Strategy (VNGGS), 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 stipulated that by 2020, gas emission reduction per GDP should be 8%-10% lower than that of 2010. The Resolution gave priority to implement GHG emission reduction program through efforts to reduce deforestation, forest degradation and improving livelihoods for communities, and ensuring land for planned sustainable forest development. Sustainable development and a transition towards a low-carbon economy were introduced and includes mitigation targets and measures and regulations on linking with international carbon markets. The strategy sets out objectives towards a green economy, energy efficiency, GHG reduction and improvement of living standards[5]

The Resolution highlighted action in the forestry sector including: 1) investment in natural forest protection, restoration and regeneration, promotion of forest plantations (particularly mangroves); effectively stopping illegal logging and forest fires; banning of logging in natural forest; 2) expanding SUF areas by accelerating the establishment of new nature reserves and strengthening the management; prioritizing resources to protect the landscape, ecology and natural heritage.

[4] The Socio-Economic Development Plan is seen as a major opportunity for mainstreaming CC-response in development planning - a major effort is needed to establish climate change response as a central element of the five-year SEDP.

[5] It includes the target to reduce the intensity of GHG emissions by 8-10% (as compared to the 2010 level) between 2011 and 2020; and reduce GHG emissions by at least 1.5% -2% a year until 2030. The strategy focuses on improving energy efficiency, changing the fuel structure in industry and transportation, increasing the proportion of new and renewable energy sources and the development of organic agriculture.

The Ministry of Natural Resources and Environment (MONRE)[6] prepared options to reduce GHG emission toward 2030 in the forestry sector by 22.84 millions CO_2e which includes protection of natural forest (one million ha and 15M tCO_2e), coastal forest protection (3.04M tCO_2e), expansion of coastal forest plantation (10,000ha, 0,16M tCO_2e), zoning, tending and re-growing natural forest (200,000ha 2,24M tCO_2e); and support for forest plantation producing saw logs/ large timber (2.4M tCO_2e). For options of conditional GHG emission reduction toward 2030 in forestry sector the quantity of CO_2e will be 43,46 millions in total, which include natural forest protection of 2.3 million ha (36.35M tCO_2e), coastal forest plantation (30,000ha 0.49M tCO_2e), zoning, tending and re-generation of natural forest (200,000ha 2.24M tCO_2e) and re-generation of natural production forest (400,000ha 4.48M tCO_2e).

2.2.3 Viet Nam's Intended Nationally Determined Contribution (INDC)

With the use of domestic resources, Viet Nam is expected to reduce its GHG emissions by 8% by 2030 compared to the BAU scenario and the emission intensity per unit of GDP will be reduced by 20% compared to 2010 levels and forest cover will increase to 45% [7]. Opportunities in the implementation of the INDC include:

- A law on energy-saving and energy efficiency (passed by the National Assembly, 2014) and a decree on law enforcement has already been issued;

  The mitigation options in the INDC are in line with the State directives and sectoral plans and have the potential to attract local and international private sector investment opportunities in improvements to energy efficiency and small hydro power plants;
-
- Investment in forest protection and development financed by the State budget is increasing; forestation is attracting investment from the private sector and agencies are already implementing forest protection and development plans at the central and local levels;

- The State is establishing favorable conditions by developing a policy framework on solid waste management and treatment technology, and is introducing penalties and taxes on environmental protection to encourage local and international organisations to invest in solid waste treatment units and support services; and

- Funding is diversified, Viet Nam's Environment Protection Fund is an important investment source to support waste treatment projects.

2.2.4 Strategic rational

The strategic rational for investing in the ER-P includes the following:

- The NCC is one of the most important areas of remaining natural forest and plantation forest areas in Viet Nam and the ER-P approach offers incentives to retain natural forest cover and improve forest quality;

- The ER-P strategy has the potential to significantly improve the overall quality of forest management in areas of high biodiversity and to include the social dimension;

[6] Pham Van Tan's presentation at RECOFTC/VNFOREST workshop, Ba Vi, Ha Noi, 6/10/2015.

[7] Viet Nam's Intended National Determined Contribution (INDC) commitment, in general, the INDCs inform the international community's efforts to address climate change and reach the 2°C target. The country contribution could be increased up to 25% with international support

- The ER-P includes interventions that will improve the quality of inventory data and encourage the improvement of existing forest growth development of new models that respond to changes in the market and also contribute diversification and retention of biodiversity;
- The ER-P will encourage the forest management entities to develop sustainable forest management plans and introduce new REDD+ forest management standards funding opportunities;
- The establishment of national level biodiversity indicators will allow biodiversity from any site, to be integrated into and compared with national level trends; and
- The ER-P supports further investment in the functionality of forest ecosystems, and biodiversity conservation and the provision of forest ecosystem services,.

a) Sectoral and regional context

- The rationale for the NCC includes that the region has some of best remaining natural forest cover especially along the international boarder areas, Quang Binh, (it is an important area for biodiversity with international levels of biodiversity) and many of the 17 Nature Reserves and National Parks, found in the area form biodiversity corridors with neighbouring Lao and Cambodia[8];
- The NCC will be an important test for the plans to improve current forest inventory methodology[9] many of the provinces in the region already have experience of the interventions proposed and the risks associated with new regional approaches as proposed in the ER-P are therefore considerably reduced through the following previous and ongoing experience:
    - REDD+ projects have been already been piloted in some provinces e.g. Quang Binh, Thua Thien Hue, Thanh Hoa and Nghe An;
    - There is on going support and work with the private sector including SFCs, and smallholder plantations;
    - ODA projects in the region include long term pilots developing and testing collaborative sustainable forest management approaches between the different types of forest management boards and local communities;
    - Work with communities to develop forest land allocation and improved managed access to forest and NTFPs; and
    - Long term work on developing Forest Stewardship Council (FSC) certified forest approaches in Thua Thien Hue, Quang Tri and Quang Binh;
- Many of the villages and communities found within project area currently reside inside or adjacent to PFMBs, SUFs and SFCs state entities which have significant forest stock;
- The expected beneficiaries in the NCC will receive direct and tangible benefits from their share of plantation and timber revenue and the initiatives will benefit from expanded livelihood opportunities; and
- The proposed ER-P activities in the NCC include enrichment planting, rehabilitation forest restoration and transformation of short term plantations to longer term and diversified native

[8] The forest sector does not face some of the most pressing economic drivers that occur in the central highlands e.g. investment in coffee and pepper crops.

[9] Thereby help to address the following problems (i) Low intensity: greater area coverage of forest inventory under REDD will allow claims of deforestation and degradation trends to be made with greater confidence; (ii) Poor objectivity of data: improve accuracy of inventory data and allowing comparison with another source(s). (iii) Lack of independent verification.

species and it is expected that these can significantly enhance forest carbon stocks while also contributing to livelihoods and other environmental objectives, these activities are vital in terms of adaptation to climate change, as short-rotation plantations (mainly Acacia and Eucalyptus) are prevalent in the region and young plantations are vulnerable to typhoons and monsoon events.

2.3 Political commitment

Viet Nam government policy over the last 10 years has been strongly committed to introducing and preparing the country for climate change and by reducing greenhouse gases (GHGs) and adapting to the potential impacts of climate change; this is demonstrable through the introduction of legislation and support for REDD+ which has been adopted as one of the government's core activities.

As with other ministries MARD was required to draw up an Action Plan on Climate Change for climate change mitigation and adaptation, the main objectives of the plan are to:

- Enhance the government's capacity for climate change adaptation and mitigation to minimize its adverse impacts and then ensure sustainable development of the agriculture and rural development sector;
- Ensure the stability and safety of residents in cities and different zones and regions, especially the Cuu Long and Red River deltas and the central and mountainous areas;
- Ensure stable agricultural production and food security in an agricultural area of 3.8 million ha with two seasonal rice crops;
- Ensure the maintenance of dyke and infrastructure systems to meet disaster prevention and mitigation requirements;
- Strengthen international cooperation by promoting the link with international and regional programs, and receive technical and financial assistance from international communities in climate change adaptation and mitigation; and
- Ensure financial support for the plan's implementation from the government budget and by mobilizing official development assistance, international cooperation support programs, and other sources of national and international assistance.

2.3.1 Recognition of the importance of climate change and the main implementers

- In 2008, the Government issued the National Target Programme to Respond to Climate Change (NTP-RCC) to assess climate change impacts and develop adaptation and mitigation measures and requires the mainstreaming of activities in response to climate change in all other sectors and fields;
- Recognition of the importance of climate change is demonstrated by domestic responses as well as international engagement. At the domestic level, political will and commitment to responding to climate change is reflected most recently in Article 68 of its Constitution (2013)[10] and the Communist Party's Resolution on Active Response to Climate Change, Improvement of Natural Resource Management and Environmental Protection (2013)[11];

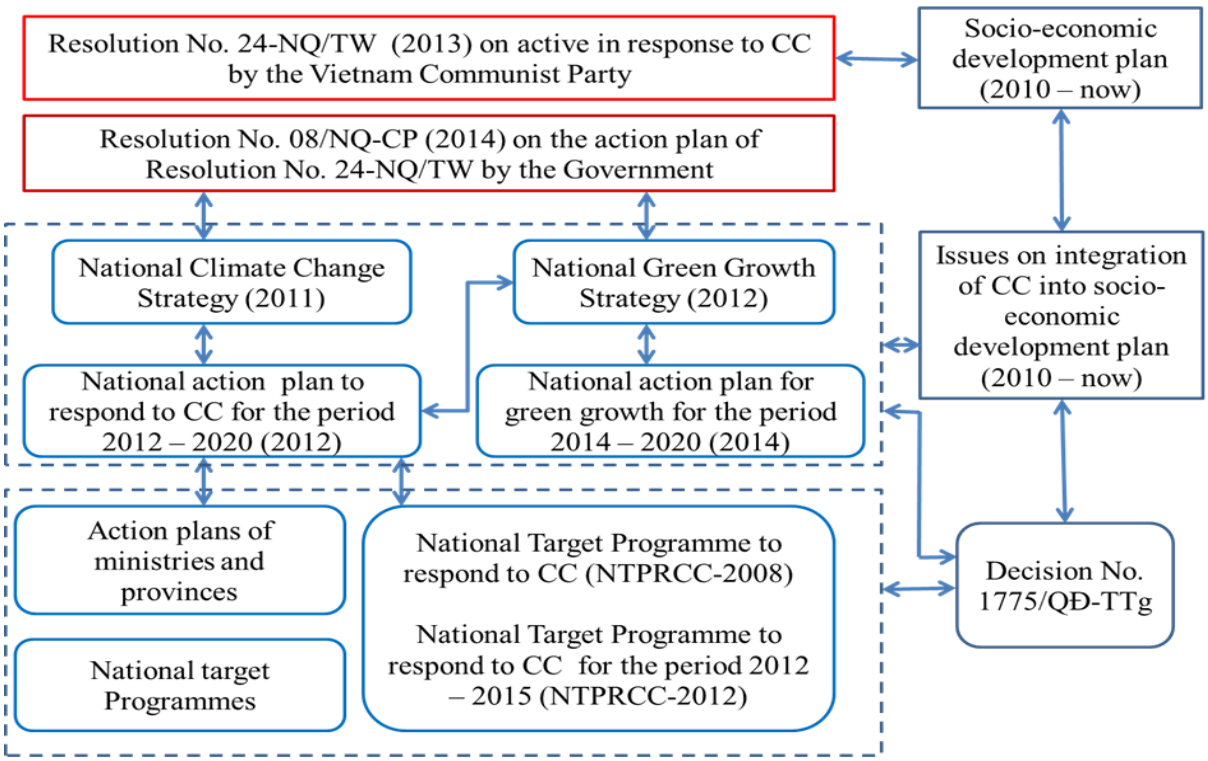
[10] Article 63 of Viet Nam's constitution provides: (1) The State shall adopt environmental protection policies; manage and use natural resources in an efficient and sustainable manner; conserve nature and biodiversity; and take the initiative in preventing and controlling natural disasters and responding to climate change. (2) The State shall encourage all activities for environmental protection and the development and use of new energy and renewable energy.

[11] Climate change legislation in Viet Nam 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.

- Climate change was mainstreamed into the National Socio-Economic Development Strategy (2011-2020) and SEDP (2011-2015), and policies on disaster risk reduction, coastal zone management, and energy supply and use.; and
- In 2011, the National Climate Change Strategy (NCCS)[12] 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.

A summary of the long term political commitment is shown in the following Figure 2.1 and summarises the various strategies [13].

Figure 2.1 Key strategies and policies on climate change mitigation in Viet Nam and inter-linkages



a) Climate change action plans

To implement the strategy, the National Action Plan on Climate Change Period 2012–2020 was issued in 2012 and sets out objectives and lists 65 programmes, projects and proposals. The economic sector ministries and provinces have developed CCAPs to respond to climate change. The action plans are

[12] The NCCS states that adaptation is a priority in the initial phases of the plan. Mitigation actions are "no regrets" options that provide win-win solutions, including REDD+ activities in areas suffering deforestation and forest degradation leading to erosion and potential landslides and land use change and sets out four specific objectives: 1) to ensure food security, energy security, water security, poverty reduction, gender equality, social security, public health, improved living standards and natural resource protection; 2) the development of a low-carbon economy; 3) improved public awareness including popularising climate-friendly ways of living and modes of consumption; and 4) enhancing international co-operation. The National Committee on Climate Change was established as an advisory agency for the Prime Minister to propose strategic solutions institutional body for overseeing climate change policy, mobilise and co-ordinate resources to respond to climate change. The role of the NCCC is central for the oversight of the NCCS, Viet Nam's GGS and other climate-related programs to ensure that they are coordinated and their implementation is harmonized with clear targets on greenhouse gas emissions (GHG) and energy sector reform to ensure mitigation goals are reached. In addition, the role of REDD+ as part of the overall framework for climate change mitigation needs to be further developed.

[13] From Viet Nam's intended Nationally Determined Contribution to Land use and Land Use Change and Forestry; GIZ

intended to improve adaptation capabilities and ensure the sustainable development of agriculture and rural development.

The Action Plan Framework for Adaptation and Mitigation of Climate Change of the Agriculture and Rural Development Sector covering the period 2008–2020 was issued by MARD in 2008. 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.

b) Environmental protection and GHG

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" and sets out actions to: 1) improve public awareness and adaptability to climate change; 2) mainstream climate change response into strategies, plans, program 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 Viet Nam 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 LULUCF and by 5% in waste management.

c) Political commitment in Laws and Decrees

- In 2013, the Law on Natural Disaster Prevention and Control was enacted, to address natural hazards that have the potential to affect the country, but which are primarily climate change related.
- In June 2014, the revised Law on Environmental Protection was promulgated and came into force on 1 January 2015, and requires activities relating to environmental protection to be harmonised with 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; management of GHGs.
- Development planning is currently undergoing a major improvement with a new planning law expected in January 2017 which is set to improve the institutions of incorporating environment sustainable development criteria including ecosystems services into planning[14].
- The Law on Forest Protection and Development 2014 is due to be updated in 2016-2017 and will most likely include more on climate change and a stronger REDD+ orientation.

d) Funding of climate change incorporating REDD+

In 2014, the Prime Minister agreed to allocate VND3trn (US$46.9m) from the Support Programme to respond to climate change to implement projects in response to climate change in 2015, focusing specifically on 16 projects involving coastal and protective afforestation and sea dyke reinforcement.

The forest sector and funding incorporating REDD+ includes to conserve and/or enhance forest carbon stock to address:

- Planned and unplanned conversion to agriculture, unsustainable forest management, and illegal logging issues identified as drivers of deforestation and degradation;

[14] Environmental protection and nature conservation is one of key principles of planning-related activities (Article 4. Fundamental principles of planning-related activities), Sectors related to environment, natural resources, biodiversity conservation, forestry is included in the list of sectors having national sectoral plans (Article 12. The planning system, Annex 1. List of national sectoral plans) All plans are provided to determine directions for environmental protection, biodiversity conservation and climate change adaptation, which creates the basis for incorporating ES into planning measures of all sectors and administrative levels. (Chapter II, Section 2. Scope and content of plans)

- Production forestland allocation; wide use of innovative forest use rights and co-management approaches;
- Sustainable production forest certification;
- Payment for Forest Environmental Services; and
- Strengthened cooperation on law enforcement.

2.3.2 Political commitment from the NCC provinces

The political commitment of the provinces is clearly demonstrated through the support of provincial leadership enabling the provincial departments and districts to work on the Program. and progress REDD+ related activities as summarised in Table 2.2 below, by undertaking the development of PRAPs, and setting up PRSCs.

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	Draft final		Yes	
Quang Binh	Yes	Yes	Yes	Final with PPC		Yes	Yes
Quang Tri	Minor	Yes	Yes	Draft		Yes	Yes
Thua Thien Hue	Minor	Yes	Yes	Final	June	Yes	Yes

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

The Chairman of People's Committees at district and commune level, have responsibility for forest management, protection and development functions within their administrative units. All provincial governments have Departments of Agriculture and Rural Development (DARD) that have operational responsibility for forest administration and report to the provincial government on administrative, technical and financial matters. Provincial departments direct and control forest operations in districts and communes[15]. The Branch Offices of the Department of Forest (which was recently officially merged

[15] In Vietnam the lowest level of state administration is the commune (referred to as the Commune People's Committee: CPC). The communes are under the direct administrative control of the District People's Committee. In each district there are between 10 and 25 communes (within the project Quang Tri with 15 communes has the smallest number of communes while Nghe An with 25 communes has the greatest number) and within each commune there are at least 4 to 5 villages or hamlets although in more densely populated lowland areas there may be fewer villages or hamlets with a larger number of households. The socioeconomic contexts of these villages or hamlets are highly variable although in upland forest dependent villages or hamlets the variation depends to a large extent on access to protection, special use or production forests or a combination thereof. Although, typically, in upland areas these villages or hamlets will be peopled by persons of a similar ethnic background and are likely to be either close or distant kindred. In activities associated with the SESA and BSM the terms "commune" and "communities" are not used to refer to the same structures. The term commune refers to the administrative structure that consists of the villages or the hamlets. The term "communities" refers to groups living within these villages or hamlets. Where consultations have been undertaken with communes the inference is with representatives of the CPCs. Where consultations have been undertaken with communities the inference is that these consultations have been undertaken with members of local village or hamlet communities. In practical terms the initial point of contact for either the SESA or the BSM is with the commune and not individual communities residing in the villages or hamlets within the commune. Communes are

into DARD) and Forest Protection Department (FPD) are under the DARD. Forest Management Boards have to report to the Provincial Peoples' Committees (PPC). Within each province, the Districts have responsibility for implementing government policies. Below the provincial level, Districts, led by a District People's Committee (DPC), are responsible for implementing government policy, including forestry policy, and for providing technical extension assistance to farmers in both forestry and agriculture. Forest rangers employed by District-level offices of the FPD are in charge of providing consultation on forest management, protection and extension to the Commune People's Committees (CPC). NGOs also play a locally important role in forest conservation, management and provision of extension services at general commune and individual community levels.

The provincial, municipal, and district authorities have the responsibility for implementing the central government's environmental policy. At each of these levels, Departments of Natural Resources and Environment (DONREs) are responsible for facilitating and enforcing regulations of natural resources and the environmental. Enforcement of forestry and fisheries regulations is the responsibility of departments of agriculture and rural development and linked departments and divisions. Viet Nam has introduced a special environment police force, which now operates in most provinces with increasing effect across the environment and natural resource fields, for example, in enforcement of pollution control and wildlife trade regulations.

2.3.3 Commitment in the Forest Sector Development Strategy and the example of the success of Payment for Forest Environmental Services

The National Forest Development Strategy 2006–2020 (NFDS) and the National Plan on Forest Protection and Development (NPFPD) supports payments for ecological services to local forest managers and is developing mechanisms to deliver the objective of income generation and sustainable livelihoods for some parts of the forestry sector, and is not expected to be dissimilar to approaches under consideration for benefit sharing mechanisms in REDD+. REDD+ is firmly considered as part of the drive to achieve the objectives of the NFDS[16].

The Payment for Forest Environmental Services (PFES) policy was issued by 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).

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.[17] 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

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able to legally open escrow accounts and have access to government allocated funding programs. They are also able to enter into legally binding contracts to initiate development-based activities targeted at communities residing within the villages or hamlets under the administrative control of the commune. Local communities unless organized as a legally constituted cooperative are neither able to receive state funding or enter into legally binding contracts.

[16] The challenge for the forestry sector is to integrate policy instruments for development of the sector (e.g. the Law on Forest Protection and Development (2004) and the National Strategy on Forestry Development 2006–2020) with the climate change response through REDD+, but also through the adaptation of benefits from afforestation, sustainable forest management and improved plantation management. The forestry sector includes small-scale, natural resource-dependent, rural communities, as well as large commercial entities (state owned enterprise (SOEs), SFCs or private forest companies). The mainstreaming of climate change through the development of the forestry sector needs to consider these diverse interests and requirements. Strengthening the linkages between the NFDS, NPFPD and climate change related policies is expected help to deliver both forest development and climate change benefits.

[17] 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 Viet Nam of Nguyen Huu Tuan Phu, June 2015.

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.[18] 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.

[18] Nghe An PPC's report summarizing PFES results, September 2014.

3 ER Program location

3.1 Accounting Area of the ER Program

3.1.1 Overview of Viet Nam

The political and economic reforms (Đổi Mới) launched in Viet Nam 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. Viet Nam'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. Viet Nam'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[19]). 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 Viet Nam 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 totalling 5.15 million ha (16% of the total land area of Viet Nam), 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 on Viet Nam) living in 1,820 communes[20] as shown in Table 3.1.

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

ER Province	Area (km^2)	% of area	Population 2013	% of population	Average annual growth rate %
Thanh Hoa	1,1130.5	21.6	3,476,600	33.8	0.33
Nghe An	16,492.7	32.1	2,978,700	28.9	0.38
Ha Tinh	5,997.3	11.1	1,242,400	12.1	0.12
Quang Binh	8,065.3	15.7	863,400	8.4	0.39
Quang Tri	4,739.8	9.2	612,500	5.9	0.44
Thua Thien Hue	5,033.2	9.8	1,123,800	10.9	0.59

[19] Taking stock: An update on Vietnam's recent economic development; World Bank, December 2015.

[20] 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.

Total	51,458.8		10,297,700		0.36
	or 5,145,800 ha				

Source of data is General Statistics Office (GSO) 2013

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 Viet Nam 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.

The national Forest Protection Department's (FPD) annual forest cover monitoring data indicate that 44% (2.3 million ha) of the proposed ER Program area was forested in 2012; nearly all (95%) of which, is 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.

Figure 3.1 The ER-P Accounting Area

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

3.2.1 Existing forest types

The MARD classifies forest[21] depending on the use purpose, establishment origin, site condition, tree species and tree volume as below: Three forest types by use purpose as described in the Table 3.2 below.

Table 3.2 Three types of forest by use purpose

Special use forest	Protection forest	Production forest
National park (NP)	Watershed protection forest	Natural production forest
Nature conservation zone: Nature reserves Species-habitat conservation area	Wind and sand protection forests	Planted production forest
Landscape protection area: Forests of historical or cultural relics Scenic landscapes	Wave and land reclamation protection forest	Seeding forests, including the selected and recognized planted forests and native species
Scientific research and experiment forests	Environmental protection forest	
The forest is further categorised by origin, site condition, species and volume as follows		
Two forest types by establishment origin: 1) Natural forest (primary forest, secondary forest, regenerated forest and forest after extraction); and 2) Planted forest (new plantation on barren land, replanted forest after logging of plantation, and natural regeneration after logging of plantation).		
Four forest types by site condition: 1) Forest on earth mountain; 2) Forest on rocky mountain; 3) Inundated forest (mangrove forest, forest on alkaline soil e.g. Melaleuca forest, and waterlogged forest); and 4) Forest on sandy soil.		
Four forest types by tree species: 1) Wood forest (broadleafed forest, needled forest, mix broadleafed and needled forest); 2) Bamboo forest; 3) Palm forest; and 4) Mix bamboo and wood forest.		
Forest types by volume 1) Very rich; 2) Rich; 3) Medium, 4) Poor and 5) Has no volume.		

For NCC region forest types were combined in to one forest type to reduce uncertainty during the forest and land use mapping/updating and the harmonized classification system in the NCC is shown in Table 3.3 below.

Table 3.3 Forest and land use classification system at national scale and for the NCC

Type	Forest and land use type	Forest/non-forest	Forest and land use classification system for the NCC	
			Type	Forest and land use type
1	Evergreen broadleaf forest - rich	Forest	1	Evergreen broadleaf forest - rich
2	Evergreen broadleaf forest - medium	Forest	2	Evergreen broadleaf forest - medium
3	Evergreen broadleaf forest - poor	Forest	3	Evergreen broadleaf forest - poor
4	Evergreen broadleaf forest - regrowth	Forest	4	Other Forest

[21] Circular No. 34/2009/TT-BNNPTNT dated 10 June 2009.

Type	Forest and land use type	Forest/non-forest	Forest and land use classification system for the NCC	
6	Bamboo forest	Forest		
7	Mixed woody - bamboo	Forest		
10	Mangroves forest	Forest		
11	Limestone forest	Forest		
12	Plantations	Forest	5	Plantations
13	Limestone without forest	Non-forest	6	Non-forest land
14	Bared land	Non-forest		
15	Water bodies	Non-forest		
16	Residence	Non-forest		
17	Other land	Non-forest		

Table note: Based on the result of the average timber stock volume calculation for the forest types in the NCC region in the report on national reference level establishment conducted by Forest Inventory and Planning Institute (FIPI), the forest type numbers 3, 4 and 7 have more or less the same value of stock volume, however, it is difficult to distinguish among those classes when using Landsat data for image interpretation.

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 Viet Nam (MONRE, 2009, 2012[22]). According to climate change scenarios[23], 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 3.4. Long term analysis of tropical cyclones show variance over different decades, but with no clear long term trends[24]. A separate detailed analysis of long term tropical cyclone rainfall[25] 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.

[22] Ministry of Natural Resource and Environment (Monre), 2012: Climate change and sea level rise scenarios for Viet Nam

[23] Climate change, sea-level rise scenarios for Viet Nam, 2009.

[24] IPCC Regional Impacts of Climate Change; Recent Climate Trends and Variability. www.ipcc.ch/ipccreports/sres/rgional

[25] 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 TTHue). 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 3.4 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	Averag 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

Table notes: 1. Best fit to the ER-P areal 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 land slides even where forest cover has been maintained, where the protective forest cover is removed the erosion can rapidly develop.

3.2.4 Biodiversity

The biodiversity of the region contains some of Viet Nam's most notable forests with high biodiversity value and 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 recognised conservation corridors (ranked 'high' or 'critical' global conservation priorities see Figure 3.2 and 3.3), and includes 17 protected areas (see Annex 1 Section 3 Table 3.1), 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 NCCs includes: 1) the Annamese Lowlands EBA, one of five in Viet Nam, which covers the lowlands and foothills of north-central Viet Nam (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 IBA sites out of 59 in Viet Nam; and 3) a number of Key Biodiversity Areas (KBA).

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

The map Figure 3.3 below shows the importance of the protected areas for the conservation of remaining evergreen broadleaf forest and the adjacent forest areas where many forest dependent communities live.

Figure 3.3 Deforestation and degradation during the reference period

3.2.5 Population and the forest and dependency

At present, the census of Viet Nam officially recognises 54 different ethnic groups, although there are actually more groups than this that have not been given official recognition, the 54 comprise about 14% of the population. The NCC region is home to 13 groups, including the Kinh [26] and the ethnic minority groups make up some 11.5% of the total population of the NCC (over 10.29 million in 2013).The largest ethnic minority populations are found in the two northern provinces of Thanh Hoa and Nghe An. According to the last population census,[27] these two provinces are home to 88% of the ER-P ethnic population.[28] The predominant groups in all six provinces, ordered by population, are Thai (45%), Muong (29%), Bru-Van Kieu (6%), Tho (6%), Hmong (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.

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

[27] A new census of ethnic minority populations was carried out in 2015, but the official results are not yet available.

[28] 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.

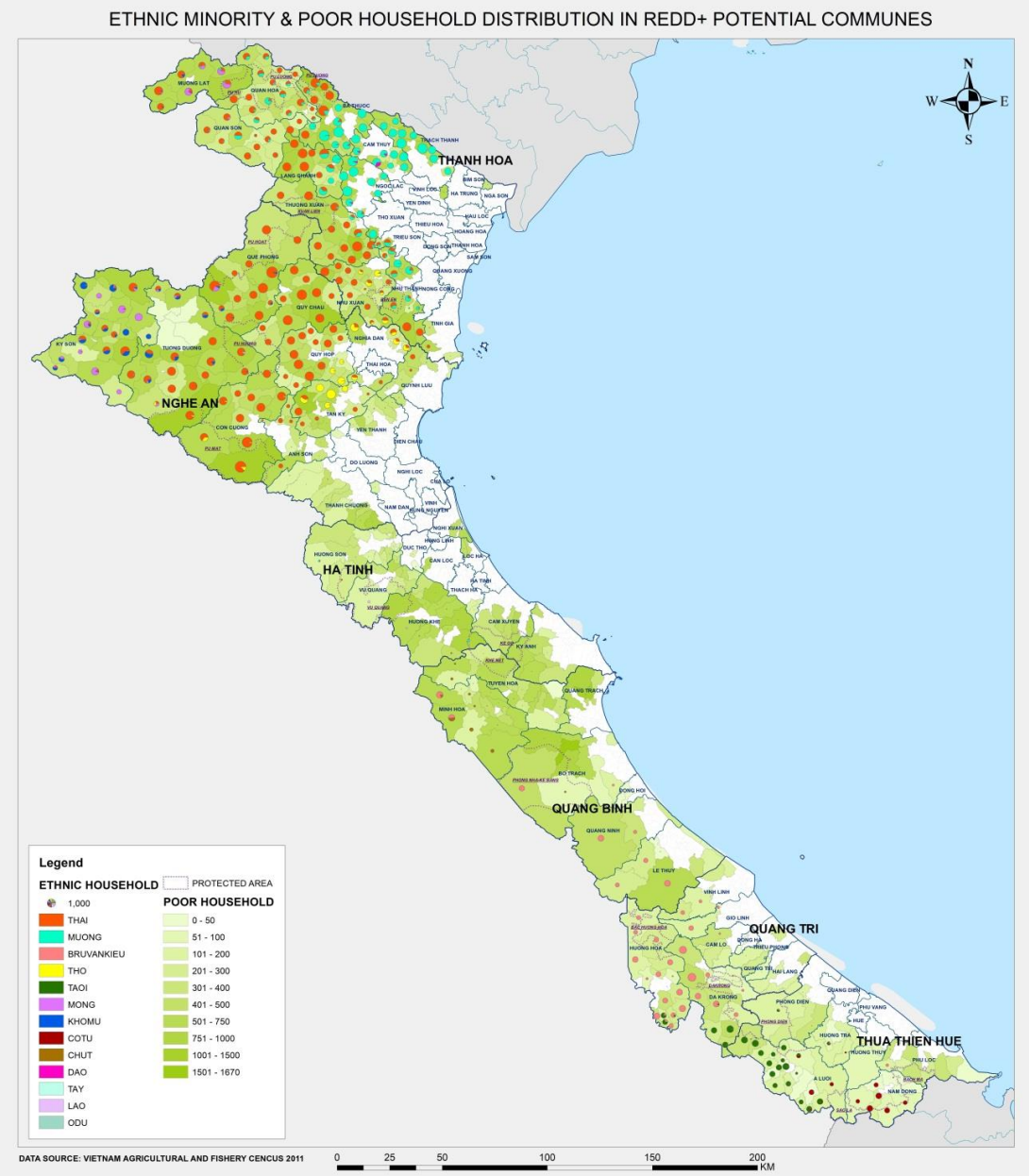
Table 3.5 Ethnic minority population data by group and ER-P Provinces

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*	33,385**	**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^	**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

Table notes: Source is GSO Census Data 2009 for all provinces except TT Hue where the data are from the provincial CEMA, 2015 *The Ta-Oi in Quang Tri are almost all Pa Co according to CEMA.**Ta-Oi in TT Hue includes Pa Co (21,138); ^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.

In ethno-linguistic terms, the Muong and Tho belong to the Viet-Muong group (along with the Kinh), Bru-Van Kieu and Ta Oi belong to the Mon-Khmer groups, the Thai are in the Tai-Kadai, the Hmong in the Hmong – Iu Mien, while the Kho Mu (also spelled Khmu) belong to the Austro-Asiatic (or Khmuic) ethno-linguistic group. Presented above is Table 3.5 that is based on the population census published by the General Statistics Office (GSO) in 2009.

Figure 3.4 Map showing the distribution of the ethnic minorities and poor households in REDD+ potential ER-P communes



As can be seen from Figure 3.4 there is quite a marked difference in distribution of the different ethnic minorities over the ER-P area with the Thai, Muong and H'mong found mainly in the north in Thanh Hoa and Nghe An, few minorities, mainly Chut and Lao, are found in the central area of the ER-P area e.g. Ha Tinh Province, and the Van Kieu, Ta Oi, O'Du etc. are found in the southern part of the NCC, Quang Binh, Quang Tri and Thua Thien Hue. High levels of poverty correlate with generally high ethnic minority populations in the north (compare with the slightly less level of poverty found in the south of the ER-P area) and when this is compared with the forest cover map (Section 4 Figure 4.1 and Annex 3 Figure 2.18,) the relationship between poverty and ethnic minorities, remoteness and reliance on forest areas is clear, and for example Ha Tinh which has few minorities has less poverty.

In the ER-P the ethnic minority groups are found in the largely mountainous districts and communes that also have higher percentages of land classified as forest. 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. Table 3.6 below shows the high correlation between forest cover and presence of ethnic

minorities. 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 (Ha Tinh especially) populations in the four southern provinces of the ER-P, ethnic minorities still form a majority of the population in several target districts, and are represented to a greater degree in several more high forest districts 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
		No.	No.	No.	Population	
					%	
Thanh Hoa	Quan Hoa/30a	10,000	800	9,200	92	20%
	Quan So'n/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 So'n/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 So'n	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	

Table 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[29].

Poverty and insecure livelihoods also figure strongly in the high forest area districts. Of the four provinces that have Program 30a[30] districts (high priority districts for poverty alleviation), eight of 14 also belong to the districts with the highest forest cover.

[29] 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.

[30] Government Resolution 30a/2008/NQ-CP defined 62 poor target districts. See the complete list at CEMA's website: http://www.cema.gov.vn/wps/portal/ubdt/vanban/. Two districts were added under 1791/2013/QD-TTg bringing the current total to 64. Of relevance here is also Resolution 80/2011/NQ-CP on poverty alleviation from 2011 – 2020, which makes many references to 30a.

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

According to the National Forest Inventory (NFI) for 2000-2010, the forest area change in Viet Nam during the period 2000-2010 is shown in Table 4.1.

Thanh Hoa and Nghe An have the largest loss of natural broadleafed forest, but the smallest area of forest degradation while Quang Binh and Ha Tinh have the largest area of forest degradation. Quang Tri and Thua Thien Hue have less total deforestation and forest degradation of the six provinces, but within the provinces the areas of forest degradation are much larger than the deforestation areas.

Table 4.1 Deforestation and forest degradation during 2000-2010 in ER-P region by province (ha) from the NFI

Province	Loss of natural forest area (deforestation 2000-2010)	Forest degradation area* from 2000 to 2010	Total deforestation and degraded forest area
Than Hoa*	78,209	7,764	85,973
Nghe An*	115,673	17,185	132,858
Ha Tinh	13,536	36,685	49,221
Quang Binh	39,128	55,692	94,820
Quang Tri	7,612	21,144	28,756
Thua Tien Hue	10,410	29,369	39,779
Total	264,568	166,839	431,407

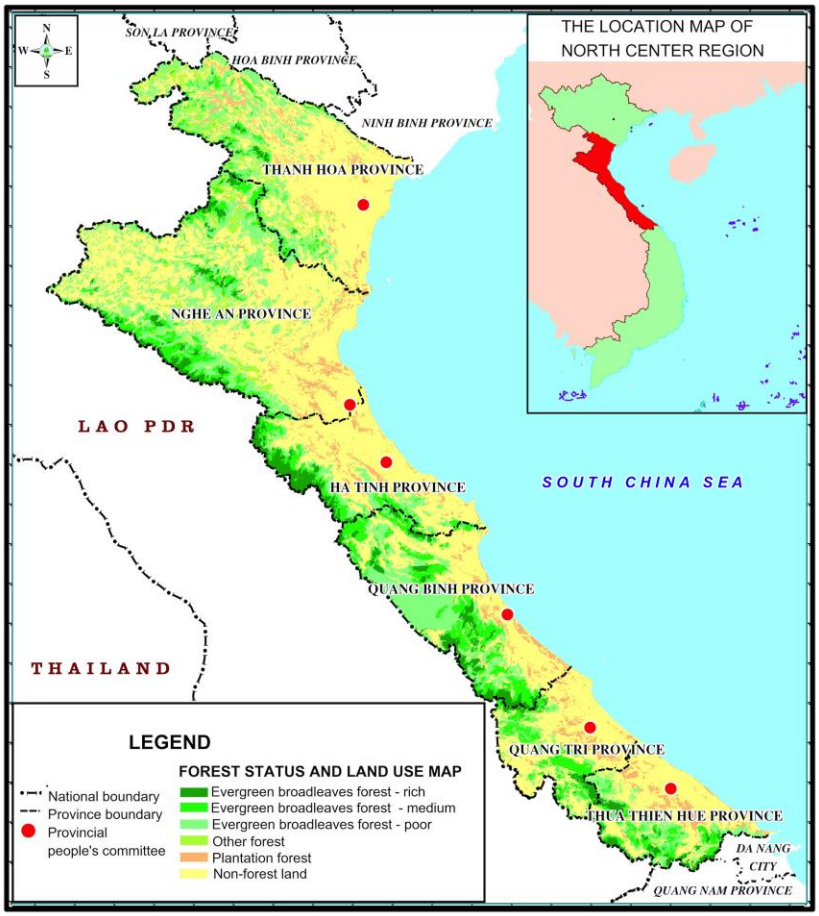
Note: Excluding bamboo forest and mix bamboo-wood forest area, (the above data has now been updated).

4.1.1 Forest cover maps for the ER-P

Table 4.2 Area of forest cover and land use in the NCC (ha)

No	Land uses	2000	2005	2010
1	**Forest land**	**2,319,065**	**2,496,603**	**2,771,531**
1.1	Evergreen broadleaf forest - rich	282,046	233,922	226,626
1.2	Evergreen broadleaf forest - medium	512,245	497,567	452,900
1.3	Evergreen broadleaf forest - poor	1,053,217	1,160,297	1,315,598
1.4	Other Forest	160,146	149,910	138,755
1.5	Plantations	311,411	454,907	637,651
2	**Non-forest land**	**2,825,443**	**2,647,905**	**2,372,977**
	Total	**5,144,508**	**5,144,508**	**5,144,508**

Figure 4.1 Forest cover map of NCC in 2000



4.1.2 Drivers of deforestation and degradation

The main drivers for deforestation and forest degradation in the ER-P include: [31]

- Unsustainable wood extraction (legal and illegal), agricultural land expansion, expansion of industrial tree plantations, infrastructure development, mining, and forest fires;

- Deforestation results from: (i) Planned and unplanned conversion of mainly poor forest land into agriculture land (mainly for rubber, Acacia plantations, annual and perennial crops including cassava, and shifting cultivation), (ii) Planned forest conversion to non-agriculture land (infrastructure, including hydropower schemes (HPPs), reservoirs (irrigation and water supply), roads, resettlement (mainly related to HPPs) mining (including open cast rock, clay and minerals), and forest fires[32]; and

- Forest degradation is mainly the result of unsustainable wood extraction (often illegal logging), the first step in developing shifting cultivation and encroachment and conversion of forest land for agricultural crops. Natural degradation results from the impacts of typhoons.

[31] Through PRAPs, supporting reports on drivers, systematic studies, literature review, including Government reports at national and provincial levels, international reports on Viet Nam forestry sector and consultations conducted in the last two years at all levels in the six provinces.

[32] Economic and industrial zones, and urban expansion also feature in some provinces but are not recorded as drivers in the PRAPs and reports on drivers.

4.1.3 *Ranking of deforestation and degradation drivers and changes in land use in the ER-P region*

The two main priority drivers continue to be:

1. Expansion of agricultural land (by area the agriculture has the largest influence and the agricultural statistics (see Annex 3 Figures 2.1 to 2.17) show an increase in further forest conversion) the most important crop drivers are rubber[33], cassava and forest plantations; and
2. Infrastructure principally HPPs and roads. 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. The clear priorities for countering deforestation and forest degradation are thus controlling the conversion of forest to agriculture and the expansion of roads and HPPs.

The following Table 4.3 ranks the main drivers in the ER-P and is based on work done for the PRAPs and provincial reports on the drivers operating in the provinces and Table 4.4 provides a summary of the different drivers.

Table 4.3 Ranking of the main drivers in the ER-P by province and region, based on the PRAPs and provincial driver reports (updated table)

Main drivers	PRAP deforestation driver report ranking						Rank for the ER-P region	PRAP forest degradation driver report ranking						Rank for the ER-P region	Approximate extent or area (ha)					
	TH	NA	HT	QB	QT	TTH		TH	NA	HT	QB	QT	TTH		TH	NA	HT	QB	QT	TTH
Conversion of forest																				
(i) Conversion due to plantation development (rubber and short term acacia)	1	1	1	2		2	2	1	1	1	1		2	1		378	24,493			
(ii) Conversion to due expansion of agriculture	2	2	2	1		3	1	2	2		2		1	1	-	9,023				
Infrastructure development																				
(i) Hydropower (mainly), water supply and irrigation	3	3	4	3		1	2	1	1		3		3		2,702	6,324	861			761
(ii) Roads		4		3			2				3					507	185			162
Illegal logging	6	7	3	3		4		6	2		4		1	2	941	?				2,583
Forest fire	7	8		5		5		7	2		5				262	~ 1,000	662			
Mining/ rock /clay	5	6				6		5								850				
Resettlement	4	5						4												
Firewood																				
Annual rates of DD																				

[33] By far the largest historical driver, see Annex 3.

Table 4.4 Summary of drivers of deforestation and forest degradation at work in the ER-P region

Direct drivers for deforestation								Direct drivers for forest degradation	
Agriculture		**Infrastructure**				**Mining**	**Natural causes**	**Unsustainable legal logging**	**Illegal logging**
Planned conversion of forest for agricultural and tree crops	Rubber plantation	Expanding road network	Irrigation/ multipurpose schemes	Hydropower schemes	Urbanization	Rock quarries	Typhoons	Commercial logging by SFCs	Domestic use
	Cassava starch farming	National roads	Reservoirs	Reservoir	Expansion of urban area	Gold	Forest fire		Commercial purposes
	Other cash crops including tree fruit crops	Provincial road	Increases in irrigable area	HPP infrastructure	Water supply schemes	Titanium	Plantation forest diseases		
	Aquaculture farming	Rural access and feeder roads			Landfill	Others			
	Acacia plantation								
Unplanned conversion	Shifting cultivation and encroachment on protection and production special use forests								

Underlying causes

Demographic factors	Economic factors	Institutional factors	Cultural factors
Population increase	Unemployment	Lack of coordination in sectorial and land use planning of land use and sectorial)	Producer shorter-term needs
	Improved market access (national & global)	Promotion of rubber plantation	
		Acacia plantations	
		Dairy/ cattle ranching	
Migration		Weak law and policy enforcement	Preference for wooden houses
		Defence of national borders	

4.1.4 *Drivers of deforestation: planned and unplanned forest conversion for the expansion of agriculture, as direct and indirect driver of deforestation (rank no. 1)*

As noted most forest conversion in the NCC region is related to the expansion of agricultural land, including for rubber, cassava, annual and perennial crops and has occurred at rates of 4,500-10,000 ha/year over 2000-2010, depending on the province. For example, in Ha Tinh, spatial analysis shows that conversion of forestland into agriculture was high in the period 1995-2005 (3,364ha) and then decreased 2005-2014 (1,042ha)[34].

It is notable that the different agricultural crop drivers operate in quite localised areas (see Annex 3 Figures 2.5 to 2.9, 2.12 to 2.17) and the impact of an individual agricultural crop driver on a forest area can change relatively rapidly with changes in provincial commodity and land use policy and market demand and this can lead to changes in the types of crops and the areas, for example, the areas of crops such as maize and cassava tend to increase or decrease with market demand (see section Annex 3 Figures 2.9, 2.10, and 2.13). Planned conversion of forest for expansion of agriculture – direct drivers include:

a) Plantation crops

The expansion of the area under rubber has continued (See Annex 3 Figures 2.9, 2.15, 2.16 and 2.17) and remains a localised driver of deforestation in this region and in the future to 2020, even though the price and the area of rubber producing latex has fallen, and unless provincial sectoral planning follows provincial land use planning more strictly as required by the law[35]. The impact of rubber as a driver may reduce if the latex prices do not increase. High latex prices (VND 60 million/tonne in 2011, equivalent to US$2,850/tonne) prevailed for some time encouraging expansion and falling yields from cassava has also driven the expansion of rubber in the NCC region. In Ha Tinh, for example, conversion of forestland into rubber plantations during 2005-2014 was nearly 4,465ha[36] and provinces continue to plan for further rubber expansion, despite increasing losses from typhoon damage and the current low prices[37]. As rubber takes about six years to produce latex, many farmers and rubber companies are continuing to plant rubber with the expectation of future higher prices, (even though the price of fresh latex was down from VND 40,000/kg to 9,000/kg on 16 Oct. 2015[38]).

The growth rate in planted area has increased at an overall 7% for the whole NCC region, however the growth rate in particular provinces (Ha Tinh 11%, Nghe An 10% and TTHue 11%) has been much higher. The forecast trend for rubber based on historic performance shows a continuation in the in the area as shown in Table 3.6 below.

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[34] UN-REDD report at Ha Tinh workshop, Oct. 2015.

[35] For example, the land use plan of Ha Tinh province towards 2020[35] approved by the Government identified 5,178 ha of forestland being converted into other land use purposes, of which 4,198 ha was for non-agriculture land, while the rubber development planning for 2010-2020 for Ha Tinh[35] as approved by the Ha Tinh Provincial People's Committee has stated that total forestland of 32,383 ha of which 17,854 ha is planted forest and 2,643 ha of natural forest are to be converted into rubber plantations, approximately four times higher than the total converted forestland in the provincial land use plan.

[36] UN-REDD report at Ha Tinh workshop, Oct. 2015.

[37] China's economy concerns about it has driven prices to seven year lows mid 2011 European Rubber prices was peaking about €425 per tonne and by mid 2015 it had dropped to €110 per tonne, world production peaked in 2011-2012 at about 90,000 tonnes (12 month sum) and since then has dropped to about 60,000 tones in 2014 and 58,000 tonnes (12 month sum) in 2015 Reuters and FT March/April 2016. Vietnam is due to join the International Tripartite Rubber Organization (ITRO), which controls 70% of the world supply of natural rubber agreed to cut exports by 615,000 t from March to August. With Vietnam joining the cartel the price of natural rubber is expected to rise in international market, Rubber News April 5 2016

[38] http://thitruongcaosu.net/2015/10/16/gia-cao-su-trong-nuoc-ngay-16102015/

Table 4.5 Three year current and forecast increase in area planted to rubber NCC region

Year	Actual area of rubber (ha)	Forecast growth in the area of rubber (ha)
2012	72,870	
2013	77,911	
2014	79,335	
2015		82,454
2016		86,536
2017		90,619

The Table 4.5 is based on analysis of the historical trend of rubber area from 2001-2014, there have been fluctuations in the price of rubber latex over that period and these are expected to continue; there has been a relatively rapid expansion of the area for rubber in some provinces notably Nghe An, Ha Tinh, and Thua Thien Hue, currently prices for rubber latex are at a low which may in the short term stall further investment in the crop. However, the overall trend and growth forecast remains high relatively high

Plantations have played a crucial role in Viet Nam´s forest transition[39], and while it is acknowledged that they reduce the pressure on natural forests, remnants of natural forest and remaining logged over poor natural forest has been replaced by plantation forest, the areas of natural forest lost through this are difficult to estimate.

Plantation agriculture, mainly Acacia (different species)[40], has covered much of midland landscape of the NCC region for many years The relatively rapid expansion of the *Acacia* hybrid plantation estate from the late 1990s, when superior clones were first approved by the Government and continues to penetrate into the upland areas of the NCC region. However, in some areas it has not replaced native species, for example, in upland areas of Nghe An and Thanh Hoa[41] where *Melia sp.* continues due to strong local prices and in Thanh Hoa a bamboo system still largely dominates in upland areas (but increasing areas of Acacia are now apparent); and in Quang Tri, changes in local market forces has seen a rapid localized change from Acacia to cassava.

[39] Plantation forest cover more than 3.5 million ha and by 2020, it is expected that plantations will cover more than 4.1 million ha (MARD 2015).

[40] Viet Nam has established over 1.1 million ha of acacia plantations for wood production, managed on 5-10 year rotation cycles. 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 Viet Nam in the 1960s and to northern Viet Nam in the early 1980s. Trials demonstrated good growth rates on a range of sites including on shallow, stony soils. Acacias were found to be easy to grow and manage, even with the limited financial and technical resources available to small growers. By 2013, 51% of total plantation area was planted with acacia: *Acacia mangium* (600 000 ha), clonal *A. mangium* □ *A. auriculiformis* hybrid (400 000 ha), *A. auriculiformis* (90 000 ha) and *A. crassicarpa* (5 000 ha). Nearly 50% of the resource is managed by small growers holding 1-5 ha woodlots. Acacia plantations have emerged as an important resource for supporting the rural economy and national export revenue. Given the range of climate, terrain, soils, management inputs and skills, plantation productivity varies from 10 to 25 m^3 ha^{-1}. Mono-culture Acacia plantations are a poor replacement for natural forest in terms of biodiversity, however, VNFOREST is committed to improve the economic and environmental performance of Acacia plantations.

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

b) Annual and perennial crops

Maize and cassava, both act as short term drivers[42] of deforestation, but the impact of the local market demand can be a significant factor[43] with cassava even replacing Acacia plantations in some areas, for example, in Quang Tri due to the higher prices and demand in 2014/15 from a new cassava processing factory. It is widely grown in communes, and in smaller amounts in shifting cultivation areas, this places a commodity price based risk for natural forests if the demand and price of cassava is high (the main demand is for starch and more recently biofuel, but demand for this fuel this has already fallen). The second highest rate of forest conversion for agriculture in the region is for cassava. (See cassava Annex 3 Figure 2.12).

4.1.5 Unplanned forest conversion to agriculture (shifting cultivation and encroachment for longer term cropping) – direct driver

Shifting cultivation still occurs in the NCC region, but is limited to the upland and mountainous western parts, and little or no swidden is officially recorded in the midland landscape of the central provinces of Ha Tinh and Quang Binh provinces, Shifting cultivation is a cultural practice of ethnic minority communities, and is most often found in the absence of viable alternatives[44], and in areas lacking good agricultural land.

Provincial land use planning can deviate from national land use plans on conversion of forest. A review of provincial planning Decisions issued by the Provincial People's Committees reveals that many do not follow the provincial land use plans (LUPs) as approved by the national Government[45] [46]. Table 4.6 below shows the expected area of forest to be converted into other land use purposes and the expected area of barren land being converted into forest area by 2020 in the six ER-P provinces. By 2020 Nghe An has plans to convert the largest area of barren land into forestland (67.3% of the total converted land in the ER-P area). Quang Binh and Quang Tri plan to convert barren land into forest areas, however, the overall forest area being converted into other land use purposes is still larger in all provinces (i.e. a net gain of forest as shown on the last row of Table 4.6).

Table 4.6 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

[42] This may not be the case in other areas of Vietnam where the crops can be locally more important e.g. cassava as early year harvested crop in Central Highlands and maize in the northern mountain areas.

[43] Analysis of cassava areas show a slow steady increase two provinces, but other province a loss so the area of cassava is more or less constant, except in the two province Thanh Hoa and Quang Tri and in Quang Tri a good local market opened up with the building of cassava processing factory – but the market price of cassava has fallen and production capacity has been reached.

[44] Reports from provinces and FPD from 2007 to 2014 show small area of forest lost due to shifting cultivation and through interviews of local people it revealed that the Government regularly supports poor households, particularly HHs of ethnic minority with rice.

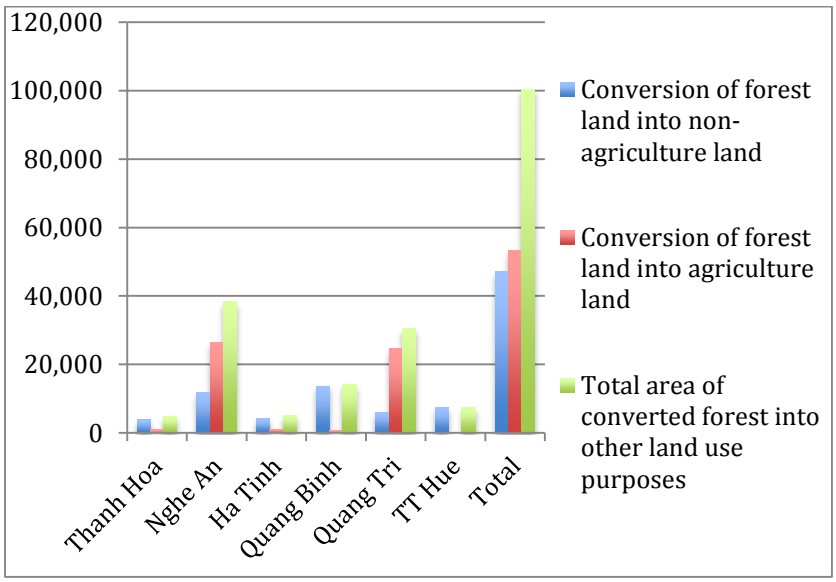
[45] An example of unplanned forest conversion for rubber development from Ha Tinh for 2010-2020 shows provincial planned rubber development is about four times higher than the total allowable converted forestland in the nationally approved provincial land use plan. In Nghe An, within two years from 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)

[46] 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.

Province	Thanh Hoa	Nghe An	Ha Tinh	Quang Binh	Quang Tri	TT Hue	Total
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.

Figure 4.2 Area expected to be converted from forest into other land use purposes before 2020 by the ER-P provinces



4.1.6 Planned forest conversion to forest plantation – indirect driver

According to spatial analysis of the ER-P region the conversion of all types of forest to forest plantation during 2000-2010 was about 36,137 ha. This was achieved through a mixture of private investment and government projects. In some of the ER-Program provinces it was reported that there have 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 rationalised (e.g. in Thua Thien Hue Phuong Dien District), where part of the SFE land was been made over to the communes for smallholder plantations. The famers were then expected to clear remnant poor forest and follow the forest production model introduced by the company - in this case grow Acacia or Eucalyptus plantations.

The area of mangrove in the NCC region is relatively small (about 1,500 – 2,000ha from the 2010 NFI), but provides important non-carbon benefits, including biodiversity and coastal protection in the face of

increasing frequency and intensity of typhoons as a result of climate change. Mangroves are threatened by shrimp farms, which have increased extensively since the 1990's. Many of these farms tend to be short-lived due to poor farm hygiene or poor construction leading to polluted water and this can lead to the destruction of large areas of mangroves as the farmers move and create new ponds, aquaculture expansion continues into the remaining existing mangrove areas.

4.1.7 Planned forest conversion for infrastructure purposes (direct and indirect drivers) rank no. 2

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.[47]

a) Hydropower projects, multipurpose irrigation and water supply reservoirs

Infrastructure, and in particular HPPs (including multipurpose schemes) are still reported in five out of the six ER-P provinces, as having serious negative impacts on forest cover, (as they were for the ER-PIN in 2014). While the initial direct impact of deforestation resulting from infrastructure development (all types) does appear to be a relative small driver in terms of area of forest lost; however, it is locally important and the impacts can be quite severe and there are numerous cases of deforestation/ illegal logging occurring close to an area of planned legal logging, for example, the initial site or reservoir clearance. More important where a large infrastructure project is sited, is the underlying trend of general forest degradation then conversion and this continues long term as economic development activities and opportunities expand and follow after the initial infrastructure development has been completed and, for example, when most planning and social and environmental safeguards finish (even though the effectiveness of these is questionable in most cases).

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[48] to be in the range of 13,600-21,700 ha.

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 part of the National Plan for Power Development[49], and this resulted in cancelation of 424 projects nationwide[50]. Currently, only the Prime Minister can approve new hydropower projects [51]; however many proposed project still have PPC approval. As an example, in 2013[52] 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

[47] For example, the compensation for forest lost in Nghe An was is VND15 millions/ha and DARD Nghe An used this money for the general improvement for the forestry sector in the province.

[48] 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

[49] 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.

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

[51] 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).

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

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[53].

In the NCC region, arguably the largest infrastructure impact related to HPP is in Thanh Hoa Province where a cascade of four medium sized HPPs schemes is under construction on the Ma river, (see Annex 3 Section 1.2 Figures 1.1 and 1.2 for the possible impacts of the schemes in the ER-P area in Thanh Hoa). While the overall deforestation is currently 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[54] which both have international levels of biodiversity are particularly severe. The cumulative impacts of the cascade on the basin are only now in the process of being assessed, sometime after construction has begun.

Nghe An and Thanh Hoa also report a deforestation (and degradation) issues related to the resettlement of project affected people due to HPPs; it was reported[55] that people were relocated to unsuitable areas and with not enough land (particularly forest land and or flat land) which can be expected to result in future degradation and deforestation.

Improvements to the design and construction implementation process include the need for more realistic and longer term planning for social-economic issues and land use planning (and particularly on how to deal with the expected (and realised) influx of economic followers); improvements to the resourcing, independence and transparency related to the management of social and environmental management mitigation plans; consistent donor policy on best practices and making best use of the existing local planning and management processes. The environmental impact assessment of HPPs and particularly cascades are challenging, however, the lack of a consistent approach and the missed opportunities to integrated the Operational Management Plans (OMPs) for the SUFs under severe threat with the various environmental management plans (EMPs) and the lack of timely cumulative impact assessments leaves room for improvement.

In immediate practical terms for the ER-P, where the program works with SUFs and PFMBs the management planning process of forest management plans and OMPs will include assessments of the likelihood and direct potential impacts of any HPPs (and other infrastructure) in the vicinity of the management boards including assessments of potential forest lost and the inclusion of reforestation plans and the management plans should include actions required by the management boards.

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[53] A further case, while outside the ER-P is of concern as an example, is the small hydro project (26MW) planned in Yok Don NP which takes 24 ha from the core zone (the total land take is 308ha) which was approved by the PPC in 2007, but construction is now finally due to start later this year (2016). Viet Nam News April 21 2016

[54] The impacts on these two nature reserves was estimated by WB commissioned studies to be severe, however, the WB noted "…an important negative issue for the project arose at the end of the project period and related to inconsistent World Bank policy and the role of the OMP [Operational Management Plan], and relates to a lack of support for OMPs in two important Nature Reserves (Pu Hu and Na Hau NRs) which are set to have "substantial impact" from the World Bank funded Trung Son HEP project. The detailed EMP for the Trung Son Hydro-electricity Power Project has a separate 'biodiversity and protected area management plan' which at best duplicates activities and role of the OMP, and at worse undermines and deflects the SUF MB from the OMP and generally the SUF MBs have reported difficulties in understanding the EMP. The EMP should have included updates and support for the OMP. This is a considerable change in World Bank policy, and is a very negative setback in the use of OMPs and in particular for SUF MBs facing infrastructure investments close to or inside the SUF"; quote from the World Bank FSDP GEF ICR March 2013.

[55] 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 down stream.

i) Transport infrastructure

Major roads built in the program area in the reference period include the HCMC Highway 14 and ribbon development has taken place along this road (and similarly for most other new roads), and the route went through areas of natural forest including some protected areas[56].

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 and close to the border with Lao.

ii) Rapid urbanisation

Rapid population growth and expanding urbanisation has been a feature in many areas of Viet Nam including the NCC and for this region has included the designation and development of some major special economic zones[57], however, these are normally located on the coast and based around the development of deep water ports and so are not identified in the PRAPs and driver reports as drivers of deforestation (i.e. little forest area and minor to no mangrove areas).

4.1.8 Drivers of forest degradation

a) Agricultural conversion and illegal logging

The main drivers of degradation are a combination of legal and illegal logging (households and individuals are only allowed to cut timber for domestic use and not for sale[58]) often closely linked with conversion of forest for agriculture or shifting cultivation with low-key, small scale, but continual minor encroachment into forest areas with a longer term view to convert the forest to some form of agriculture. This issue has been recorded as serious problem for most SUFs[59] (including those in the NCC region), and areas of protection forest for many years and can be seen in the Figure 3.3 Deforestation and degradation during the reference period and Forest loss map Annex 3 Figure 2.18.

This type forest degradation 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, and can be difficult to resolve as a household (and even communities) will often claim a lack of boundary markers, or an agreed boundary, increasing land pressures due to economic migrants, resettlement, food security problems, combined with a lack FPD or forest ranger patrols, or re-planting poor regrowth/ protection forest with a plantation (so no net forest loss) etc.

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 have constantly had to adjust and then re-adjust the boundaries, e.g. Dak Rong NR in Quang Tri, or in the case of more general protection forest,

[56] 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.

[57] There are six known economic zones the largest and most important are ports located on the coast and include Nghi Son, Thanh Hoa 160,000 ha, South-East Nghe An-Nghe An 18,826 ha, Vung Ang-Ha Tinh, 22,781ha, Hon La Quang Binh 10,000ha, Chan May-Lang Co- TT Hue27,108ha; Quang Tri My Thuy deep water port the Government added Quang Tri's southeast ocean economic zone to the Master Plan on Vietnam's coastal economic zones in 2020. The ocean economic zone expects to cover a total area of 237.71 sq km

[58] Small scale illegal logging is often undertaken where households will carry out logging for traditional house construction and improvement, however, sometimes permission is granted for this activity.

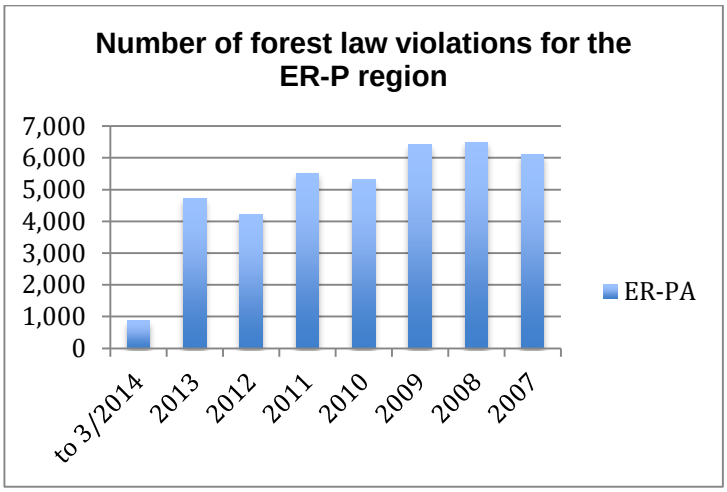
[59] VCF Conservation Needs Assessment reports, which include threat analysis and METT reports and social assessment reports from 2007 to 2013 and most identify encroachment as a serious priority issue.

for example, held by the commune, as long as the forest cover is generally maintained the issue quality or type of forest is often overlooked.

The solutions to these problems tend to be long term and include forest land allocation along the boundaries of management board areas, developing collaborative forest management approaches to improve local understanding of sustainable forest use and local use rights to provide more local "ownership" of the forest and carefully orientated livelihood improvement activities.

Illegal organized selective logging operations are known to occur in SUFs and PFMBs in the NCC region, and they are consistently difficult to identify and halt and will often rely on local Kinh and ethnic minority households to undertake the work in the forest. The data on the number of Forest Protection and Development Law violations has decreased markedly during the period 2007 to Q1/2014 as shown in the Figure 4.3 below.

Figure 4.3 Yearly total number of forest law violations[60] (2007 to Q of 2014) for the ER-P region



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

An important factor in illegal logging is the willingness or otherwise of local communities to engage in the protection of natural forest (protection and production forest) and in forest planting without improvements in the arrangements for forest land tenure. A number of different models and combinations have been tried including various types of forest protection contracts, village forest protection and development funds, including village protection patrols with collaborative management approaches, an important factor has been to try to improve the level of local involvement and ownership.

b) Unsustainable legal logging

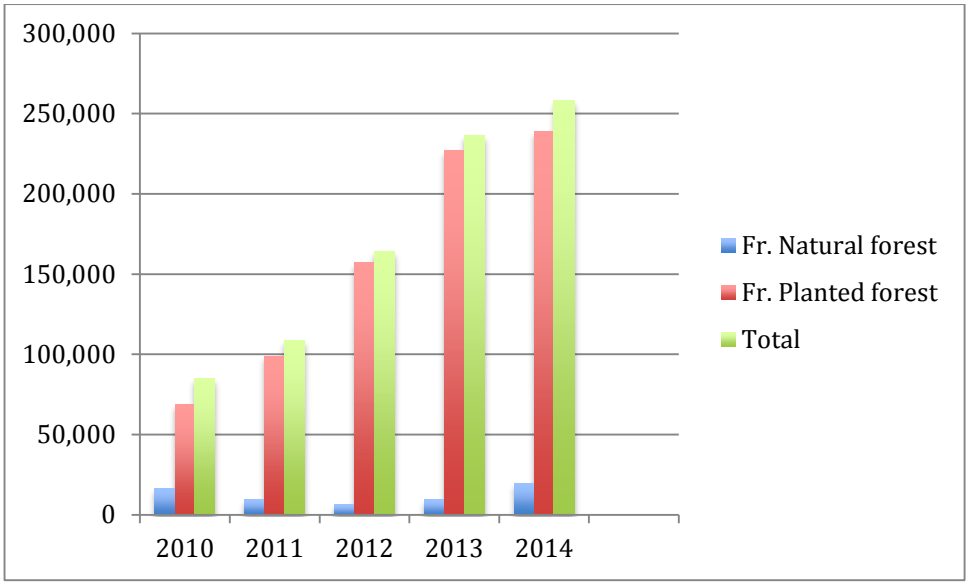
The unsustainable timber harvest in the region is conducted by commercial legal SFCs or as a response to infrastructure projects (Annex 3 Figures 2.1 and 2.2) for details showing the volume of legal logging in the ER-P region over time (and for an example see the following figure for Ha Tinh).

To help restore natural forest quality 2014 saw the introduction of a ban on logging in natural production forests with the aim to curtail all extraction from natural production forests that are not certified to an international SFM standard. In the ER-P area only Long Dai SFC in Quang Binh[61] is eligible to log natural forest (Trung Son a "sub-SFC" to Long Dai).

[60] These include: forest encroachment including shifting cultivation, forest product harvesting violation of forest fire regulations, numbers of forest fires, violations of forest land use, violation of wildlife protection regulations, forest product trade and transportation, forest product processing and other violations

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

Figure 4.4 Legal logging in Ha Tinh during period 2010-2014



Source: Ha Tinh Statistical Year book 2014

4.1.9 Natural degradation drivers

The NCC region is a typhoon prone region, but no increase in typhoon activity is expected for the NCC region (See section 3.2). Viet Nam has invested heavily in disaster awareness and prevention and Figure 6.1 Annex 1 shows a map ranking communities by vulnerability to disasters. Without implementing climate change adaptation measures, the expected sea level rise could be 100cm, and more than 2.5% of the area of central coastal provinces will be at risk of being inundated, directly affecting about 9% of population[62].

4.1.10 Underlying causes leading to a reduction on forest cover

There is insufficient state investment (financially and technically) in the forestry sector for forest protection, biodiversity conservation and forest landscape restoration activities. Building local capacity is included in the ER-P and a key factor in the ER-P and CF approach is to include M&E and MRV approaches and performance based financing which creates incentives and allows better feed-back leading to adaptive management and overall improved implementation.

Gaps in provincial investment strategy and forest management for forest resources	Possible solutions included in the ER-P
Provincial investment and socio-economic policy is set in the provincial SEDPs (these are supported by sectoral, product and land use plans); in many provinces the priorities are for the development of manufacturing, service industries infrastructure or focus on a limited number of agricultural products e.g. SEDPs of Thanh Hoa and Nghe An and do not take account of the value of maintaining forest	Improved information for better policy and setting of priorities, taking more account of forestry, environmental issues and economic values. Included in the activities/ functions of the PRSCs; Follow up capacity building for PRSCs, implementation of PRAPs and improved Forest

[62] Intended nationally determined contribution of Viet Nam, 2015.

cover. Land use and sector development planning are not always as consistent as required, and the change or adjustment of planning in a short period affects not only the sector, but also other sectors	Protection and Development Plans (FPDPs), Improved monitoring (from the PFMS and MRV) on forest cover into improved provincial LUPs.[63]. The ER-P introduces PRAPs (and improved FPDPs) which will feed into the provincial land use plan (LUPs) and improved coordination on LUP should occur through the multi-sector PRSC

Lack recognition of importance of forest ecosystem services and engagement in conservation of biodiversity	Possible solutions included in the ER-P
The remaining natural forests in the ER-P region are under pressure and many are in a poor state, however, there is considerable potential to improve the overall forest quality (biodiversity, ecosystem functions and services). A related underlying cause is improve awareness and engagement in biodiversity conservation, and how to work with communities and SUF MB and PFMBs which have high conservation value forest.	The PRSC has a role to encourage better understanding of the value of natural forest and ecosystem services and capacity building is included for the PRSC, Investment in improving forest quality and protection is to be part of the ER-P; The ER-P requires a good and consistent M&E system and complementary approach to consistent budgetary funding, rather than current often expedient and piecemeal approach, the performance based ER-P, relies on improved forest monitoring including M&E, PFMS and MRV for payments from the CF so there is strong incentive improve forest monitoring; Capacity building for drawing up improved management plans for PFMB SUF MBs/ SFC site forest management (achieved through improved management plans for PFMBs and SUFs and OMPs for SUFs) which wiil alos review PFES opportunities and functioning; District and commune forest management will helped by the PRAP, FPDP, PFMS and ACMA included in the ER-P. Experience in the ER-P region has shown that biodiversity conservation has only been successful when linked to improved prioritized planning and targeted budgeting, this linkage is included in the ER-P approach to working with SUF and PFMBs particularly through improved management planning, introduction of incentives and promoting a better understanding and

[63] The general approach to planning is undergoing a review will be improved with better integration, under the forthcoming national Planning Law The new Planning Law takes effect from January 1st 2017 and will include more provisions on environmental services including forestry and biodiversity conservation (Article 12).

	relationships with village communities inside and around the SUFs and the PFMBs. This is supported through support for improved operational and management plans further and wider introduction of the ACMA and BSMs; The ER-P includes stepwise approaches to take stock of the situation and improve and update their planning and management[64].

Low commercial value of forestry products	Possible solutions included in the ER-P
Most of the plantation timber is currently used for the low-value wood chips[65]. To make the shift towards carbon-rich sustainably managed forests there is a need for specific investments that are in line with the objectives of REDD+ and VNFOREST forest sector policy. However, so far REDD+ finance has not been available for this kind of intervention.	Make finance and technical support available for transformation of the short term rotations to take advantage of potentially more profitable long term and mixed native species rotations.

Investment in forestry and plantations is often long term, but with introduction of *Acacia* clone and improved *Acacia Mangium* this has had a marked impact on both smallholder plantations and large company plantations, and both have been used to successfully generate reasonable incomes for smallholders and companies. Depending on provinces, wood chip factories located nearby buy *Acacia* peeled round wood by weight and smallholders prefer to cut early in the rotation (often at five years) to obtain money quickly and avoid perceived risk of typhoon,

4.2 Assessment of the major barriers to REDD+

There are four important barriers facing REDD+ that are currently hindering the deforestation and forest degradation drivers from being addressed in the NCC region; the ER-P includes proposes solutions and interventions to help overcome the barriers the issues solutions are summarized as follows:

Barrier 1 Persistent rural poverty in upland and forest covered areas	How to remove the barrier included in the ER-P
Alleviating rural poverty and securing livelihoods is a priority for provinces in their SEDPs and includes measures such as continued emphasis on land allocation, however, at the provincial level very little finance has been forthcoming for wide scale FLA or to develop capacities or to implement REDD+ programs which could contribute to these objectives and activities.	Improvements to livelihoods, agricultural technology, and climate adaptive work and further work on value chains contribute to alleviating poverty –undertaken by partner programs and projects including Vietnam Forest and Delta Program (VFD), and IFAD); The PRAPs contribute to better policy and setting of priorities and this should help the funding of priorities in the forest sector; 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 FLA

[64] Handled through Component 1 and for further details see Annex 1 section 4.3.

[65] This does not mean that the plantation timber grown is poor quality – just that the market demand for wood chips is high.

Limited alternative income opportunities in the NCC mean that although rural per capita incomes have increased in recent years, the NCC region remains one of the lowest incomes per capita areas of Viet Nam – VND 900,000/month (US$ 43/month).[66] 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) this can result in low productivity of plantations. Poor households can face shortage of capital and difficulties to access credit resulting in low levels of investment in any type of plantation forestry.[67]

The ER-P PRAPs have tried to focus on the areas where forest cover is important and forestry has traditionally been an important feature in people's community livelihoods and for households (hhs) wishing to participate in forestry work, concessionary financing is expected to be made available from the Vietnam Bank for Social Policies (VBSP).

Barrier 2 Access to secure land tenure	How to remove the barrier included in the ER-P
If an individual household seeks a LURC on forest land for forest purposes this can be a time consuming and costly; without relatively easy access to a secure form of land tenure, investment in a long term forest tree crop will be risky	FLA is included and supported in the ER-P; Allocation of land (LURC) for households for smallholder plantation is also supported in the ER-P; Improved household and community forest access rights are supported in the ER-P together with collaborative management approaches with the MBs and SFCs

The Land Law 2013 stipulates that natural forest classified as 'production forest' can only be allocated to protection management organizations (as a legal entity), while the Forest Protection and Development Law 2004 allows for natural forest classified as production forest to be allocated to HHs, individuals and communities (the later are not recognized as a legal entity under the Land Law). Furthermore, natural forest in production forest has not been considered as assets of forest owners. The Land Law 2013 intends that only organizations with management expertise and funds to invest in to protect natural forest for a long time period as suitable to be allocated natural forest for protection and development.

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) and under the ER-P it is a central element to all six PRAPs particularly the continuation of FLA. This is supplemented with collaborative management approaches between the various MBs, SFCs and the village communities for forest protection, and benefit sharing. The ER-P includes support for following of the required processes for forest land allocation and additionally also targets smallholder forest households through project linked concessionary financing made available from the VBSP. A critical element in any household plantation forestry is the LURC for the household.

Technical data strongly suggests that longer rotations with mixed species has the potential to provide better rates of return than a simple short rotation woodchip plantation. The ER-P includes technical support on the transformation of short rotation to longer rotations and mixed plantations and concessionary financing is expected to be made available from the VBSP to facilitate this.

[66] The lowest per capita incomes being in the Northwest region (VND 740,000/month or USD 35/month), and highest in the Southeast region (VND 2,610,000 or USD 103/month) - according to the nationwide Viet Nam Household Living Standard Survey (VHLSS) 2012 of the General Department of Statistics (GSO).

[67] Sustainable forest management may not generate sufficient annual income and alternative agricultural goods have high opportunity costs. Income from rubber and other cash crops, particularly, cassava, fruit trees etc. can be higher, and can provide stable income. Poor rural household income is largely (43%) dependent upon agriculture and forestry activities may only make a relatively minor (5%) contribution to household economies (although subsistence use of forest resources can be an important element in livelihood strategies, particularly for the remote forest dependent ethnic minority households).

Community forest management (CFM) is not well recognized by local authorities, while Viet Nam Land Law (2013) or Forest Protection and Development Law (2004) recognize a title of village community but Viet Nam Civil Code does not[68]. To avoid this barrier, in some provinces HHs have grouped and worked under Viet Nam Cooperative Law. The ER-P PRAPs include a basket of FLA approaches (including cooperative approaches) for communities and hhs are included in all PRAPs and as noted the current forest law is set to be updated in 2016/17.

Barrier 3 Forest governance and lack of institutional capacity	How to remove the barrier included in the ER-P
There is a clear need for specific incentives that help implement existing (often ambitious but far reaching) policies, improve implementation of land use planning strategies [69] and forest governance that support REDD+ and sustainable forest management; however, if funding is to reach forest owners, then implementation of the regulatory polices needs supportive economic instruments. At the same time the forest sector at the provincial level is over-regulated with difficult to meet timber harvesting regulations.	Included here is the design of BSMs that support the proposed ER-P Adaptive Collaborative Management Approach (ACMA) and performance based approaches, the performance based approach while currently difficult to explain, in practice there have been significant successes in the performance based approaches in other forest sector projects[70]; Support for SFCs improved management practices work with and involve local communities; Already scheduled updating of the Law on Forest Protection and development

In the context of Viet Nam, although policies may be good the organization of management by sectors and unclear responsibilities and coordination mechanism among sectors as well as limited capacity of human resources at the local level, and insufficient financial resources can encumber effective implementation of the policies.

The ER-P includes support for law and policy change and technical support for Forest Stewardship Council (FSC) certification or similar is included at the central level and provincial level, in addition there are complementary projects on-going and proposed within the ER-P region that would be sufficient to help remove this barrier.

Barrier 4 Weak investment and lack of private sector involvement	How to remove the barrier
Engagement and involvement of the private sector in REDD+ has been limited, opportunities for state owned SFCs is improving but with limited uptake to date	The ER-P includes measures to directly engage, encourage and influence SFCs to improve plantation and sustainable forest management, and work with SFCs and trade forest bodies;

[68] There are a number of pilots and quite large area forest projects, which have successfully supported CFM, but the approaches have yet to be translated into national widespread use.

[69] See footnote 63 on the proposed Planning Law.

[70] Two examples are very pertinent to the ER-P and include the FSDP's VCF component which was strongly orientated to performance based small grants for SUFMBs; and the KfW series of forest projects include a degree of performance based and self-reliance management in the village based forest protection development funds. In both projects not every SUF MB in the small grant program or every community in the KfW projects responded to the performance based nature, however, there are numerous examples of those that did e.g. See the WB ICR for the FSDP, in this case additional small grants were awarded contingent on the MB meeting management, planning, M&E and fiduciary goals, and grants took account of performance on these key measures and were adjusted on the success or otherwise.

	Finance is also included to encourage private smallholders to continue to invest in plantations.

A central part of the investment in ER-P is to work with the SFCs to improve plantation management and sustainable forest management, help SUFs to potentially equitize and gain access to REDD+ finance and improve relationships with communities inside and around the SFC, assist with FLA and help ensure communities have reasonable access to NTFP resources[71].

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

The program design draws on previous programs and projects implemented in the region and also from the design process involved in developing the PRAPs.

a) The PRAPs

The NRAP[72] includes a requirement for a Provincial REDD+ Action Plan[73] that builds on, information from the existing provincial socio-economic and sectoral planning, the provincial SEDP, FPDP and the CCAPs. The ER-Program with support from other projects and programs[74] developed six individually tailored PRAPs, which broadly meet the REDD+ expectations of the provinces[75] and include planning for the different land use and forest cover.

The development of the PRAPs involved:

- All PRAPs were initially very broad multi sector plans that overlapped with other provincial plans, there was a necessary focusing of the proposed activities and proposed budgets and funding, however, elements of the multi-sector approach remain in all PRAPs and all include focused livelihood support;
- All PRAPs include forest land allocation and support for improvements for forest governance;
- Extensive as possible consultations were undertaken and some included very extensive consultations over a lengthy period, and one PRAP also included pilot Site REDD Action Plans (commune level REDD+ Action Plans), three PRAPs involved international NGOs undertaking the consultations and the two others were undertaken by a University;

[71] Access to NTFPs can be a source of contention between SFCs and local communities.

[72] REDD+ in Viet Nam is governed by the National REDD+ Action Plan 2011–2020 (Decision 799/QĐ-TTg, 2012) and broad guidance on REDD+ preparedness and implementation in Viet Nam is given by the NCCC.

[73] The PRAP is not designed to address climate change that is covered by the provincial Climate Change Action Plan, the PRAPs draws on these.

[74] The Vietnam Forest and Delta Program supported the development of PRAPs in its two program provinces of Thanh Hoa and Nghe An and also supported a PRAP in Quang Binh with some previous support from GIZ, UNREDD II overlaps with the ER-P and as part of its own PRAP program, supported the PRAP in Ha Tinh (although in a slightly different format) and JICA SNRM supported the development of the PRAP in Thua Thien Hue.

[75] The draft PRAPs of all six provinces have been elaborated with assistance of consultant teams and match in general the requirements and the given format. The introductions and the background chapters are very detailed and provide sound information on forest resources and areas, institutional and socio-economic context. Driver identification and analysis have been carefully presented. Site-specific and other issues in this chapter have been sufficiently described. Drivers have been addressed by respective approach and priority actions in the chapter, which then has been developed to activities in the following chapter. The activity and budget tables remain optimistic, further work is in ongoing and draft detailed activity plans and implementation schedules serve as basis for further developing improved activity and budget plans and summaries of the PRAPs will be available as annexes to the final ER-PD.

- One PRAP includes a pilot benefit sharing plan and pilot FGRM;
- Five of the six PRAPs included new forest cover, land use and forest ownership mapping etc. to support the PRAP;
- The PRAPs included the findings of forest driver studies (in five cases the PRAPs were able to draw extensive independent studies on drivers, the remaining study is on going);

In summary, six broad interventions that would be aimed at reducing ER were agreed with the provinces as follows:

Important PRAP REDD+ investment activities include the encouragement of the involvement of local forest dependent communities, PFMBs, SUFMBs and SFCs	This would be achieved by ER-P supported interventions with the following entities at the provincial level Capacity building, improved, management and protection in PFMBs 834,865ha SUFs 720,263ha 16 SFCs 241,697ha
Reducing deforestation (ha) - mostly targeting natural forest including afforestation replacement afforestation/ restoration after infrastructure	Mainly in the PFMBs, SUFs
Reducing forest degradation (ha) - mostly targeting natural forest	
Increasing ER through restoration of natural forest by natural regeneration zoning	
Increasing ER afforestation on barren land	
Increasing ER improving forest quality including models for longer rotations in restructuring, enrichment	Improved management and protection in the SFCs SUFs, PFMBs Support for local community smallholders investing in a mixture of long and short rotation plantations Support for local communities to engage with the and SFCs, including, collaborative management approaches, improved access to NTFPs and FLA
Increasing ER improving forest quality by reforestation after harvesting to increase the productivity	

b) Provincial REDD+ Steering Committees

The PPCs have set up PRSC, (already in existence in all ER-P provinces) to provide advice on REDD+ related policies, reviewing annual working plans and ensure the coordination and linkage with the relevant agencies i.e. Department of Agriculture and Rural Development, Department of Planning and Investment, Department of Finance, Department of Natural Resources and Environment etc. Additionally, PRSC also serve as a platform for SUF MBs and PFMBs and enable them to have some more influence on provincial planning and environmental impacts and assessment processes[76].

[76] A finding from the FSDP VCF component was the most SUF MBs had very limited access or opportunities to comment on or influence provincial forest management or even environmental impact assessments even where projects had the potential to impact on the SUF. A few exceptions included some SUFMBs that had a place on the PPC.

4.3.2 *Forest enhancement and deforest and forest degradation activities*

The PRAPs include a wide range of activities (including livelihood development) and 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 and involve different stakeholders with varying degrees of capacity and exposure to REDD+. The activities included in the ER-P are summarised in Table 4.6 below.

Table 4.7 Summary of the enhancement and deforestation and degradation activities included in the ER-P

Enhancement activities	Deforestation and degradation reduction activities
Planting mixed acacia and native species (including offsetting of infrastructure)	Forest protection contracts, the PRAPs include a large number of different types of contracts (village and individual) there is no certain ER outcome, however, the assumption is that the contracts are combined with other program measures such as adaptive collaborative management approaches with the different MBs, improved PFMS – which requires active participation of the communes, improved forest management and protection.
Transformation of existing plantations SFC and PFMBs (long rotations and large timber)	There are clear economic benefits through adopting the proposed approach change to long rotation and mixed native plantations.
Natural regeneration and enrichment i) silviculture techniques ii) enhancement planting	Natural regeneration and enrichment planting coupled with improved local land use planning and can be more successful with collaborative management approaches between local communities and MBs.

4.3.3 *ER-Program design justifications options and challenges*

The ER-P was formulated under the umbrella of the NFDS and the NRAP and has taken examples and lessons learned from recent major forest projects notably the FSDP and 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 NFDS and closed in 2015.

4.3.4 *Proposed interventions of the ER-Program*

The ER-P project will introduce and mainstream REDD+ to the six ER-P provinces and will be the first major REDD+ program in Viet Nam and will build on and expand on progress in implementing participatory approaches to sustainable forest management introducing REDD+ activities to the forest sector by: 1) introducing and monitoring forest carbon emission reductions targets to the forest sector focusing on the PFMBs, SUFMBs and SFCs; 2) introducing performance payments for forest emission reductions through carbon sequestration; 3) further developing sustainable smallholder forest based livelihood options including access to follow-on funding from the FSDP of smallholder plantation development, and support for improvements to other forest based livelihood activities; and 4) improving inter-agency coordination at the landscape scale to improve forest management.

The ER-P will be comprised of three key components as presented in Table 4.8 below: for a more detailed description of each component please refer to Annex 4.

Table 4.8 Summary of ER-P components

Component	Summary description
Component 1 Province level cross cutting activities and investments	Component 1 relates to institutional and implementation costs and includes the investment readiness packages for the implementation entities, as well as other investment that were budgeted in the PRAPs, but are not attributable to land based activities (planning RNAs, SSR and management and business plans in PFMBs, SUFMBs and SFCs) and support actions for the PRSC
Component 2 Reducing deforestation/ forest degradation	Component 2 includes land based initiatives and linked to the 1 ha models and the implementing entity models - Improved forest protection, improved land use planning; natural regeneration is linked to ERs, SFM, (with some potential for CFM based on cooperative apaches in some provinces), activities focus on work with PFMBs and SUF MBs, with their respective forest dependent communities
Component 3 Forest carbon stock enhancement	Component 3 includes land based initiatives linked to the 1 ha models and the implementing entity models - planting mixed Acacia and native species (including offsetting of forest lost to infrastructure) PFMBs, SFC and smallholders; Transformation of existing plantations (long rotations and large timber) work with SFC, PFMBs, smallholders; Natural regeneration and enrichment including i) silviculture techniques, work with all stakeholders; and ii) enhancement planting work with PFMBs and SUF MB
Program management and implementation costs for the central and province level are included and would facilitate efficient program implementation and the coordination of the various government agencies at central, provincial and district levels as well as undertaking program specific monitoring and evaluations, coordination of the PFMS, MRV and ensuring effective collaboration and cooperation with other partners and PPMUs.	

4.3.5 Scale of the proposed ER-P

While component 1 is focused on the entire province level and related to the forest governance and enabling environmental, components 2 and 3 are actual land-based interventions. The total ER-P target area (Components 2 and 3) amount to 224,930 ha to be implemented by about 42 PFMBs, 17 SUF MBs and approximately 13 SFCs[77] with additional inputs coming from smallholders. Avoidance of deforestation and forest degradation and enhancement of carbon stock in degraded natural forest will occur on 146,555 ha**.** Carbon stock enhancement activities such as the transformation of existing short-rotation plantation to long-rotation and native species forest is estimated on an area of 48,665 ha, while new planting on bare land is planned at 29,710 ha. All assumed models are profitable over a period of 25 years. (See Table 4.9 below) For a detailed description of the individual intervention model, the key assumptions and the GHG emission reduction impact, please refer to Annex 4)

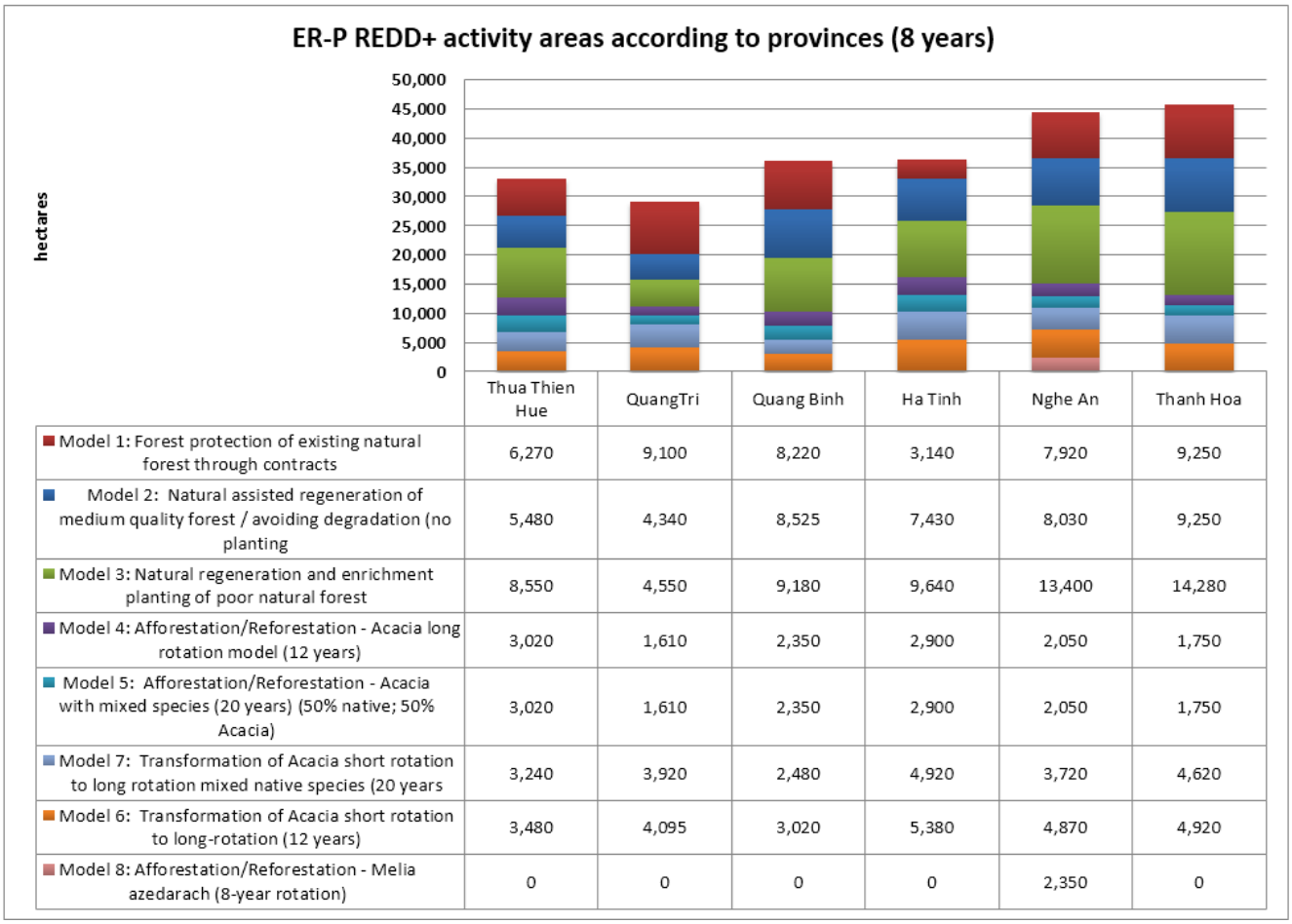
[77] There are about 47 PFMBs, 17 SUFMBs and 16 SFC but not all may wish to participate – this is based on the FSDP project where not all eligible SUFMB applied for small grants (about 90% did) and not all eligible or identified smallholder communities whished to participate in the smallholder plantation forestry and collaborative follow up work with SFCs by the FSDP and the FCPF project.

Table 4.9 Summary of the ER-P main economic models of component 2

Deforestation / Forest degradation driver	REDD+ activity	Targeted area (ha)	Percentage of total remaining land use class in ER-P accounting area (%)
Component 2:			
Evergreen broadleaf forest rich to Evergreen broadleaf forest – rich to medium (degradation) due to illegal logging and overexploitation	Model 1: Forest protection of existing natural forest	43,900	19.4%
Evergreen broadleaf forest - medium conversion to Evergreen broadleaf forest - poor due to illegal logging and over - exploitation	Model 2. Natural assisted regeneration of medium quality forest / avoiding degradation (no planting	43,055	9.5%
Evergreen broadleaf forest - poor conversion to bare land for illegal agricultural land conversion	Model 3. Natural regeneration and enrichment planting of poor natural forest	59,600	4.5%
Component 3:			
Plantation area remains plantation area - Enhancement activity for production and reversal risk reduction and reversal risks	Model 6: Transformation of Acacia plantation to long Acacia rotation	25,765	4.0%
Plantation area remains plantation area - Enhancement activity - Enhancement activity for production and reversal risk reduction and reversal risks	Model 7: Transformation of Acacia plantation to long rotation mixed species	22,900	3.6%
Non-forest land - Enhancement activity	Models 4: Afforestation Reforestation with pure Acacia	13,680	0.6%
Non-forest land - enhancement activity to compensate for planned infrastructure development	Models 5: Afforestation Reforestation with pure Acacia and mixed species and offsetting of infrastructure and development	13,680	0.6%
Non-forest land - Enhancement activity	Models 8: Afforestation Reforestation with Melia	2,350	0.1%
Total		224,930	

The Figure 4.6 below shows the area distribution according to the province and according to the interventions model. The total are covers about 10% of the total forest area. The area compilation and assumptions aim to provide balance between high GHG emissions reduction activities and a high economic performance. The natural forest models have comparatively lower NPVs and profitability compared to the plantation models (see Annex 4), while the GHG emission reduction effect is higher in the natural forest models. The plantation transformation models are scaled high, as these have the ability to generate relatively immediate revenues and reduce the overall investment needs. The remaining plantations and models that require larger up front investments at the beginning of the program generate later returns.

Figure 4.5 ER-P REDD+ activity areas per province (in ha after 8 years)



	Thua Thien Hue	QuangTri	Quang Binh	Ha Tinh	Nghe An	Thanh Hoa
Model 1: Forest protection of existing natural forest through contracts	6,270	9,100	8,220	3,140	7,920	9,250
Model 2: Natural assisted regeneration of medium quality forest / avoiding degradation (no planting	5,480	4,340	8,525	7,430	8,030	9,250
Model 3: Natural regeneration and enrichment planting of poor natural forest	8,550	4,550	9,180	9,640	13,400	14,280
Model 4: Afforestation/Reforestation - Acacia long rotation model (12 years)	3,020	1,610	2,350	2,900	2,050	1,750
Model 5: Afforestation/Reforestation - Acacia with mixed species (20 years) (50% native; 50% Acacia)	3,020	1,610	2,350	2,900	2,050	1,750
Model 7: Transformation of Acacia short rotation to long rotation mixed native species (20 years	3,240	3,920	2,480	4,920	3,720	4,620
Model 6: Transformation of Acacia short rotation to long-rotation (12 years)	3,480	4,095	3,020	5,380	4,870	4,920
Model 8: Afforestation/Reforestation - Melia azedarach (8-year rotation)	0	0	0	0	2,350	0

For the implementation of the intervention, participatory and collaborative forest management approaches will be implemented in the forest MBs and SFCs and with the forest dependent communities living inside and adjacent to the forest entities, and collaborative management linkages will be developed to improve forest land tenure, conflict resolution mechanisms (FGRM) required by the FCPF) and capacity building and strengthening the regulatory framework and forest management process for forest dependent communities.

Prior to implementation of the intervention models, investment costs at the PFMB level and SUF MB include a REDD+ Needs Assessment (RNA) and the development of a detailed forest management and business planning. The cost for a RNA amount (including a Social Screening Report) to US$ 25,000 in year 1 and US$ 50,000 for forest management and business planning. In addition, an annual cost of US$5,000 per PFMB and SUF MB and is assumed to be for livelihood activities by the rural population. The livelihood grants depend on the size and the number of the communities and their demand – criteria will be developed to orientate and ensure that the livelihood activities are not damaging to the forests or biodiversity and can be renewable on satisfactory performance[78]. Benefits for these activities are not accounted for.

[78] VNFOREST, Forest Protection Department developed a detailed Operational Manual to manage the implementation of the small grant process – which would help gather the foundations for successful REDD+ investment, including eligibility criteria, investment activities, detailed M&E, fiduciary management, safeguards measures as part of the FSDP project much of this would be highly applicable and easily updatable, a flow of fund mechanisms were developed in general as part of the FSDP project.

A series of land-based initiatives will provide the ERs these activities are summarised below, further details are provided in Section 4.3.6 and Annex 4. 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).

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,
- 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,

Based on the assumed rollout of the implementation entities in Table 4.8 above and individual area estimates, the ER-P activities are presented in Figure 4.6 and cover a total area of 224,930 ha[79]. The area estimates are indicative and estimates and based on the data provided during the consultation processes with the provinces for the development to the PRAPs. The full scale of the program will be achieved in year 3, while cost and benefits for these areas are calculated for program period of 2017-2024 with figures to 10 years.

The area compilation and assumptions aim to provide balance between high GHG emissions reduction activities and a high economic performance. The natural forest models have comparatively lower NPVs and profitability compared to the plantation models (see Annex 4 section 1), while the GHG emission reduction effect is higher in the natural forest models. The plantation transformation models are scaled high, as these have the ability to generate relatively immediate revenues and reduce the overall investment needs. The remaining plantations and models that require larger up front investments at the beginning of the program generate later returns. To bring these areas and model into context, the following tables show the linkages to the drivers (Table 4.9 and Table 4.10) in Annex 4 presents the relation of the ER-P target areas to the historical deforestation and forest degradation areas and to what extent the ER-P addresses these historical changes.

[79] The target ER-P area of 224,930 ha represents approximately 4.4% of the total land area of the six target provinces and 8.1 % of total forest area in the NCC.

Table 4.10 Links between the main drivers identified in the PRAPs and the ER-P intervention activities and models

Main drivers	Proposed solutions based on lessons learned from previous forest sector project and programs	ER-Program intervention to reduce the drivers in province	Activities and model in the ER-P intervention
Conversion of forest (i) Conversion due to plantation development (rubber and short term acacia)	Support for SFCs	Improved FPDP, PRAP, PRSC work; capacity building in the SFC, PFMB; Make finance and technical support available for transformation of the short term rotations to take advantage of longer term and potentially more profitable longer and mixed native species rotations; Support for improved management of SFC and work on long rotation and mixed plantations	RNA and SSR to help management planning and forest governance in SUF, PFMB and SFC; Also for SUF and parts of PRMB: Model 1; Model 2; Model 3; Where establish plantations also include Model 6 and 7
(ii) Conversion to due expansion of agriculture		Improved FPDP, PRAP, PRSC work; capacity building in the SUF, PFMB, SFC	RNA and SSR to help management planning and forest governance in SUF, PFMB and SFC; ACMA; FLA; Also for SUF, and part of PFMB: Model 1; Model 2; Model 3 and Model 6 and 7
Infrastructure development (i) Hydropower (mainly), water supply and irrigation	Improved LUP and coordination, improved EIAs, forest governance	National level support for improvement to planning at the provincial level; Coordination work of the PRSC; PFMS work; Support for capacity building improved management plans for SUFs through OMPs, and for the PFMBs improvement management plans; better EMPs and better monitoring through the PFMS the PRSC; AMCA work	Management plans and OMPs of SUFs and PFMBs note and address plans for infrastructure; Model 5
(ii) Roads	Improved LUP and coordination, improved EIAs, forest governance	As above	Management plans and OMPs of SUFs and PFMBs note and address plans for infrastructure; Model 5
Illegal logging	FLA; FPCs; willingness or otherwise of local communities to engage in the protection of natural forest (protection and production forest); village forest protection and development funds, including village protection patrols with collaborative management approaches, an important factor has been to try to improve the level of local involvement and ownership.	FLA; FPCs, Collaborative management approach; PFMS system (and MRV)	RNA and SSR to help management planning and forest governance in SUF, PFMB and SFC; ACMA; FLA; Model 1; Model 2; Model 3
Forest fire		PFMS, improved forest governance	Capacity building, PFMS, Adapative collaborative management approach (ACMA)
Mining/ rock /clay		As infrastructure	Management plans and OMPs of SUFs and PFMBs note and address plans for infrastructure; Model 5
Resettlement		Closely related to infrastructure	Model 5, Model 6 and 7
Firewood		Forest governance FPC PFMS also have national and provincial fire prevention and monitoring programs, eg MODIS at national level and at provinical level and at every MB (fire risk assessment take place)	RNA and SSR to help management planning and forest governance in SUF, PFMB and SFC ACMA

Table 4.11 ER-Program areas compared to total areas and historical deforestation and forest degradation areas

Forest type and total area in 2010[1] (ha)		Key deforestation/ forest degradation/ enhancement land use change dynamic (2000-2010)[2] (ha)		ER-P intervention models to address drivers and enhance carbon stocks (ha)		% ER-P coverage of historical deforestation/ degradation / enhancement
Evergreen broadleaf forest – rich	226,626	Evergreen broadleaf forest – rich to medium (degradation)	-66,277 **(24% of total degradation)**	**Model 1** Forest protection of existing natural forest through forest protection contracts	43,900	66% of historical degradation in the land use class
Evergreen broadleaf forest - medium	452,900	Evergreen broadleaf forest - medium conversion to poor	-139,181 **(51% of total forest degradation)**	**Model 2** Natural assisted regeneration of medium quality forest/ avoiding degradation (no planting)	43,055	31% of historical degradation in the land use class
Evergreen broadleaf forest - poor	1,315,598	Natural forest - poor to bare land/ agricultural land	-163,950 **(54% of total deforestation)**	**Model 3** Natural regeneration and enrichment planting of poor natural forest	59,600	29% of historical deforestation in the land use class
Plantation area	637,561	Increase of plantation area from non-forest land	+376,659 **(60% of total area)** [3]	**Model 6,7** Transformation of short term Acacia plantations	48,665	8% of plantation increase area
Non-forest land	2,372,977	Bare land/ non-forest land	-97,125 ha	**Models 4,5,8** Afforestation, Reforestation with pure Acacia and mixed native species and offsetting of infrastructure and development	29,710	31% of historical non-forest conversion rates
Total	**5,144,508**				**224,930**	

Table notes: 1,2 According to Activity Data report (Dien, 2016 et al); 3 Partly includes replanting of harvested areas.

4.3.6 *Business models and feasibility for Acacia plantation restoration/ transformation*

Pilot example business models, that if adopted by the private sector SFCs, smallholders of the ER-P region, have been developed to promote sustainable forest management and focus on two main activities – with the simultaneous objectives of contributing significantly to mitigation in the context of REDD+, enhancing the economic performance and taping potentials for up-scaling:

- Increasing the rotation length to make it suitable for sawn log production; and
- The stepwise introduction of marketable high-value native species in existing Acacia plantations.

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. (See Annex 4 for further details on the business models.)

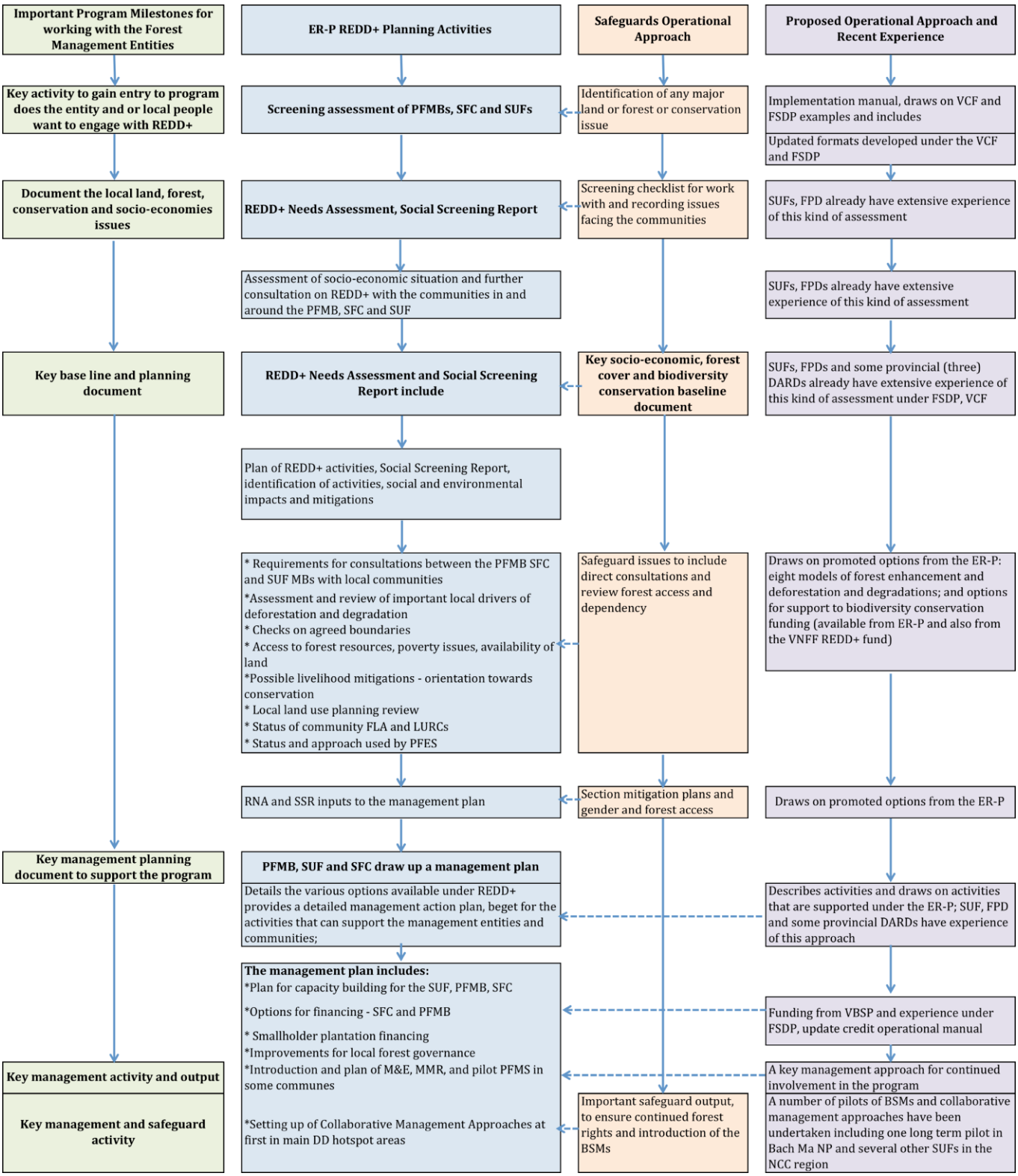
4.3.7 *Summary of the overall program*

A summary of the overall ER-P and important operational milestones and processes is shown below in Figure 4.7 and this shows the linkages between the forest management entities, their key role in:

- Managing the forest landscape and builds on and encourages deeper engagement with local communities, to identify local drivers and involve the local communities in identifying local solutions;
- Links to biodiversity conservation;
- Access to the funding from the VBSP for the PFMBs, SFCs and smallholders and access to funding for the SUFs;
- The various screening, planning and management steps required;
- The emphasis and importance in improving monitoring in the forest management entities and the existence of pilot commune based provincial forest management system.

The figure below also show the steps that cross links to the involvement of safeguards at key steps and also summarizes the experiences that exist which is a comparative advantage that Vietnam has in that it has managed reasonably complex inter-actions between forest management entities, communities, and introducing management processes that the management entities can mostly undertake them selves and also collaborative management approaches with local communities and smallholders that can contribute to improvements to local forest ownership and governance issues.

Figure 4.6 Summary of the overall ER-P and operational approach



4.4 Assessment of land and resource tenure in the Accounting Area

In Viet Nam all land is constitutionally the property of the state, but exclusive use rights are given to individuals under a contractual arrangement with the state. 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. The following Table 4.12 provides an overview of the different types of land tenure in the NCC including the area covered State forest entities and by LURCs.

Table 4.12 Land tenure areas, land use by user

Land tenure type or land use	Consolidated figures (ha)	No. LURCs/ Dec13	User	Notes
Total NCC area	5,145,556			Figures do vary due to changes due to changes in projections and mapping of provincial boundaries
Special Use Forest Management Board	720,263		State forest management entity	17 SUFs, most have surveyed boundaries, areas, allocation, MB set by Prime Minister Decree and PPC Decisions
Protection Forest Management Boards	863,266		State forest management entity	47 PFMBs; The Decision of PM (QD 17/2015 QD-TTg dated 09/6/2015) on Regulations of managing PFMB stipulates that the PPC is responsible
State Forest Companies	241,697		Generally a SOE	16 SFCs; some have LURCs or partial LURCs
Area managed by State forest entities	1,825,226			
Area with LURCs				
Total area under LURCs	3,345,260	6,226,528	Individual households and company leases	All types of LURC: agriculture, forest, aquaculture, rural and urban residence, public and religious
Agriculture	710,497	3,335,097		
Forestry	2,464,368	329,561		
Rural resident	91,867	2,401,368		
Urban resident	13,741	485,238		
Public	64,788	35,264		
Area not under LURC	1,800,674			Approximate figure
Area under forest protection contracts	198,485	38,297	Usually individuals or households	About 38,297, contracts normally renewed annually, each contract is about 5ha
General land use				
Agricultural land	4,077,705			This figure includes forest land
Forest area	3,144,185			
Production forest	1,544,135			
Protection forest	991,980			
Special use forest	608,070			
Natural forest area	2,178,878			
Total plantation area	721,499			
Plantation area mainly acacia	686,840			
Rubber	34,659			
Unused land	500,488			
Bare land ~	799,925			Commune area (estimate)

a) Reality of access and use of forests

While much of the forest land is still owned 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 still access these forests. This access includes for harvesting of NTFPs and tree felling for household construction purposes. Some individual households "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 Viet Nam 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. In general while there is restricted access to and use of forest resources forest dependent households are not denied access on a “*de facto*” basis. Hence the lack of tenure *per se* does not mean lack of access. What lack of tenure means is that there is the possibility of restricted formal access to forest resources by forest-dependent households.

It should also be noted that some forest-dependent communities and households do not wish to be allocated forest land, especially protection forest land, particularly if they lack the labor resources or the forestland in question is located some distance from their normal place of residence or crop cultivation. If they were to be allocated forest land that they could legally convert into cropping land they would be more interested, but they consider the opportunity cost of being allocated protection forest land is too high. They are also interested in production forest land if they could find finance for commercial forestry activities, such as the cultivation of acacia, and in such instances tenure either by LURC or leasehold appears to be satisfactory.

It also has to be recognized as younger household members in forest-dependent households participate to a greater extent in secondary education than in the past they understand waged and salaried employment in the towns and cities of Viet Nam (especially Ho Chi Minh City, Da Nang and Hai Phong) generate higher incomes so land tenure issues *per se* are less important than they otherwise would be. It is necessary to understand the inter-generational socio-cultural and political-economic dynamics of change in rural Viet Nam, including in the upland areas. There was a time when younger ethnic minority household members would not enter the waged and salaried labor market but in recent times they have observed from the generally more economically prosperous Kinh households that reliance on agricultural and forestry income-generation activities alone is not the path to improved livelihoods.

b) Customary forest rights

Prior to state management of forests in Viet Nam wet rice fields, terraced fields, dry rice fields and orchards could be exchanged, sold, mortgaged and inherited among community members. Forest resources other than land, including forest products and water sources, were communally owned and can 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.

Land and resources are owned by the entire community. They can be used by all community members who are treated equally in terms of the use of the community land. No person may sell or transfer forest land to outsiders. When a community member leaves the village, their community land use rights expire. The supreme owners of the land and resources are invisible supernatural beings. All land users must respect these beings who govern the land and all it contains. Those who pollute the land by breaking customary rules are penalized and are required to apologize to those beings to avoid collective punishment of the entire community. Almost all villages have areas of forbidden forests, including mainly watershed protection forests, sacred forests and cemetery forests (typically when land acquisition is underway the GoV attempts to respect and avoid aspects of these forbidden forests, most notably the cemetery forests). The remaining forest is accessible to community members on the principle of “first-come, first-served”. The assertion of individual land use rights in the community is acknowledged by community members. This practice remains common when forest land is cleared for swidden cultivation: a practice the GoV has prescribed since the late 1980s.

Thus there are substantive differences between the statutory rights enshrined in the policies and laws of Viet Nam and the customary rights of upland ethnic minority communities. The GoV does not recognize these customary forest rights.

Currently in many natural forests (i.e. state owned and managed forest under the management of SFCs, PFMBs and SUFMBs of forest allocated to a commune) the forest and NTFP resources are looked upon

as “free goods” and a particular, but growing problem for many village communities who are dependent on the forest, is the influx of “outsiders” who come to an area and undertake illegal logging and mass collection of NTPFs, particularly medicinal herbs and orchids etc. for the Chinese market. Many forest dependent communities would like to see a form of legal ‘right of use’ for what they perceive as their forest and in return they are prepared to work more closely with the PFMB and SUF MBs and work to protect the forest they are dependent on[80]. With the successful examples from previous and on-going projects and programs[81], including within the NCC region, the possibility of a consistent medium-long term (5 years+) approach across six closely linked provinces, the ER-P would provide an ideal opportunity, together with the proposed improvements to the PFMS system (and MRV), to consistently apply the approaches across six provinces.

In previous and even on-going projects, a problem has been that the ‘project approach’ can be quite limited in the interventions, timeframe and area. It could be the core or the buffer zone of one SUF, or an area of high value conversation forest, and typically a project only lasts for a three year period (sometimes extended) and would not act across a contiguous region where all MBs and significant forest areas would be included, as is the case with the ER-P. A further limitation with a project approach, is that typically a project will only have one owner/ implementer, which may or may not be the significant implementer for the sector, an additional challenge facing the project can be that it does not have the full commitment and accountability of the provincial departments and there can be poor interaction between the various departments.

c) Access to forest and land disputes

Historically and in some areas within the NCC there are historical and on-going access to forest and encroachment or land disputes, these particularly centre around the boundaries of the State forest entities, SUFMBs, PFMBs and SFCs, and for example most SUFMB that under took a detailed Conservation Needs Assessment in the central region (2007-2013) reported illegal logging and illegal encroachment for agricultural purposes as a conservation issue. In most cases the access/ encroachment issues are generally resolved locally with a compromise and in many cases the SUF MBs have excised areas of heavily encroached on land from the NR or NP as the biodiversity and conservation value are compromised. SUFMBs are at a particular disadvantage as Forest Protection and Development Law prohibits any collection or removal of forest resources, and SUF are often looked upon as a public good; however, in many cases the SUFMB has to accept the inevitable that it cannot stop all NTFP collection. Therefore the MB will often try to arrive a practical solution with a community of agreeing that no commercial quantities are removed[82] or no further encroachment takes place in return for some NTFP collection. In discussions with the PFMBs and SFC they face similar issues as the SUFMBs, but these are not so well documented and the PFMBs and SFC have an advantage in that NTFP collection is not prohibited. Experience[83] with the SUFMBs has shown that if collaborative management approaches are adopted, with participatory boundary demarcation, formal agreements on land use and on types and sustainable rates of collection of NTFPs together with focused livelihood improvements the incidents of issues over forest access and land encroachment is much reduced.

d) The Program contribution

It is proposed through the Adaptive Collaborative Management Approach (ACMA) that stakeholders will look more closely at land tenure issues to determine how (a) existing conflicts between forest owners

[80] Example of pilot Decision 126 implemented in several SUFs and recent KfW projects.

[81] The larger project examples that have include elements of community based forest protection include the WB’s FSDP, various KfW projects, WWF Carbie and the ADB’s BCC project, in addition there are a number of small NGO funded projects and programs that also include or have included community orientated sustainable forest protection and management with support from international NGOs including WWF, BirdLife International, SNV, RECOFTC, etc.

[82] 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; or where the boundaries are surveyed for cadastral maps (or re-surveyed with a view to putting in markers); there are regulations for the boundaries to be agreed using participatory processes.

[83] Through the VCF small biodiversity conservation grant approach which was a component of the FSDP.

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.

e) Public sector resources to promote land tenure security

Cadastral surveys cover most of the commercialized urban and peri-urban areas in the coastal plain. Historically surveys have are not been vigorously pursued in most other regions or in upland areas. The verification of boundaries and the resultant improvement in ownership security is thus totally dependent on public sector land surveying, which is a function of public budgets. The result has been a compromise between the traditional practices of allowing citizens to bring unoccupied forest land under cultivation or continue to collect NTFPs as “private property” and the requirements of the land titling system based on cadastral surveys.

To consider the role of property rights in general and land rights in particular, it is important to place these rights in the context of the overall institutional structure of the society and economy. There is the potential for a lack of congruence within state institutions although the formal legal system may provide for alien-ability, the transfer of land to persons including from transfer from one ethnic group to another this may represent a deviation from some cultural norms. Similarly, although the constitution makes provisions for private property rights and the formal laws establishing such rights, the corresponding registration and enforcement mechanisms may be weak or even largely absent away from the urban areas.

f) Communal and community land

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. “Community land” where land is said to be "communally owned" there should be an attempt to determine decision making and the nature of rights of persons in possession. At least two forms occur in the ER-P area LURCs have been issued in the name of the commune leader and in the second a District makes a Decision to allocate the land to the community, however, no formal community title is recognized.

g) Ethnic minorities and remote communes

Transactions in land take place mainly among members of the same community. Information is thus fairly symmetric: the identity of those who possess transferable rights over specific tracts of land is reasonably well known to all members of the community.

h) Experience with LURCs and credit for plantation agriculture from the FSDP

Property rights allow formal credit although for ethnic minorities a lender is not always allowed to use the property right (LURC) as formal collateral (but it helps provide a picture of credit worthiness of the potential borrower[84]), but in addition to the formal procedures for registering liens on, property rights can provide important incentive mechanisms for productive use of land.

The credit for smallholder plantation forest component was managed by a FSDP project implementation unit within the VBSP. The VBSP at central, provincial and district levels served smallholder household credit needs through services at the commune level in accordance with the Credit Manual. At the commune level the foundation of the smallholder plantation forest component was the household orientation to opportunities; registration and initial social screening to target poor and ethnic minority

[84] Banks are generally not allowed to foreclose on land owned by ethnic minorities in Vietnam.

groups; inputs to landscape and commune level plantation planning and mapping; access to VBSP low interest credits, contracts; and plantation models; and preparing proposals for land allocation, survey and mapping in the LURC process. On issuance of LURCs, extension services were planned to meet priority smallholder needs; individual smallholder plantation designs prepared; VBSP credit applications submitted and secured; quality seedlings from accredited nurseries procured; and Forest Farmer Groups established. Smallholders considered that the provision of extension services and technical training were fundamental for the success of their plantation forest investments and pivotal in their transforming from an aid-dependent mentality to self-reliant, plantation forest investors.

FSDP Smallholder plantation areas were established for 76,571 ha which were owned by 43,743 households and LURCs were granted to 36,044 households covering 67,912 ha. Under the certification pilot program, the FSDP project obtained FSC certification for over 850 ha of plantation forests owned by 354 households.

4.5 Analysis of laws, statutes and other regulatory frameworks

a) The Land Law

Revision of the Land Law in 2013 effectively addressed some of the issues that were raised by experts, civil society advocates[85], and the media, as well as by farmers themselves. These issues included increasing rights to trade land user certificates, longer lease rights for farmers, and reduced agricultural land taxes.

The revised Land Law introduced important updates on:

- The rights and responsibilities of the State on land and guarantees for land users;
- Land use planning and zoning was updated to try to encourage better integrated planning and with more attention on the socio-economic aspects;
- Land allocation and leasing;
- The terms of land acquisition;
- Land Registration was updated; and
- Land use regimes were updated.

The Land Law 2013 introduced some revision through 12 Articles that regulate forest land management and utilization and generally supports state organisations and individuals for stable and long term land use; where the is not quite so supportive is through community management, however, as noted above there are options available for an organised community approach for this.

b) Forest Protection Development Law

In principle, the Land Law and the Law on Forest Protection and Development unify current related provisions. However, as the Land Law was newly enacted in 2013 to replace the Law of 2003, and the

[85] Oxfam conducted community consultations with more than 3,000 households who are directly affected by the Land Law, and commissioned research on land conflicts between state-owned enterprises and local people. This partnership led in June 2013 to the establishment of a land policy coalition (LANDA), which includes Vietnamese NGOs, research institutes and media to engage with government authorities on amendment and implementation of the Land Law.

Law on Forest Protection and Development was enacted in 2004, so there are some differences related to forest management and forestland stated in the two laws[86].

Regulations on forest and forestland allocations are not united. Production forestland, which is natural forest, is not allocated to households, individuals and communities as stipulated by Land Law 2013. It is regulated in Article 135 of Land Law 2013 that the entities allocated the production forest land, which is natural forest, are "management organizations to manage, protect and develop the forests"; other entities are not allowed to allocate the production forest land, which is natural forests.

Thus, there are still discrepancy in the regulations between the Land Law and the Law on Forest Protection and Development on the allocation of forest and forest land, which are natural production forests, to a target group of households and individuals.

c) Joint approach between the land and forest laws

The two main laws are generally cooperative and supportive and there are at least 17 important Decrees, Decisions and Joint Circulars that regulate and manage forestland by giving guidance on the processes required to lead to LURCs and forest leasing. The forest law is due to be updated 2016/17.

d) Other important laws and regulations

The laws of Viet Nam has been viewed for various aspects related to REDD and climate change over a number of years and by a number of organisations:

The Country Study of November 2011[87], this review and analysis of Legal Preparedness for REDD+ in Viet Nam was conducted using a Reference Tool that was designed to identify concrete legal and institutional instruments that may be conducive to fulfilling the requirements of the REDD+ activities, guidance and safeguards found in the Cancun Agreements. The study reviewed the laws and institutions that have a bearing on REDD+. Therefore, not only is the forest sector considered, but also crosscutting issues of land tenure, land use planning, protected areas, easements, land acquisitions, and trade and commerce as well as sectoral laws concerned with the drivers of deforestation and forest degradation, such as energy, agriculture and mining.

2012: Integrating nation and sub national approaches[88] and reviewed the regulatory framework using several case studies.

2013: Safeguards Roadmap for Viet Nam's National REDD+ Action Plan[89] and included a review, an analytical matrix to identify potential short comings. An institutional framework assessment[90] of the key government strategies plans and institutional regulatory framework for environment and climate change assessment was also carried by the ADB.

2015 Climate Change Legislation in Viet Nam[91], an excerpt from a 2015 global legislation to review climate change legislation in 99 Countries.

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[86] 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.

[87] Legal Preparedness for REDD+ in Viet Nam country study November 2011, International Development Law Organisation, November 2011.

[88] REDD+ in Viet Nam integrating nation and sub national approaches Forest Trends and Climate Focus 2012

[89] Environmental and Social Safeguards Roadmap for the National REDD+ Action Programme SNV November 2013.

[90] Viet Nam Environment and Climate Change Assessment 2013 ADB.

[91] 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.

e) Law on Environmental Protection and climate change

The law specifies that environmental protection should be in harmony with economic development, social protection, biodiversity protection and adapting to climate change. The revised law replaces a previous version published in 2005 and states that protecting the environment is the responsibility of all agencies, organisations, households and individuals; that organizations and individuals that benefit from the environment are responsible for providing financial support for environmental protection activities; and also outlines a polluter-pays principle.

It recommends that the development and use of clean and renewable forms of energy be encouraged to reduce GHG emissions and to protect the ozone layer. It also specifies that a road map is to be developed so that Viet Nam may take part in global GHG mitigation activities that are appropriate with respect to the country's socio-economic circumstances and the international treaties of which Viet Nam is a member.

The law requires the development of a National Environmental Protection Plan to assess current environmental status, and environmental and climate change forecasts. Seven decrees are currently being developed by the MONRE to guide the implementation of the law.

f) Civil society and environment

Civil society increasingly influences the debate on environmental issues in Viet Nam through environmental NGOs.

The Climate Change Working Group (CCWG) of the NGO Resource Centre is a forum for Viet Nam and international NGOs to participate in climate change debates. The CCWG recognizes that NGOs are often effective at encouraging grassroots responses to climate change. Its key objectives are to coordinate NGO initiatives to maximize impact and minimize overlap, to provide a structure for NGOs to develop a common advocacy agenda, and to ensure that NGOs have equal access to information, training, and funding opportunities in Viet Nam. The CCWG contributed to the development of the NTP-RCC, the Viet Nam National Strategy on Responding to Climate Change and the National Green Growth Strategy. It has also participated in recent initiatives to prepare guidelines on community-based adaptation responses.

Full in-depth review of the Forest Protection and Development Law: Study on Reviewing 10-years Implementation of the Forest Protection and Development Law 2004 VNFOREST FSSP December 2013.

4.6 Expected lifetime of the proposed ER Program

The expected lifetime of the proposed ER-Program is from 2017-2024 and ER Program will be integrated into the overall NRAP plan to implement REDD+.

While it is expected that the Emission Reduction Program Agreement (ERPA) with the Carbon Fund will run from 2017-2024, however, the program will be implemented in line with successive NFDS which have a long-term perspective of about 20 years and with forest management objective of increasing forest carbon revenue extending beyond the ERPA. See Annexes 4 and the economic model includes a program life of up to 20 years.

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. These consultations commenced in October 2015 in earnest although for the past 3 years there have also been consultations of an iterative nature. It is estimated that consultations have involved 24 rural communities with some 500 individual householders of whom 295 have been women (95% from 12 different ethnic minority groups with poverty rates in excess of 70%), 12 CPCs (75 members including 22 women) and District people's Committee (DPCs) (120 members including 20 women), six PPCs (25 members including 6 women) at the sub-national level. At the national level, including international participants based on consultation and participation records in excess of 100 people (including 25 women). For CSOs and NGOs some 35 people, including 20 women, of which 11 NGOs have been have been consulted in detail on REDD+ by the program and have participated in all or some of the REDD+ activities. 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 quality rather than quantity to date with the exception of the SESA, and involves forest-dependent households chosen at random based on a robust sampling strategy using as a basis the Probability Proportional to Size sampling approach that is used on the quantitative approach. In addition there have been separate sets of consultation in all provinces on the preparation of the PRAPs which involved consultations at the different levels and with the different types of stakeholders of interest.

It should also be noted that extensive and extended consultations have also been undertaken by the two partner programs of the VFD and UN-REDD phases 1 and 2. The VFD Program work on drivers has been extensive (see section 4) in Thanh Hoa and Nghe An and this has include work with the different forest stakeholder. The UNREDD 1 and 2 Programmes have worked extensively with different stakeholders while developing the PRAP and their site level approach.

The stakeholders include: high forest-dependent households and communities, with the emphasis being on ethnic minority households but not to the exclusion of non-ethnic minority households ensuring that women, younger people, the aged and vulnerable households (especially the poor and physically handicapped have been included in these consultations. These communities were selected based on existing socio-economic data and forest inventories, nearness and expected reliance on forests, a further consideration was to meet some stakeholders communities and the different forest management boards and all were agreed upon at the local level, primarily by the District and Commune People's Committees.

At the commune level the Commune People's Committees have been consulted together with mass organizations including the Viet Nam Women's Union, Farmers Association, 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 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. 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.

Outside of local communities and governmental entities at the four levels of government in Viet Nam, State Forest Companies, international organizations with a stake in REDD such as UNREDD II and FAO, the EU, multilateral providers of ODA for some aspects of REDD including ADB and KfW, bilateral providers notably JICA and USAID, and international NGOs, notably SNV, and a variety of local CSOs and NGOs have also been consulted and will continue to be consulted.

Participation methods have ranged from village level meetings of households selected at random that have included focus group discussions, forest transects, natural resource assessments and interviews of key informants. Some NGOs and mass organizations have also participated in activities at the community level. At the commune, district, provincial and national level most of the participation methods have revolved around meetings, workshops and interviews of key informants. In relation to other stakeholders these have largely involved face-to-face meetings and the exchange of reports relevant to REDD based on activities and studies. Qualitative data acquired through these processes has been used in this draft, especially in relation the design of overall program approaches, the PRAPs, (which involved separate sets of consultations to those recorded above) and to the BSMs while at the more technical level relating to REL and MRV the focus has largely been on both the national and sub-national level at the provincial level.

A crucial part of the SESA work involves consultations with multiple stakeholders from communities to implementers and policy makers who might be involved in, or impacted by, REDD+ activities and programmes. As mentioned above, consultations between the SESA/FCPF project teams and various stakeholders are taking place as an iterative process. At commune and village community levels, the team has used focus group discussion techniques to consult local communities, especially focusing on ethnic minorities, and their leaders at the village and commune. An admitted drawback of the consultation processes in some communities is that they could not be held directly in local languages requiring a second translation. The SESA team observed that the predominance of Vietnamese language usage at village meetings sometimes meant that some local ethnic minority women could not participate as fully as men during these discussions. Special attempts were always made to try to engage women in the discussions, and to elicit their views, but it sometimes proved difficult in the times available for village meetings. The SESA team also tried to ensure that the focus group discussions were held in informal settings such as someone's house, and with everyone sitting together as equals or for example going on joint exploratory forest transacts.[92]

In conducting local level, especially community, consultations at this stage in the ER-P REDD+ readiness process, the SESA team did not try to explain in detail about a REDD+ program to be implemented, as that would inevitably lead to heightened expectations of benefits from it. The main point of consultations at this stage was to gain greater understanding from the local people as to how they see their 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. In other words, the SESA investigations provide inputs to show "the variety in the needs of different population groups, including gender, ethnic, socio-economic, and geographical variations."[93] See Tables 5.1 and 5.2 below for the range of stakeholders met and Table 5.3 and 5.4 for a range of the issues discussed, list of the stakeholders who attended the meetings is shown Annex 1 Section 3 (this list is indicative and not exhaustive as further lists are available if required).

The SESA team also had several interactions with non-Governmental organisations such as regionally and nationally established CSOs[94] in Hue, Vinh and Hanoi. This included university research centres in Hue and Vinh. The consultations with CSOs were geared to gaining different views and perspectives on the situation of local communities and forest resources, and to learn of their previous experiences with consultations at village level. The SESA team learned about some of the different types of research or action research that the university centres and NGOs have been conducting. There has also been

[92] Meetings are otherwise held at venues such as village meeting halls where they take on much higher levels of formality; this is more likely to result in village leaders and external officials dominating proceedings. Ideally, the informal meetings should always separate women and men, as women tend to discuss more openly in the absence of men, especially male leaders.

[93] FCPF (March 2009) Note FMT 2009-2, National Consultation and Participation for REDD, Technical Guidance on How to Prepare an Effective Consultation and Participation Plan.

[94] 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.

interaction with several international[95] NGOs who have been involved in REDD+ and climate change and issues of concern to REDD+ such as forest land tenure.

Representatives of two of the mass organisations, Viet Nam Women's Union (VWU) and the Fatherland Front, Youth Union etc. have also been included in most discussions at the commune and district levels.

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

	Proposed ER provinces	District (and whether part of the Program 30a[96])	Commune	Ethnic groups consulted at village level
1	Thanh Hoa	Quan Hoa (30a)	Thanh Xuan	Thai
		Lang Chanh (30a)	Tan Phuc	Muong
2	Nghe An	Con Cuong	Chau Khe	Dan Lai
			Lac Gia	Dan Lai,Thai
			Luc Da	
		Tuong Duong (30a)	Tam Hop	Hmong
			Luong Minh	Khmu, Thai
		Tan Ky	Dong Van	
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 (30a)	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

Table 5.2 Large forest owners/ Forest Management Boards consulted (by Province)

Province	Name of PFMB	Name of SUF MB	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,	Phong Dien NR; Management Board of	Phong Dien Forestry Enterprise;

[95] 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.

[96] Government Resolution 30a/2008/NQ-CP defined 62 poor target districts. See the complete list at CEMA's website: http://www.cema.gov.vn/wps/portal/ubdt/vanban/. Two districts were added under 1791/2013/QD-TTg bringing the current total to 64. Of relevance here is also Resolution 80/2011/NQ-CP on poverty alleviation from 2011 – 2020, which makes many references to 30a.

Province	Name of PFMB	Name of SUF MB	Name of SFC
	Huong Thuy; Bac Hai Van	Sao La Conservation zone	Tien Phong Forestry Company
	Huong Phú Commune Community Forest Management Board		
Quang Binh			Long Dai, Trung Son; Khe Giua

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

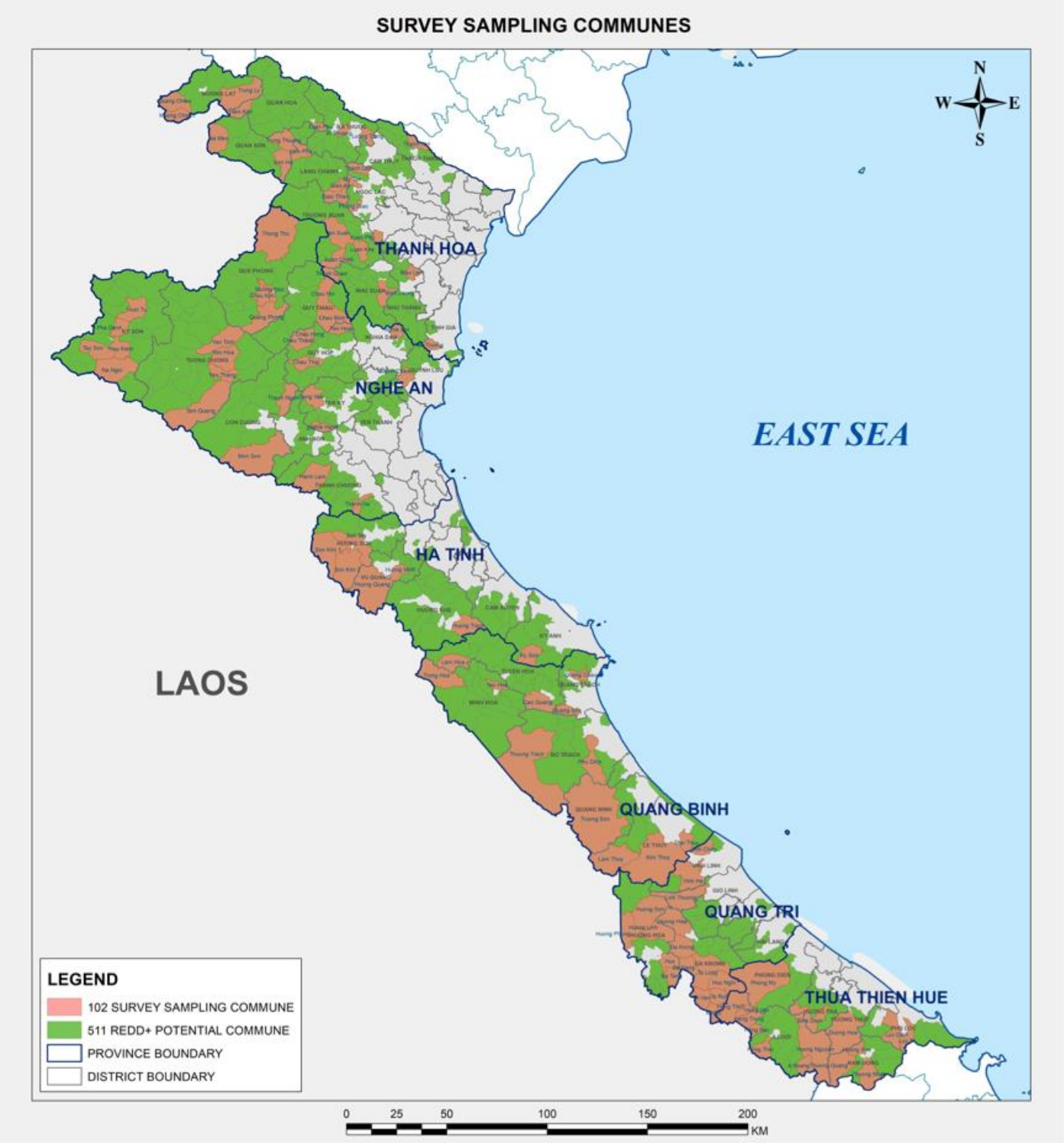
Table 5.3 Specific issues raised during different consultations with communes and village communities

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
MDRI Survey Opinion Section 5 table n=3,060 households See Map 5.1 for the location of the survey communes		
	The prevalence of illegal loggers has increased	25%
	Illegal logging has been putting a check	64%
	Income generated from forestry and forest related sources has become less reliable;	64%
	There has been increased competition from outsiders in the collection of forest products	27%
	Allowances received for forest management work are too small	41%
	The area of production forestland assigned to households is insufficient	74%
	The forests are very important “to me”	98%
	Entities believed to be most capable of managing forests	Households/ communities 54% (highest score)
SUF PFMB	Encroachment/ collection of NTFPs	

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

Summary of issues	Notes
Impacts of natural disasters, storms/ flooding	National planning and disasters awareness planning issue can really be addressed in the ER-P
Lack of production land shifting cultivation, land tenure issues (FLA and re-allocation issues), livelihood issues (poverty alleviation)	Issues included in the PRAPs
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 PRAP and need to be raised in the PLRs, ministries
Illegal logging	Addressed in the PRAP activities
Over exploitation of forest/ NTFPs	Addressed in the PRAP activities

Figure 5.1 Map showing the quantitative survey commune sites



6 Operational and financial planning

6.1 Institutional and implementation arrangements for the ER-P area

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[97]. 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 Viet Nam. Figure 6.1 below shows a summary organization chart and summary responsibilities.
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[98] and is the national focal point to implement the UNFCCC and the Kyoto Protocol[99]. 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

[97] 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.

[98] 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 Viet Nam is spread over many ministries and implementation responsibility is often devolved to provincial and district levels

[99] Viet Nam submitted its First National Communication to the UNFCCC in 2003 and its Second National Communication in 2010. In December 2014, Viet Nam submitted its Initial Biennial Updated Report (BUR1) to the UNFCCC. According to the BUR1, as of June 2014, Viet Nam had 253 Clean Development Mechanism (CDM) projects and over 10m Certified Emissions Reductions (CERs) were issued As of June 2015, Viet Nam had 254 Clean Development Mechanism (CDM) projects accredited and registered by the CDM Executive Board (EB). Viet Nam 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 Viet Nam, which is ranked eleventh in the world.

Ministry or management entity	Main responsibilities
	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 Viet Nam's strategies and development plans. MPI, with international support, has undertaken a study into low-carbon, climate-resilient development in Viet Nam 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 (MOST); Ministry of Foreign Affairs (MOFA); National Ethnic Committee (CEMA).
Viet Nam 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.
Viet Nam 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 Viet Nam. 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

Ministry or management entity	Main responsibilities
	the program and part of this work involves the work of the sub-technical working group[100] (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

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

6.1.1 *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: (i) organizing counterpart funds (for the components and activities carried out by the provinces); (ii) organizing the management and implementation staff structure in accordance with the decisions of PPCs; (iii) effectively managing and using ODA funds, counterpart funds; (iv) preparing and submitting to the PPC the annual program implementation plans; (v) 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; (vi) 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, Dept, 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 Provincial Forest Development and Protection Fund (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 Programme phase 2 PPMU in the case of Ha Tinh.

6.1.2 *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.

6.1.3 *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.

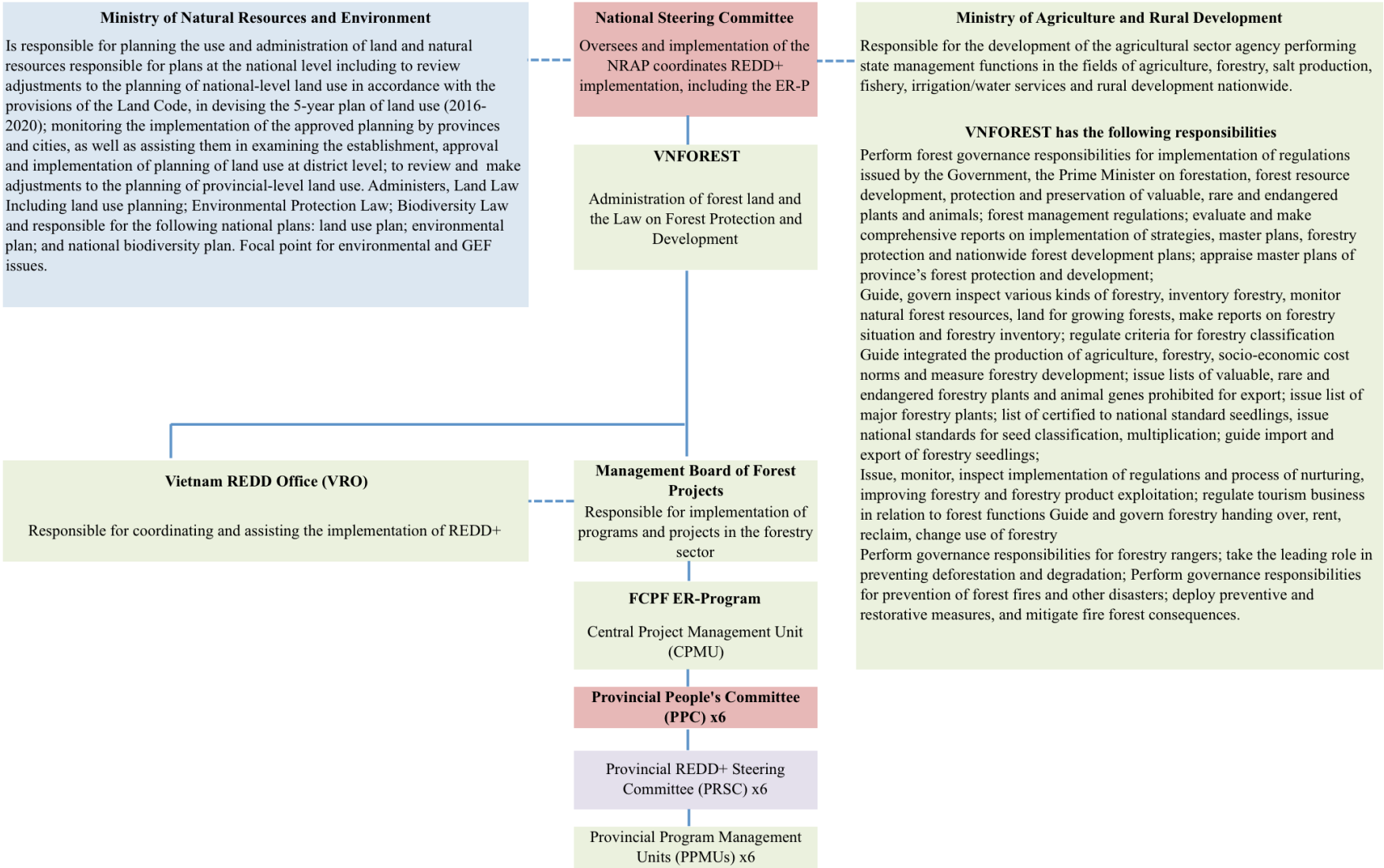
The CPMU at central level will deal with the cross-cutting issues, and facilitates the coordination between the different ministries, departments, general departments under MARD, MONRE and MPI to enhance the synergy and the unified direction from the central level to the grassroots level. CPMU, under 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.

Figure 6.1 Organisation structure for implementation of the ER-P



6.1.4 *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.

6.1.5 *Department of Natural Resources and Environment*

The Department of Natural Resources and Environment (DONRE) is the provincial focal agency for land use, natural resources, and climate change related projects and programmes in charge of the Land Use Master Plan (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.

6.1.6 *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 Viet Nam 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.

6.1.7 Private sector involvement

The private sector in Viet Nam 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[101] 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 thousand ha focusing on productivity and profitability in the context of environmental and social sustainability. Results were encouraging with average financial returns at around 15 percent for smallholder plantations.

6.2 ER Program Budget

For the identification of the financing needs we assume the total project costs (total uses) as presented in Table 6.1 below shows the financing needs of the ER-program over a period of 10 years external financing needs are required in year 1 (US$ 4.1 million); in year 2 (US$ 12.7 million) and in year 3 (US$ 6.6 million) and in year 4 (US$ 18.3 million) so currently this would be expected to be a gap of between US$ 42 million, provided that the CF payment assumptions are validated. From year 5 onwards the ER-Program should not require additional external sources of finance and will be financially self-sufficient. The cost per year for the investments in the plantations in the various entities[102] is shown in Annex 3 Section 4.

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.

6.2.1 Sources of finance

Synergy would be expected with the proposed World Bank Coastal Forest Project 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.

[101] 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.

[102] The costs are based on detailed 1ha models for each plantation model.

The MOF and MARD have agreed for the provision for the VBSP to continue the revolving fund credit mechanism established under the FSDP to continue until 2036 and this is pivotal in scaling-up of smallholder plantation forest investment within and beyond the FSDP provinces, the scope[103] is for lending for six provinces: Thanh Hoa, Nghe An, Thua Thien Hue, Quang Nam, Quang Ngai and Binh Dinh and to prepare conditions for 2016 to extend the lending scope to FCPF program provinces (this would include Ha Thinh, Quang Binh and Quang Tri. VBSP's main responsibility would be managing and disbursement of the remaining revolving fund of the FSDP project (but without technical assistance from the FSDP project implementation unit and any technical support would come from the ER-P), informing the lending plan for the revolving fund from the FSDP project annually for the MBFPs and to take the lead to coordinate with relevant units to guide the farmers to prepare the Request for Borrowing and Business Plans, based on the proposed forest planting models of MARD for each period, and in the Credit Manual in Decision 247/QD-NHCS dated January 25, 2013 of Director General of VBSP (this would need to be updated in some parts). MARD, MONRE and VBSP are reviewing the policies, plans, priorities and procedures for extension of the revolving fund and scaling-up the smallholder plantation forest investment in the future. The critical links between LURCs, plantation design, VBSP credit, access to quality planting materials, maintenance and protection, provision of extension services, technical training and access to markets are fundamental to smallholder plantation forest success and need to continue for scaling-up to new smallholder plantation forest investors in the future[104]. In similarity with the FSDP approach, it is proposed that the eligible producers would be able to take out loans for forestry plantations with the VBSP, which is funded through to 2036 and repay the loans at harvest time. This would ensure that investment in ER enhancement and transformation activities would be largely self-financing and sustainable through a reimbursable funding mechanism and as noted in the economic and financial analysis from year 5 onwards the Program would not require additional external sources of finance and would be financially self-sufficient.

Another potential project with which synergy would be expected to be developed is a proposed KfW 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.

Further support may be forthcoming from the Government of Norway which is contributing to the UNREDD Programme which also operates in Ha Tinh.

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.

Building on and taking the example of the FSDP operation, it is expected that eligible timber producers would be able to take out loans for forestry plantations from the VBSP, which is funded through to 2036 and repay these 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.

[103] Letter from Management Board of Forestry Projects 6612/BNN-VP, August 14, 2015.

[104] FSDP project documents 2015 and FSDP ICR 2016.

6.2.2 *Smallholder and SFC initiatives within the ER-P*

The Ministry of Finance (MOF) and MARD have agreed for the provision for the VBSP to continue the revolving fund credit mechanism established under the FSDP to continue until 2036 and this is pivotal in scaling-up of smallholder plantation forest investment within and beyond the FSDP provinces.

The scope[105] is for lending for six provinces: Thanh Hoa, Nghe An, Thua Thien Hue, Quang Nam, Quang Ngai and Binh Dinh and to prepare conditions for 2016 to extend the lending scope to FCPF program provinces (this would include Ha Thinh, Quang Binh and Quang Tri, (This is discussed further in Section 6). The Management Board of Forestry Projects (MBFPs) and VBSP[106] will coordinate with and guide the smallholder farmers and SFCs to prepare the Request for Borrowing and Business Plans, based on the proposed forest planting models of MARD.

The policies, and procedures for extension of the revolving fund and scaling-up the smallholder plantation forest investment are under review by MARD, MONRE and VBSP. The critical links that are fundamental to smallholder plantation forest success remain LURCs, plantation design, VBSP credit, access to quality planting materials, maintenance and protection, provision of extension services, technical training and access to markets [107].

[105] Letter from Management Board of Forestry Projects 6612/BNN-VP, August 14, 2015.
[106] Following the Credit Manual in Decision 247/QD-NHCS dated January 25, 2013 of Director General of VBSP
[107] FSDP project documents 2015 and FSDP ICR 2016.

Table 6.1 Financing needs of the ER-Program (US$)

Years	1	2	3	4	5	6	7	8	9	10	Total 8 yr	Total 10 Y.
Total project costs	10,359,170	27,524,827	47,022,114	62,744,549	78,570,859	85,370,357	87,386,885	87,386,885	87,386,885	87,386,885	112,615,137	120,265,137
Total project financing sources (from provincial budget, SFC budget, forest product revenues and contracted ERs @ USD 5 per tCO_2	6,232,100	14,831,013	40,402,433	44,389,876	98,683,880	89,446,291	112,145,878	183,677,599	143,752,649	188,813,540	180,848,920	188,813,540
Total ER-program Financing needs	-4,127,070	-12,693,815	-6,619,682	-18,354,673	20,113,020	4,075,933	24,758,994	96,290,715	56,365,764	101,426,655	68,233,784	68,548,403

6.2.3 *Projects and programs that are expected to make contributions to the implementation of REDD+ in the ER-P region*

Programs and projects that would be expected to make contributions to the forest sector with the ER-P region include:

- Training and Demonstration Centre for sustainable forestry management financed by the German Ministry for Agriculture and Food Security (BMEL) Quang Binh Truong Son SFC;
- Viet Nam 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; and
- 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:
    - FLA: 2,500 ha
    - Demarcation and benchmarking: 100km;
    - Forest protection: 160,000 ha including community-based forest patrolling;
    - Natural forest regeneration: 700 ha with (525 ha without supplementary planting, and 175 ha with supplementary planting);
    - Forest enrichment: 780 ha;
    - Reforestation for protection: 1,400 ha;
    - Reforestation for production: 250 ha; and
    - NTFP planting: 2,000 ha.
- WWF Carbie Phase 2 is under consideration for implementation and may include activities in Thua Thien Hue and Quang Tri;
- GIZ - Programme on Conservation and Sustainable Use of Forest Biodiversity and Ecosystem Services in ha Tinh and Quang Binh 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). 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;

- In addition there is provincial and state funding derived from PFES, Programs 30a, 135 and the NRDP etc.

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	Viet Nam 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 in Table 7.2 and 7.3 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	This carbon pool is not significant because of the poor forest quality. 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	Conservative. IPCC 2006 (Ch. 2, Section 2.3.3.1) notes that the carbon change estimation is applicable only to Tier 3 method for estimating the changes of inorganic soil carbon. Also 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 Viet Nam's emissions. Non-CO_2 emissions are not significant in the proposed project areas and therefore it is not selected.

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[108].

However, the newly adopted requirement of the Methodological Framework for reference period that requires the reference period is end date should be no later than 2 years before the TAP (i.e. 2016-2=2014), so 2000-2010 technically meets the criteria using existing data. If a later date is advised (which may be good given the high rate of change), it should be no later than 2014.

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[109].

Given the new requirements of the Methodological Framework, it is proposed that Viet Nam will update the reference period. It is planned that the updated reference period will be from 2005 – 2015. To develop a reference level for such period, the generation of 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. Therefore, the use of reference period of 2000 – 2010 for reference development can be considered as a temporary period.

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 Viet Nam, follows the definitions provided under Circular 34 (2009)[110]. This definition is in line with the definition of forests used for the national GHG inventory[111]. 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:

1. 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

[108] Forest inventories take multiple years we assume that time 1 = mid 2000 and time 2 – mid 2010, that is 10 years.
[109] The final maps and data is expected to be published in early 2017.
[110] Issued by Ministry of Agriculture and Rural Development in 2009.
[111] MONRE, 2014. First Biannual Updated Report (BUR) for 2010.

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.

2. Having a minimum tree cover of 10% for trees that constitute the major component of the forest.

3. 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[112]; the 2012 JICA (2012)[113] 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.

[112] Karsten Raae et al., 2010. Technical Assistance in the Development of the National REDD Programme 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 was 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.

[113] 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.

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
5	Plantation	PLA	Forest
6	Non-forest lands	NOF	Non-forest

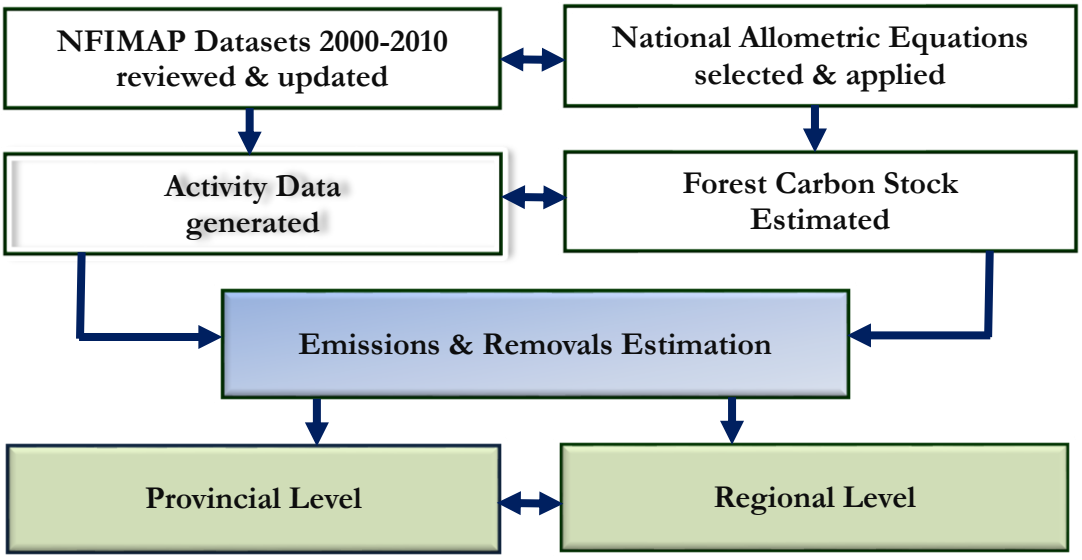
8.3 Average annual historical emissions over the Reference Period

8.3.1 Description of the method used for calculating the average annual historical emissions over the reference period

Viet Nam 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 2 Section 6 – Report on the Development of the Forest Reference Level for the NCC Region of Viet Nam.

Figure 8.1 Approach of reference level construction



8.3.2 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 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

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):	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 bellows: • ***Deforestation***: The activity of conversion of forests to non-forest land, as identified following the NFIMAP[114] and updates[115]. Where a series of activities including deforestation may have occurred within a single cycle of the National Forest Inventory (NFI). • ***Forest degradation***: An 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 a**ctivity** 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;
Explanation for which sources or sinks the parameter is used (e.g deforestation or forest degradation):	• 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.
Data unit (e.g. ha/yr):	ha/year

[114] Including both plot measurements and remotely sensed information.

[115] 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.

<table>
<tr><td>Value for the parameter:</td><td>
<table>
<tr><th>Parameters</th><th>2000-2005</th><th>2005-2010</th><th>Average 2000-10 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>141,882</td><td>130,944</td><td>27,283</td></tr>
<tr><td>Reforestation not adjusted)</td><td>352,809</td><td>397,008</td><td>74,982</td></tr>
<tr><td>Forest enhancement</td><td>50,068</td><td>90,420</td><td>14,049</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, Viet Nam 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 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 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 2 Section 1).</td></tr>
<tr><td>Spatial level (local, regional, national or international):</td><td>Provincial and regional (NCC)</td></tr>
<tr><td>Discussion of key uncertainties for this parameter:</td><td>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.</td></tr>
<tr><td>Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:</td><td>Since the precision is not applicable, the accuracy assessment is conducted. A total of 539 points are sampled and checked for analysis for 6 mentioned land use categories for 2000 – 2010. Olofsson's Method[116] 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. For details see Section 12 and AD report (Annex 2 Section 1).</td></tr>
</table>

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

8.3.3 Development of the Emission Factors

<table>
<tr><td>Description of the parameter including the forest class if applicable:</td><td>Above Ground Biomass (AGB) is estimated using national allometric equations and plot measurement data (DBH) 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[117]. 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 2 Section 2)</td></tr>
<tr><td>Data unit (e.g. t CO_2/ha):</td><td>tCO_2/ha</td></tr>
<tr><td>Value for the parameter:</td><td>Estimated carbon stock for land uses and forests are as follows:
<table>
<tr><th>Land use and forest</th><th>Carbon stock (tCO_2e/ha)</th><th>STDEV (tCO_2e/ha)</th><th>SE, 95% cl (%)</th></tr>
<tr><td>1. EBF-R</td><td>543.5</td><td>240.6</td><td>8.2</td></tr>
<tr><td>2. EBF-M</td><td>264.9</td><td>91.8</td><td>4.3</td></tr>
<tr><td>3. EBF-P</td><td>115.5</td><td>89.2</td><td>7.3</td></tr>
<tr><td>4. OFO</td><td>82.9</td><td>91.6</td><td>20.8</td></tr>
<tr><td>5. PLA</td><td>89.0</td><td>74.5</td><td>24.3</td></tr>
<tr><td>6. NOF</td><td>0</td><td>na</td><td>0</td></tr>
</table></td></tr>
<tr><td>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:</td><td>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[118] 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 2 Section 5.)</td></tr>
</table>

[117] Table 4.4. of IPCC 2006. AGB of forests values in Vietnam are less than 125 tones ha^{-1}.

[118] 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).

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 22 – 34%. Details see Section 12 and Annex 2 Section 2 EF Report development.

8.3.4 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 (see Table 8.3):

Table 8.3 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
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[119].

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:

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

Where: C*i* 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:

[119] 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.

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

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 or RF (tCO_2e/ha) = ((*Ci – Cj*)/*Ai* x 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 C*i* > C*j*, 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 fellows:

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

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,).

8.3.5 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[120].

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 8.4)[121].

Table 8.4 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	10,354,543	7,714,860	2,872,923	3,987,774	5,087,363	5,499,207
2. Forest degradation	5,173,448	8,203,984	5,366,614	17,057,482	8,045,606	6,657,369
3. Reforestation	-16,155,817	-20,692,028	-9,566,485	-10,025,874	-9,805,962	-10,306,665
4. Forest restoration	-3,353,362	-7,069,262	-1,128,805	-3,401,221	-3,234,443	-2,978,813
5. Total emissions	15,527,991	15,918,844	8,239,537	21,045,256	13,132,969	12,156,576
6. Total removals	-19,509,179	-27,761,289	-10,695,289	-13,427,095	-13,040,405	-13,285,479
7. Net emissions	-3,981,188	-11,842,445	-2,455,752	7,618,161	92,564	-1,128,903
8. Average annual emissions	1,552,799	1,591,884	823,954	2,104,526	1,313,297	1,215,658
9. Average annual removals	-1,905,918	-2,776,129	-1,069,529	-1,342,709	-1,304,040	-1,328,548

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. The average annual emissions and removals is calculated for reference period (see Table 8.6)[122].

[120] The detailed calculations are available in a separate spread sheet.

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

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

Table 8.5 Estimation of emissions and removal for the NCC in 2000 – 2010

Activities	Emissions (+)/Removal (-) for 2000-2005 (tCO_2e)	Emissions (+)/Removal (-) for 2000-2005 (tCO_2e)	Emissions (+)/Removals (-) for 2000-2010 (tCO_2e)	Average annual emissions/Removals (tCO_2e) for reference period (2000 – 2010)
1. Deforestation	20,982,057	14,534,612	35,516,669	3,551,667
2. Forest degradation	28,157,613	22,346,890	50,504,503	5,050,450
3. Reforestation	-36,003,733	-40,549,097	-76,552,830	-7,655,283
4. Forest restoration	-7,370,632	-13,795,261	-21,165,893	-2,116,589
5. Total emissions	**49,139,670**	**36,881,502**	**86,021,172**	**8,602,117**
6. Total removals	**-43,374,365**	**-54,344,358**	**-97,718,724**	**-9,771,872**
7. Net emissions	5,765,305	-17,462,856	-11,697,551	-1,169,755

8.4 Upward or downward adjustments to the average annual historical emissions over the Reference Period

Forest cover of Viet Nam was reduced from 43% in 1943 to 28% by 1990. Between this period, about 5 Mha of mainly natural forest was lost (Phuong et al 2012). Understanding the importance of forests and their environmental protection function, the Government of Viet Nam invested in a number of nation-wide reforestation, restoration and forest protection programs from 1990 with partial financial support from the programs of Official Development Assistance (ODA). Of these, the most notable was the Program 661 or "Five Million Hectare Reforestation Program" (1998-2010), which made significant contributions to the increase of Viet Nam's forest cover. During the period 1998 – 2010, the program planted 2.4 Mha of plantations, restoring 1.7 Mha of natural forests and 0.9 Mha of industrial crops and fruit trees nation-wide (GoV, 2011). Through the implementation of this program, the forest cover for the NCC increased from 32% in 1990 to about 54% by 2010 (Hung et al 2015).

Following the end of the international ODA financial support to the 661 Program, it was discontinued after 2010 as the national budget did not support the financing needed to continue the program. The 661 Program is therefore a one -time specific program outside of the long-term reforestation activities considered to be business as usual funded through the government budget. We therefore believe that the increases in plantation area associated explicitly with the 661 Program during the Reference Period should be removed from the Reference Level calculations, since otherwise the Reference Level will implicitly assume a continuation of a National program that is in fact no longer in existence.

Failure to adjust the RL for the 661 Program will in effect penalize Vietnam by incorrectly crediting some of the future FCPF program increases to a non-existent 'Business as Usual' domestic program. Considering the specific circumstances of the 661 Program, the reforestation and forest restoration area of the 661 Program 1998 – 2010, (the main impact of the Program was from 2000-2010) has been removed from the estimates of plantation area changes used to derive the reference level.

The statistical data on the 661 Program reported by the provinces has been used to quantify the reforestation conducted under the 661 Program. The report from the provinces indicate that the total plantation area established by the 661 Program for 2000 – 2010 is 376,215 ha (see Table 8.6 below).

Table 8.6 Area of forest (ha) established by the 661 Program in NCC provinces 2000-2010

Year	Thanh Hoa	Nghe An	Ha Tinh	Quang Binh	Quang Tri	Thua Thien Hue	Total
2000	4,000	3,054	5,127	4,500	4,988	3,951	25,621
2001	3,900	3,068	5,392	4,500	5,304	2,708	24,872
2002	4,200	5,392	4,013	4,600	4,825	3,665	26,695
2003	4,500	7,140	4,561	5,000	4,354	3,105	28,660
2004	3,000	6,895	7,185	5,594	5,312	3,613	31,599
2005	5,000	7,208	6,065	3,837	3,743	4,173	30,026
2006	9,500	6,804	7,694	13,801	2,779	4,598	45,175
2007	9,500	5,476	6,090	14,011	3,002	4,332	42,411
2008	9,500	7,079	9,517	3,835	2,946	4,138	37,014
2009	11,000	9,254	6,410	3,287	3,420	5,726	39,097
2010	13,378	12,064	9,191	1,085	4,895	4,433	45,045
Total forest area of 661 for 2000-2010 (ha)							**376,215**

(source: statistics of provincial 661 project management unit)

As mentioned above, it is proposed to exclude removals associated with the 661 Program from the removals for reference period. Based on statistical data on 661 reforestation areas and the assessment report on success rate of 661 Program (VAFS, 2016) , it indicated that the success rate of 87% for the 661 Program plantations is applied downward judgment of removal to the reference level as the impact of the 661 Program in the NCC region. The proposed removal for downward updating of the reference removal is shown in Table 8.7.

Table 8.7 Estimated removals due to the 661 Program

Year	Area counted, 87% survival rate of total area (ha)	Carbon stock (tCO_2e/ha)	Removal (tCO_2e)
2000	22,290	88.97	-1,983,099
2001	21,639	88.97	-1,925,159
2002	23,224	88.97	-2,066,228
2003	24,934	88.97	-2,218,346
2004	27,491	88.97	-2,445,846
2005	26,123	88.97	-2,324,075
2006	39,302	88.97	-3,496,639
2007	36,897	88.97	-3,282,654
2008	32,202	88.97	-2,864,956
2009	34,014	88.97	-3,026,182
2010	39,190	88.97	-3,486,601
Total	**327,307**		**-29,119,786**

(Based on assessment (VAFS, 2016) that indicates 87% of success rate for 661 Program)

8.5 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 8.8 below summarizes the estimated reference level.

Table 8.8 The estimated ER Program Reference level

ERPA term year *t*	Average annual historical emissions from deforestation over the Reference Period (tCO_{2-e}/yr)	If applicable, average annual historical emissions from forest degradation over the Reference Period (tCO_{2-e}/yr)	If applicable, average annual historical removals by sinks over the Reference Period (tCO_{2-e}/yr)	Adjustment, if applicable (removal deduction from 661 Program over reference period, tCO_{2-e}/yr)	Reference level (tCO_{2-e}/yr)	
					Emissions	Removals (with adjustment)
2017	3,551,667	5,050,450	-9,771,874	-2,911,979	8,602,117	-6,859,894
2018	3,551,667	5,050,450	-9,771,874	-2,911,979	8,602,117	-6,859,894
2019	3,551,667	5,050,450	-9,771,874	-2,911,979	8,602,117	-6,859,894
2020	3,551,667	5,050,450	-9,771,874	-2,911,979	8,602,117	-6,859,894
2021	3,551,667	5,050,450	-9,771,874	-2,911,979	8,602,117	-6,859,894
2022	3,551,667	5,050,450	-9,771,874	-2,911,979	8,602,117	-6,859,894
2023	3,551,667	5,050,450	-9,771,874	-2,911,979	8,602,117	-6,859,894
2024	3,551,667	5,050,450	-9,771,874	-2,911,979	8,602,117	-6,859,894
2025	3,551,667	5,050,450	-9,771,874	-2,911,979	8,602,117	-6,859,894
2026	3,551,667	5,050,450	-9,771,874	-2,911,979	8,602,117	-6,859,894
Total	**35,516,669**	**50,504,503**	**-97,718,724**	**-29,119,786**	**86,021,172**	**-68,598,937**

8.6 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 Viet Nam'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, and use of NFIMAP dataset etc. The construction of Viet Nam'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 Viet Nam's Reference Level for the UNFCCC. The difference between such Reference Levels is the reference period. The Viet Nam'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, particulalry the Initial Biannual Updated Report (BUR) of Viet Nam for 2010. To date, Viet Nam 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 interm of forest definition, carbon pools and gases. However, the AD used in the BUR is mainly based on national statistics. Viet Nam is in the porcess 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 gerenerated from remote sensing information and allometric equations for biomass estimation.

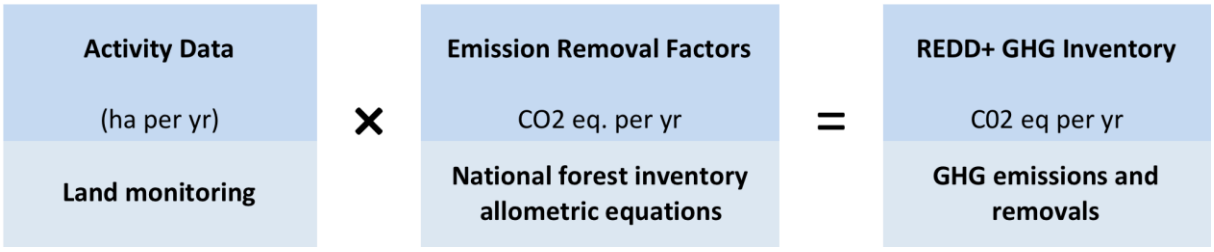
9 Approach for measurement, monitoring and reporting

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 with the emission/removal factors (Figure 9.1). [123]

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.

a) Generating forest cover maps

Currently, the National Forest Inventory and Statistics (NFIS) Project has been carrying out in Viet Nam since 2011. This project will generate forest cover maps (FCMs) at 1:10,000 for Viet Nam 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

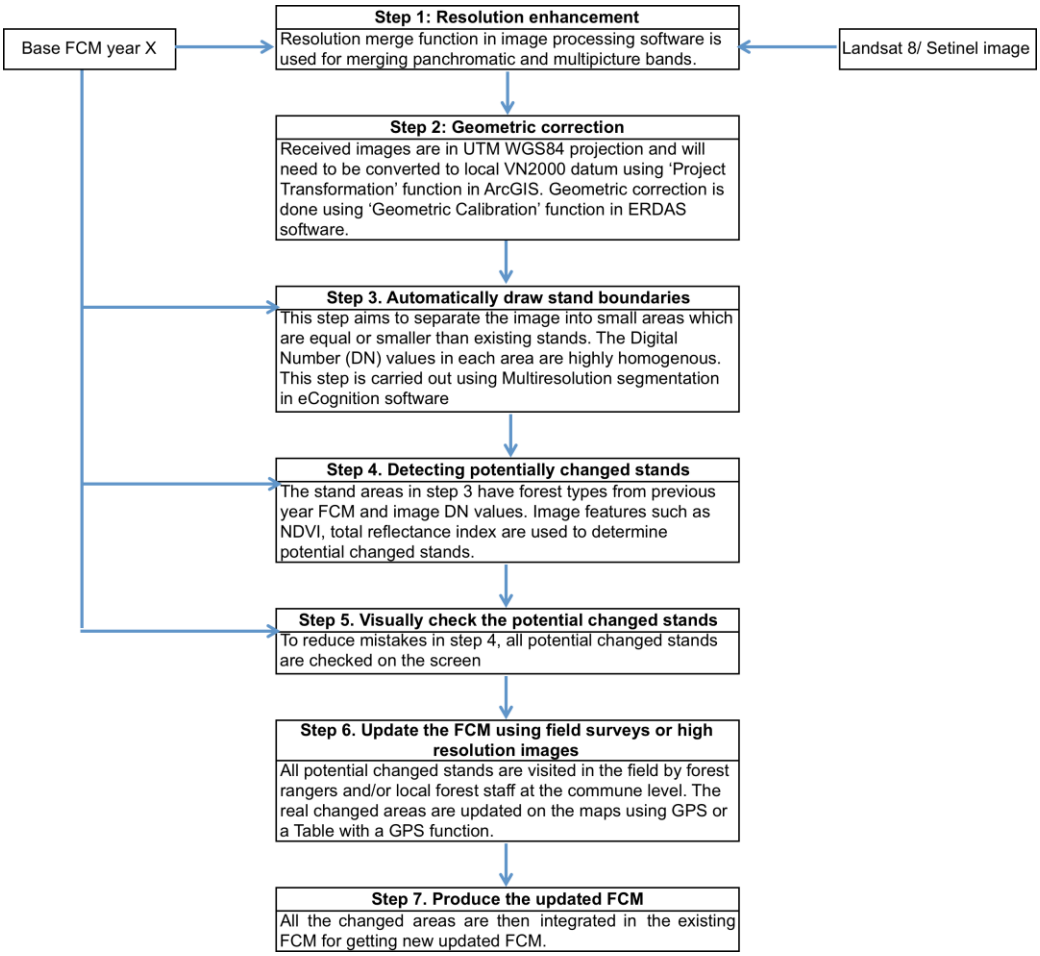
[123] The forest definitions, stratifications, REDD+ activities, carbon pools and gases to be monitored, change matrix are all standardised and follow those already described in Section 8.

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

The “Annual Monitoring of Forest and Forestry Land” Program need to update the FCMs annually and report from the commune through the district and province up to the national level by the end of each year. Although this still has some limitations, the Program is planned to be improved to generate the AD for the MMR system with sufficient accuracy. One of the main drawbacks of the “Annual Monitoring of Forest and Forestry Land” Program is that it does not use remote sensing imagery for updating the FCMs. The improved approach under the MMR of the ER-P is proposed as follows: (i) using medium resolution remote sensing imagery to identify the potential forest change areas; (ii) using high resolution remote sensing imagery together with ground surveys to update the FCMs at identified areas.

The following Figure 9.2 summarises the processing steps applying Approach 3 for updating the FCM annually:

Figure 9.2 Approach for the annual update of the FCM



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[124].

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.

b) Generating a forest and land cover change map and matrix

By using the above procedure, annual FCMs with almost similar quality be generated for each province in the NCC region from 2015. 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+1 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 map. This matrix contains basic information for estimating emissions and removals for each of the REDD+ activities.

c) 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.[125] 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 stable

[124] 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 image characters 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.
[125] Available at http://www.openforis.org/tools/collect-earth.html.

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)[126] and Olofsson et al. (2014)[127] 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

a) Sampling design

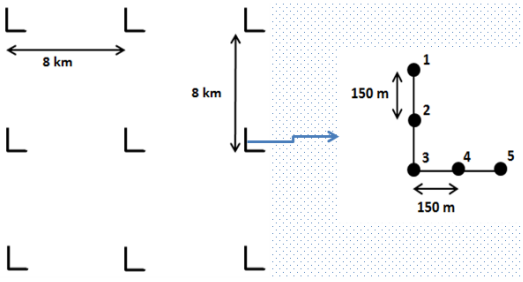
After the completion of Cycle IV, of NFIMAP, Viet Nam received support from FAO-Finland through the "Support to National Assessment and Long-term Monitoring of the Forest and Trees Resources in Viet Nam (NFA)" Project to improve the sampling design of the NFIMAP to be implemented in the 2016-2020 and subsequent cycles. The NFA Project has successfully developed an improved sample plot system that 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 cycle. If this improved sample plot system is approved, it will also function as part of the national MRV system for REDD+. Therefore, for the MRV system in the NCC region be consistent with the emerging national MRV system, the sample plot system proposed by the NFA Project is selected for generating the EFs/RFs for the MRV system in the NCC region.

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.

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.

[126] 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.
[127] 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.

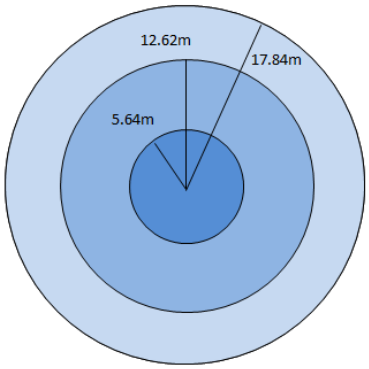
Table 9.2 The number of clusters and plots by provinces

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**

b) 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

c) 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.

a) Uncertainty assessment

The same method of 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.

b) Data and parameters to be measured

Parameter:	**ADij** ($1 \le i \le 6$; $1 \le j \le 6$)
Description:	Area of conversion from land class *i* in year x to land class j in year x+1
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	Provincial forest and land cover map year x for the six provinces in the NCC region. Provincial forest and land cover map year x+1 for the six provinces in the NCC region. Intersect provincial forest cover maps year x with provincial forest cover maps x+1 to generate forest and land cover change maps.

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.	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.
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+1 are based on ground observations of 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 drawing 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 comment:	

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:	tCO2e/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	The quality assurance/quality control protocol for field

Control procedures to be applied:	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.
Any comment:	

9.2 Organizational structure for measurement, monitoring and reporting

9.2.1 Organizational structure, responsibilities and competencies

Responsibility of the relevant Ministries, agencies and localities are as follows:

2) Viet Nam 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) Programme 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

↓

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 form central specialized agencies
The central specialized agencies such as Viet Nam 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

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[128] either:

(i) Directly, as forest owners (individual households or collectively as village communities under community forest management); or

(ii) 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:

(i) Identifying and monitoring the key drivers of forest cover change, forest degradation, and carbon stock enhancement across the landscape;

(ii) Assisting in field data collection for estimating forest carbon stocks and EFs/RFs;

(iii) Assisting in accuracy assessments of (spatial and non-spatial) activity data generated for REDD+, for verifying or validating remote sensing products; and

(iv) 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.

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

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

- 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 Viet Nam, 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: (i) the databases for storing quantitative and qualitative data collected and managed by agencies inside and outside of the FORMIS system; (ii) the platform for providing capacity for integration of existing and new data and applications, security, exposing data and business functionalities in standardized manners; and (iii) 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 Viet Nam 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 improved Annual Monitoring of Forest and Forestry Land Programme, which uses NFIS results as a base, 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, Viet Nam's national forest monitoring system consists of three elements:

1) National Forest Inventory, Monitoring and Assessment Programme (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 Programme 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, Viet Nam National Forest University and Viet Nam Academy of Forest Sciences.

3) Annual Forest and Forestry Land Monitoring and Reporting Programme

This Programme 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 Programme 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. Each province will operationalize a revised Annual Monitoring of Forest and Forestry Land Program 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 quality. 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

10.1.1 Domestic displacement risks

In the context of Viet Nam, total displacement can be separated into policy-induced leakage and demand-driven displacement. [129] The potential risks of domestic displacement of emissions from the proposed ER Program activities are, linked to the drivers, as outlined in Section 4.1 and summarised below in Table 10.1, most of the potential displacement in the NCC area are characterised as low and slow. Residual domestic displacement will be measured and fully accounted for by a robust National Forest Monitoring System (NFMS) currently under development.

10.1.2 International displacement risks

Over the past 15 years there has been rapid growth of markets in many developing and emerging economies. Most prominent among these has been China, which is now the world's largest importer and consumer of wood-based products[130]. Viet Nam has a relatively limited domestic production of high-quality raw timber materials, therefore its forest products industry imports 40–50% of its raw materials. It is estimated that in 2010 demand from the wooden furniture industry totalled about 6.4 million m^3 (roundwood equivalent (RWE) volume), of which around 1.6 million m^3 was domestically produced.

Internationally, Viet Nam is classed as a wood processing country exporting and trading mainly with China[131], Japan, South Korea, USA and EU, and Viet Nam is a therefore a transit country for a considerable proportion of the reported sawwood exports. Timber producer countries trading with Viet Nam include Indonesia, Lao and Cambodia.

Viet Nam's main forest sector related exports are finished furniture, large volumes woodchips and paper. The main export markets for furniture are the US, Japan and the EU; China is the largest market for woodchips from Viet Nam while the US and Taiwan are the largest markets for Vietnamese paper. The volume of other exports of several other timber-sector products, primarily plywood, sawwood and paper-sector products, predominantly woodchips have all grown rapidly and most are exported to China, Japan, South Korea and Taiwan.

Viet Nam's private sector and government have both demonstrated increasing awareness of developments in the US and EU markets, the latter through the introduction of legislation on

[129] Policy related leakage occurs when an increase in displacement of wood extraction is due to a policy-induced reduction in domestic roundwood supply, with unchanged consumption of secondary processed (or value-added) wood products (SPWP) and exports. Demand driven leakage occurs when an increase in displacement abroad is due to an increase in domestic consumption and exports of SPWP that remains unmatched by a corresponding increase in domestic supply, assuming unchanged policies. Forest transition in Viet Nam and displacement of deforestation abroad, P Meyfroid and E F Lambin; Proceedings of the National Academy of Sciences of the US (PNAS) (2009) www.pnas/cgi/doi/10.1073/pnas.0904942106.

[130] Since 2000 China has emerged as the main processing hub for the world's forest sector and China's domestic consumption of wood-based products has grown enormously, in 2008 China's imports and exports of timber-sector products stood at 45 million m^3 and 44 million m^3 of roundwood equivalent (RWE) respectively, in 2013 imports had risen to 94 million m^3 but exports rose to just 53 million m^3.

[131] Data on trade between Viet Nam and China is reported to be inconsistent for many wood-based products. For example, since 2008 the export value of Viet Nam's sawnwood exports to China has exceeded the corresponding import value reported by China, while the import value of logs reported by China exceeded the corresponding export value reported by Viet Nam over the same period.

legal forest-product document requirements (see sub-section on legislative framework) and the former through growing demands for evidence of sustainable sourcing.

Strengthening systems for data collection and reporting and enabling cross-checking of information are important steps in helping to detect and clamp down on illegal trade. They are priorities not only for countries that have legislation prohibiting the trade in illegal timber, but also for those wishing to export to such markets – the former must be able to determine the legality of their own imports and/or distinguish them from domestically produced timber. This has an important issue in Viet Nam's VPA negotiations because its forest-sector trade is dominated by the export of products manufactured from imported raw materials.[132]

There has been a concerted effort to invest in chain-of-custody (CoC) certification among larger processing companies in Viet Nam, particularly in the furniture sector; as a result, the number of such certificates has grown rapidly in the last five years. A number of international agreements committing Viet Nam 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.

Growth in the production and export of certified products (as opposed to exports by certified companies) continues to be hampered by limited supplies of high-quality certified timber in the region and the high transport costs of sourcing raw material from other regions, as well as an unwillingness among corporate buyers in end-user markets to pay the additional costs associated with full certification.

In Viet Nam, only 46,000 hectares of forest were certified in 2012, (FAO) all of which were plantation forest. The country has set a national target of 1.8 million ha of certified forest by 2020 (Forest Trends).

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	Allocation of, and investment in, production forests, particularly for households and communities, provides stable alternative income to shifting cultivation; Some underutilised degraded and bare lands; market volatility of global commodity prices (particularly latex and cassava/ starch) possibility to displace rubber production to other regions if latex prices recover and rise; Planned conversion of forest to agriculture land also exists in other agro-ecological regions.
Unplanned forest conversion to agriculture (shifting cultivation)	Low	The differences in ecological conditions across agro-ecological regions limit displacement of conversion for agricultural purposes i.e. much of the unplanned conversion (outside of the NCC area has been in the areas where high value coffee and pepper crops are grown and coffee and pepper is not well suited to the NCC region); Allocation of, and investment in, production forests, particularly for households and communities, provides stable alternative income to shifting cultivation and market volatility of global commodity prices (particularly latex and

[132] Tackling illegal logging and Related Trade: What Progress and Where Next A Hoare Chatham House 2015.

Driver of deforestation or degradation	Risk of Displacement	Explanation/ justification of risk assessment
		cassava/ starch); PFES, with participatory forest monitoring, adopted to compensate forest owners and subcontracted local communities can provide an income supplementation; High income generating cash crops planting to avoid unplanned deforestation and forest degradation with sustainable agriculture.
Planned and unplanned natural forest conversion to planted forest	Low	Tightening of regulations on conversion of natural forests to other land uses; Systematic mapping and monitoring of biological diversity in both forest and non-forest ecosystems The area affected during 2000-2010 is not large (11,800 ha); A national logging ban (from 2014) covers most natural forests (exceptions are where the forest has an FSC or equivalent)
Planned and unplanned conversion related to infrastructure	Low	Planned conversion related to infrastructure also exist in other agro-ecological regions and is comparatively small overall and tends to be localised; Tightening regulations on conversion of natural forests to other land uses; Support local authority to prepare proper forest conversion plan for infrastructure development; Unplanned conversion related to infrastructure tends to be localised and dependent on the type of infrastructure but generally low and slow rates (but with hot spots).
Unsustainable legal and illegal selective logging for commercial and subsistence purposes	Low	Domestic forest law enforcement which has been improving[133],[134]; Law enforcement interventions adopted as model to inform improved national policies and practices; integration with FLEGT and operationalising VPA components adopted as strategic response to both domestic and international leakage; By certifying production forests in the Accounting Area, some supply can be maintained within the Accounting Area, reducing the risk of both domestic and international displacement; Illegal logging could be displaced to other parts of Viet Nam if proportional law enforcement efforts are not made;

[133] "There has been significant improvement in Viet Nam in the quality and openness of the national debate about illegal logging and forest governance during the review period of this assessment." The Chatham House 2014 assessment of Viet Nam's policies on international illegal logging and associated trade, show low country scores in many areas apart from forest law enforcement and the proportion of total trade in wood-based products estimated to be illegal is estimated to have declined for the period 2000–13 illegal imports into Viet Nam has declined from 22% to 18% .Tackling Illegal Logging and Related Trade: What Progress and Where Next A Hoare Chatham House 2015.

[134] A report from Chatham House has used media coverage as an insight proxy for levels of public awareness of illegal logging and related trade and media coverage has been steadily increasing. While such awareness may not always lead to action, it is important for bringing about change and is therefore a useful monitoring tool. An assessment of the media can also give an indication of the approaches being taken within a country to address the issue. See the Chatham House reference above.

Driver of deforestation or degradation	Risk of Displacement	Explanation/ justification of risk assessment
		The proposed ER Program is focused on sustainable development – through forestry-based livelihood support (through CFM and smallholder forestry), and, as such, will work to address the needs of communities in conjunction with enhanced forest protection responsibilities (through PFES); The proposed ER Program promotes alternative production sources for timber through allocation and certification of production forest in the context of a nationwide logging ban in natural forests;
International		
International displacement mainly Lao and Cambodia	Medium to Low decreasing over time	The proposed ER Program may create international Displacement, especially in Lao, which shares forest across the border with the NCC region. Illegal logging could be displaced to Lao or other neighbour countries if no change in international measures to address illegal timber supply taken. However, the risk of international Displacement is decreasing over time as Viet Nam and neighbouring countries join the Voluntary Partnership Agreement (VPA) with the European Union on the Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan. Bilateral negotiations with Viet Nam are under way to ensure Lao can meet Viet Nam's VPA requirements for imported timber; Anti-corruption agencies and civil-society monitors have proved they can contribute effectively to anti-corruption strategies – provided they are sufficiently resourced and are empowered.

Table note: Categorized as high, medium or low

10.2 ER Program design features to prevent and minimize potential displacement

10.2.1 Domestic design features

The Viet Nam's NRAP does not articulate any specific provisions for addressing risks of displacement, either domestically or internationally. Consequently, the design features to address the risk of displacement in the ER Program will serve as a major influence informing the operationalisation of the evolving NRAP which is being updated in 2016 and will be supported through capacity building in provinces and central level including MMR, work FLEGT and includes:

- Investing in forest governance, despite improvements in forest governance, gaps remain and reforms are set to continue;

- Legal frameworks are in place and are due to be up-dated in 2016/17 implementation remains patchy with unclear or contradictory laws and policies and mandate overlaps are still common; and
- Improvement to forest monitoring: Availability of information on the forest monitoring sector has will be supported under the ER-P.

- Law enforcement and training: Targeted strategies for law enforcement is required and customs officials at Viet Nam's major importing ports and border points are being given training on how to implement new policies, including timber import and export controls. The program (with other stakeholders) has held a number of workshops and plans more to involve the different law enforcement agencies[135].

- Forest Certification: For processing countries like Viet Nam, an important indicator of the degree and effectiveness of the response of the private sector to the problem of illegal logging is the extent of the uptake of voluntary legality verification and sustainability certification standards in the sector.

- Collaborative management approaches with the communes, communities and MBs and SFCs.

10.2.2 International aspects and collaboration with other projects and programs

The FCPF readiness program has been supporting on going work on the establishment of memorandums of understanding (MoUs) in place with Lao and Cambodia aimed at improving cooperation to combat illegal logging and work has been on going with the provinces which have border crossings in the ER-P (Quang Binh, Qung Tri and Nghe An) and similarly action is also supported through other projects including UN-REDD II in Ha Tinh which also has a border crossing; GIZ which 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[136] and the EU has been supporting the NGO-FLEGT Network.

a) Improvements in response to FLEGT, the Lacy Act and similar

The EU Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan, which arose out of this growing consensus, has framed the European approach to tackling illegal logging since 2003.[137] In parallel with European efforts, the US developed legislation prohibiting imports of illegal timber: in 2008 it amended the Lacey Act to this effect. Australia introduced similar legislation in 2012, in the form of the Illegal Logging Prohibition Act. The international approach for combating illegal logging is through FLEGT Action Plan and this was provided with further impetus for the US to amend the Lacey Act, which, in turn, helped shape the EU legislation. Private certification schemes have been aligning their systems with the requirements of the EUTR, Lacey Act and Australian legislation.

VPAs, for their part, have been used to initiate or reinforce national discussions and reform processes in partner countries, while stakeholders are involved VPA negotiations in various countries have exchanged experiences.

[135] Including Customs, Economic Police, Police and Forest Protection Department (national and provincial and also includes the CITES unit) and Forest Rangers of the Special Use Forest Management Boards etc.

[136] GIZ: Programme on Conservation and Sustainable Use of Forest Biodiversity and Ecosystem Services in Viet Nam; and SRD and the NGO-FLEGT network receives FLEGT funding from the EU.

[137] It set out a range of measures aimed at preventing illegal imports into Europe and increasing demand for legal imports and includes the elaboration of voluntary partnership agreements (VPAs), under which only timber licensed as legal (that is, with a FLEGT licence) can be imported into Europe from partner countries.

11 Reversals

11.1 Identification of risk of reversals

Reversal of GHG benefits could result from fire, disease, illegal logging, unplanned agricultural expansion (responding to global commodity price hikes), centrally planned infrastructure development, or climate change (particularly increased frequency and intensity of typhoons). Table 11.1 provides an assessment of the anthropogenic and natural risks of Reversals that might affect ERs during the term of the ERPA.

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 reposes to rising prices; Commodity (latex or starch) prices beyond the control of the ER Program; Prices currently low for latex, falling for starch and biofuel starch	Medium but localised	Livelihood improvement through production forestland allocation and development coupled with PFES contracts for natural forest protection;
		Consistent, revised and improved LUPs, but difficult to introduce as LUP under different ministry; Improved input to the SEDP land-use planning through the PRAP;
Infrastructure development Main risk by type	Medium but locally high in limited areas	
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; Improved cumulative impact assessments OMPs for SUF under threat from HPP Consistent donor policy (notably WB);
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
Small scale infrastructure includes roads, small HPPs water supplies multipurpose irrigation/ HEP schemes etc.	Medium but locally high in limited areas	Participatory land-use planning through PRAP and improved SEDP process Forestland allocation securing statutory tenure?
Illegal logging	Low overall impact, but can include selective logging of high	Key strategy of the proposed ER Program is strengthened enforcement Community based forest management Prevention-based enforcement;

Risk	Level of risk	Mitigation strategies
	value/ rare species	strengthened criminal justice response; intelligence-based enforcement; participatory forest monitoring
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 PRAP 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). Continue to monitor, task of MONRE with international collaboration e.g. CSIRO Australia.
Climate change is likely to affect acacia plantations – vulnerability is expected to be low until 2030 but could become medium in 2050 [138]		Continue to monitor conditions and likely impacts and identify plantations that are potentially at risk. Further research on planting material. Task of VAFS with international collaboration e.g. CSIRO Australia
Natural		
Typhoons Typhoons are normal part of life in the area and causes farmer to be risk averse, for example over with length of plantation rotations	Medium	As above -similar to mitigation measures under climate change; Domestic buffer see below; Possibility of insurance but not available as yet.
Fire historically a minor driver of DD; could increase with climate change	Low	Monitored by VNFORESTS; implementation of fire prevention measures and fire-fighting infrastructure (Viet Nam 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 Viet Nam However, there are about 1.1M ha of acacia, and low levels of pests and diseases problems are being reported so far, and include outbreaks of *ceratocystis sp.*[139] 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 diseases control such as improved pruning and timing of the pruning (avoiding the rainy season) disease found in areas with higher rainfall and longer term strategy to diversify spp. Breeding for disease resistant. Task of VAFS with international collaboration e.g. CSIRO Australia.

[138] Planting domains of key species in a changing climatic environment; T H Booth, T Jovanovic and C Harwood; 2014, CSIRO Australia.

[139] *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.

11.2 ER Program design features to prevent and mitigate reversals

The overall risk mitigation strategy is to negotiate trade-offs between ER, economic, environmental and social objective of land-use options through the participatory PRAP processes. The Table 11.1 above provides mitigations to the perceived potential risks. Viet Nam's equivalent of a national REDD+ strategy, the 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 operationalisation of the evolving NRAP with regards to reversals management mechanisms.

11.3 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 an CF 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 and will follow the Carbon Fund Methodological Framework Criterion 19 etc. 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 the Annex 1 Section 6 Table 6.1 and all risks are assed following the table guidelines.

11.4 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, and will be reported to the Carbon Fund within the timeline prescribed in the Carbon Fund Methodological Framework. A percentage 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. Viet Nam will participate in the Carbon Fund buffer option 2. 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.

12 Uncertainties of the calculation of emission reductions

12.1 Identification and assessment of sources of uncertainty

12.1.1 Uncertainty of Activity Data

a) 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.

b) 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 totalnumber 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 2 Section 1 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"
	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[140]

12.1.2 Uncertainty of Emission/Removals Factors (EF/RF)

a) 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.
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 2)
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.	Not applicable
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.	Not applicable

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

b) 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.

12.1.3 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:

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

Where: $U_1, U_2, U_3, \ldots Un$ is the percentage of uncertainty associated with each of the parameters;

$X_1, X_2, \ldots Xn$ is the value of each parameter; and

U total is percentage uncertainty in the sum of the parameters.

12.2 Quantification of uncertainty in reference level setting

12.2.1 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**					

12.2.2 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**

12.2.3 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 over 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	20,982,057	26%	14,534,612	26%	19%
2. Emissions caused by forest degradation	28,337,241	29%	22,581,591	29%	26%
3. Removals resulted from reforestation	-36,003,733	28%	-40,549,097	28%	20%
4. Removals resulted from forest restoration	-7,413,305	29%	-13,902,006	29%	22%

13 Calculation of the emission reductions

13.1 Ex-ante estimation of the emission reductions and removals enhancement

Ex-ante estimations of emission reduction and removal enhancement by the REDD+ interventions are based on the following: i) The emissions and removals from the reference period; ii) REDD+ action plans of the provinces; iii) Program on emission reduction in agriculture and forestry by 2020[141]; and iv) Consultation meetings with provinces. With effective implementation of interventions through the support of the ER Program and Viet Nam government, there is high potential to reduce emissions caused by deforestation and forest degradation and increase removals by reforestation and forest enhancement.

According to the presented scale of the REDD+ intervention (components 2 and 3) in section 4.3, the GHG emission reductions are quantified. In total the ER-P will result in 25 million tCO2 over a period of 8 years. ER due to avoided deforestation and forest degradation amount to 20.4 million, while carbon stock enhancement benefits amount to 4.6 million tCO2 over the ER-P implementation timeframe.

Considering a reversal buffer of 13% and an uncertainty buffer of 4% and the RL GHG emissions and removals, net ER amount to 20.75 million tCO2 over 8 years as shown in the Table). The RL include the RL adjustment of the 661 Program (as explained in Section 8). The detailed description of the models and all assumptions are presented in the Annex 2 Section 3). (See Table 13.1,).

[141]Decision 1775/QD-TTg of Prime Minister on emission targets for relevant sectors by 2020.

Table 13.1 Ex-ante estimation of the Emission Reductions Program (including the 661 Program)

ERPA term year t	Reference level (tCO2-e/yr)	Reference level annual GHG emissions (tCO2/yr)	Reference level GHG removals (tCO2/yr)	Estimation of expected emissions under the ER Program (tCO2-e/yr)	Estimation of expected removals (tCO2-e/yr)	Estimation of total expected emissions (incl. removals) under the ER Program (tCO2-e/yr)	Expected set-aside to reflect the level of uncertainty associated with the estimation of ERs during the Term of the ERPA (tCO2-e/yr)	Total Estimated Emission Reductions (tCO2-e/yr)	Total net ER-P GHG emisions reductions (tCO2-e/yr)	Total net carbon stock enhancement / removals (tCO2-e/yr)
2017	40,491	8,602,117	-8,561,627	8,602,117	-8,561,627	40,491	0	0	0	0
2018	40,491	8,602,117	-8,561,627	7,995,550	-8,689,483	-693,933	95,475	638,949	527,714	111,235
2019	40,491	8,602,117	-8,561,627	6,882,396	-8,923,091	-2,040,694	270,554	1,810,631	1,496,157	314,474
2020	40,491	8,602,117	-8,561,627	5,570,782	-9,200,095	-3,629,313	477,074	3,192,729	2,637,261	555,468
2021	40,491	8,602,117	-8,561,627	4,259,169	-9,477,100	-5,217,931	683,595	4,574,827	3,778,365	796,462
2022	40,491	8,602,117	-8,561,627	4,259,169	-9,477,100	-5,217,931	683,595	4,574,827	3,778,365	796,462
2023	40,491	8,602,117	-8,561,627	4,865,736	-9,477,100	-4,611,364	604,741	4,047,114	3,250,652	796,462
2024	40,491	8,602,117	-8,561,627	5,978,890	-9,477,100	-3,498,210	460,031	3,078,670	2,282,208	796,462
Total	**323,926**	**68,816,938**	**-68,493,013**	**48,413,809**	**-73,282,696**	**-24,868,887**	**3,275,066**	**21,917,747**	**17,750,723**	**4,167,024**

- The GHG estimates assume a 13% reversal buffer as calculated in the Annex 1 Section 6, Table 6.1;

- In addition the estimates are conservative, which is further explained in the following sections below;

- GHG emission reductions are only quantified for the REDD+ investment areas, but not for the full Accounting Area of the ER-P. The cross-cutting province level investment and synergies with other governmental and donor related programs will most likely result in additional emission reductions;

- Only 85% of the ER-P investment are in natural forest is assumed to generate emission reduction. The remaining 15% are conservatively excluded from calculations;

- For carbon stock plantation activities and areas related to reforestation, it is assumed that 90% of the plantation will survive and generate carbon stock enhancements;

- Carbon stock enhancement benefits adopt a long-term average carbon stock approach which takes into consideration the harvesting and respective reversal over time (see Figure 13.1 below).

The GHG calculation is aligned with the RL calculation and the estimated REDD+ intervention (investment) areas under the scope of the ER-P. For the quantification of the expected ERs, the quantification is separated into avoided deforestation and forest degradation GHG emission reductions, and carbon stock enhancement benefits (same as under RL) as further explained in detail.

For the GHG mitigation assessment an underlying analysis of the land use change matrices in the RL was carried out and summarized in order to contextualize the scale of the program and its overall contribution to reduce GHG emissions and enhance carbon stocks compared to the RL.

- For the quantification of the avoided deforestation and forest degradation, we initially analyzed the RL land use change matrices in the natural forest land use classes - “evergreen broadleaf forest – high”, “evergreen broadleaf forest – medium” and “evergreen broadleaf forest – poor” as well as the deforestation of evergreen broadleaf forest - poor to non-forest land. Here the majority of deforestation and forest degradation has occurred historically.

- Between 2000-2010, the total evergreen broadleaf forest degradation amounted to 272,826 ha. The degradation area equals to 15% of the total natural forest area in 2000 in the ER-P Accounting Area. The major driver of this forest degradation is attributable to illegal logging and illegal overexploitation of natural forest. Once the natural forest achieves a relative poor forest status (poor), there is a strong trend towards deforestation for agricultural land use (see below).

- Deforestation was 301,950 ha between the period 2000 - 2010. Deforestation in natural forest forests amounts to 184,996 ha while the remaining deforestation occurred on plantation or other forest land. Out of this natural forest deforestation area 163,029 ha 88% occurred in “evergreen broadleaf forest – poor” (or 54% of total deforestation occurred in this land use class).

- The major driver behind this change is at the first step natural forest degradation, followed by a conversion to agricultural land.

13.1.1 Historical forest degradation dynamics in natural forest

- The conversion of "evergreen broadleaf forest – rich" to "evergreen broadleaf forest – medium" area change between 2000 and 2005 was 48,684 ha and between 2005 – 2010, 17,593 ha were degraded (in total 66,277 ha or 24% of total forest degradation in the ER-P Accounting Area) (see also Table below 13.3 *"ER-Program areas compared to total areas and historical deforestation"*).

- The forest degradation dynamics form evergreen broadleaf forest - rich towards evergreen broadleaf forest - poor were significantly lower: Between 2000 and 2005, the area change amounted to only 8,267 ha and between 2005 – 2010 to only 12,454 ha. In total, this adds up to 20,721 ha or 8% of total forest degradation.

- The analysis of the evergreen broadleaf forest - medium land use class and transition towards evergreen broadleaf forest - poor land use class shows a forest degradation rate of 69,415 ha and 69,766 ha in 2000-2005 and 2005-2010, respectively. In total, this adds up to 139,181 ha or 51% of total forest degradation in the RL period.

- As a conclusion the conversion of evergreen natural forest towards the next lower forest quality class over the RL period is responsible for about 75% of total forest degradation which the REDD+ intervention models (1 and 2) will address.

13.1.2 Historical deforestation dynamics in natural forests

- The analysis of deforestation of the evergreen broadleaf forest - poor land use class towards non-forest land shows that 95,649 ha were deforested between 2000 – 2005, while 67,380 ha were deforested between 2005 - 2010. In total this add 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 13.3 below).

Table 13.2 ER-Program areas compared to total areas and historical deforestation and forest degradation areas

Total area in 2010 according to activity data report (Dien, 2016) (ha)		Key deforestation / forest degradation / enhancement land use change dynamic (2000-2010) (ha) (according to activity data report, Dien et al 2016		ER-P intervention to address drivers and enhance carbon stocks (ha)		% of total land use class area (in 2010)
Evergreen broadleaf forest – rich	226,626 ha	Evergreen broadleaf forest – rich to medium (degradation)	-66,277 ha (24% of total degradation)	Model 1: Forest protection of existing natural forest through contracts	43,900 ha	19%
Evergreen broadleaf forest - medium	452,900 ha	Evergreen broadleaf forest - medium conversion to poor	-139,181 ha (51% of total forest degradation)	Model 2. Natural assisted regeneration of medium quality forest / avoiding degradation (no planting)	43,055 ha	10%
Evergreen broadleaf forest - poor	1,315,598 ha	Natural forest - poor to bare land / agricultural land	-163,950 ha (54% of total deforestation)	Model 3. Natural regeneration and enrichment planting of poor natural forest	59,600 ha	4.5%
Plantation area	637,561 ha	Increase of plantation area from non-forest land	+376,659 ha (60% of total area, partly includes replanting of harvested areas)	Model 6,7: Transformation of Acacia plantation	48,665 ha	7.6%
Non-forest land	2,372,977 ha	Bare land / non-forest land	-97,125 ha	Models 4,5,8: Afforestation Reforestation with pure Acacia and mixed species and offsetting of infrastructure and development	29,710 ha	1.3%
Total	**5,144,508 ha**				**224,930 ha**	

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 Viet Nam 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 WB will be utilized accordingly. The Safeguards as they apply to this Program are included in Table 14.1

There are World Bank financed infrastructure projects in several of the six 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 Viet Nam 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.

Because the Program is being supported by the World Bank an Environmental and Social Management Framework (ESMF) 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.

Currently there is no finalised Feedback and Grievance Redress Mechanism (FGRM) that has been specifically developed for this Program. This is still under preparation in conjunction with UN-REDD II. MARD needs to ensure it is consistent with FGRMs that are currently being utilized in Viet Nam and it fully encompasses the need for Free, Prior and Informed Consultation (FPIC) of not just affected ethnic minority peoples in Viet Nam 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 Viet Nam (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).

Table 14.1 Summary of triggered World Bank Operational Policies[142]

World Bank Operational Policies	Updated status (Result of SESA 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.

[142] 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 Investigations)	Proposed approach
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	Not triggered	Unlikely to see any increase in use of pesticides increase in intensification of agriculture is not a program activity
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 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	

World Bank Operational Policies	Updated status (Result of SESA Investigations)	Proposed approach
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	

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 resettlement 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 percentages 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.

14.1.1 Gender in the program area

The 2013 Constitution of Viet Nam 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 Viet Nam 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.[143] 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.[144] 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.

As mentioned above, common property rights are not formally recognised in Viet Nam 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

[143] 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 Red Book.
[144] See USAID (2013) *Country Profile. Property Rights and Resource Governance, Vietnam,* p. 11.

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.

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 included social and a quantitative socio-economic assessment, carried out through consultations with the various local stakeholders and a quantitative 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 entities.

The proposed 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 required to be conducted through consultation with local people, and with a view to promote participatory natural resource management involving the local people; and

- 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.

The role of the Social Screening Report would be at the individual level of PFMB, SUF MB and SFC and involve consultations with local communities on proposed interventions and on access to natural resources, socio-economic impacts and mitigation and environmental impacts and mitigations. It would be a central part connecting the different management plans from the PFMBs, SUFMBs and SFCs and communities were surveyed through SSRs would need identify livelihoods needs; and contribute to the forest management priorities that were assessed through REDD+ Needs Assessment. Communities would be expected to participate in preparation of the management plans of the PFMB SUFs and SFCs and it is envisaged that the PFMBs and SUF MBs and community leaders would agreed the formal partnerships through collaborative shared responsibilities and benefits over the natural forest.

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

In the forest interventions, the early involvement of local people in consultation to develop a REDD+ needs assessment is aimed at reducing tensions between local people and PFMBs and SUF MB management authorities; and ensuring negotiated agreements on resource use are developed that recognize both forest protection and conservation needs and the needs of local people. However, natural resources use is likely to be a sensitive issue most sites (as has been experienced through he SESA and previous related work). There may be instances in which local communities and PFMBs and SUF MBs authorities cannot reach agreement, or in which conflicts arise over resource use between these parties. There may also be cases in which the parties concerned feel that entitlements promised or agreements already negotiated are not being properly honoured. In these cases parties should defer to the grievance procedures and take the issue to the Commune authorities (as similarly as explained below for the benefit sharing mechanisms below next section).

If faced with inaction or an impasse, the disputing parties are entitled to take the dispute to a higher level of government authority.

If the displaced person or community is not satisfied with the decision of the Provincial People's Committee, the case may be submitted for consideration by the District Court.

14.3.1 Grievance Redress Mechanism for the Benefit Sharing Mechanism

A feedback mechanism will be established to deal with inquiries and complaints about the incorrect data, disputes over rights and obligations or other issues related to the benefit sharing of ER Program.

The design of an equitable and efficiency benefit sharing system is a key requirement in the preparation of the REDD+ mechanism. The lack of legal recognition may hamper a FGRM system and the community to benefit from REDD+.

a) Village level

Use the village Reconciliation Team, grassroots democracy regulations, people's inspection committee, general FCPF guidance on resolving complaints and feedback to reconcile questions or disputes related to the benefit sharing of ER Program.

The village Reconciliation Team is responsible for receiving, sorting and organizing mediation. If the cases are not covered, the mediation group guides complainers to take the next steps.

In case do not know any person or agency authorized for handling such requests, they may consult the Team solving common complaints before giving instructions or guide complainers to contact directly Team solving common complaints.

b) Communal level

Communal Reconciliation Committee is addressing questions related to benefit sharing of ER Program in line with the Law on Reconciliation at grassroots level. CPC Chairman has established Team solving common complaints between the commune and forest owners, including those who are without REDD+ benefits, with the participation of forestry staff, judicial staff, forest rangers, cadastre staff, preventatives from political organizations, forest owners. Team solving common complaints is responsible for providing and clarifying information when requested, receiving feedback, and guiding people to comply with complaint procedures, and advise the CPC or forest owners to settle the case, ensuring the truthfulness, transparency and efficiency.

Team solving common complaints receives direct requests of the people or from the Head of village Reconciliation Team, sorting and recording them, answering questions immediately or later if consultation needed.

Assign staff to support reconciliation staff legal and technical issues in specific cases when requested; transfer these requests, proposals or complaints to competent persons or guide complainers to do necessary procedures; monitor and supervise the settlement and promptly notify the results of the settlement.

Report to CPC and propose People's Council Office to include questions in the coming sessions of People's Council to process unresolved cases.

c) Forest owners (Forest management boards, forest companies)

Establishing the support team legal and technique in resolving inquiries and complaints for village Mediation Team, communal Reconciliation Committee, Team solving common complaints.

d) Provincial level

Provincial ER Program Management Unit receive and resolve inquiries and complaints related to benefit sharing under its authority and responsibility, then report to ER Program CPMU and inform the results to CPC and other stakeholders.

Where is beyond the competence, Provincial ER Program Management Unit report to PMU to find solutions or ask complainers to exercise the right to complaint according to law provisions.

14.3.2 Monitoring of Benefit Sharing Mechanisms as an integral part of FGRM

Within the framework of benefit sharing of ER Program, the monitoring must serve the principle of the equitability in sharing benefits among stakeholders, contributing to sustainable livelihoods development and poverty reduction for people who depend on forests.

Performance monitoring: monitor the changes in emissions to meet the principle of result-based payments or monitor intermediate outcomes that have close ties to emissions reduction such as the remote-sensing activities and geographical surveys.

Monitoring the implementation of REDD+ activities to ensure the principle of "additionality", which means ensuring that revenues from REDD+ will be paid for activities that REDD+ can be done without them.

a) Monitoring of investments and costs to carry out REDD+ activities.

Monitoring the financial flows from central to local level: identify criteria to assess the effectiveness and efficiency of the flow and financial processes; apply these standards, norms and procedures selected for the flow and financial processes. There should be an independent audit agencies involved in the audit annually.

b) Monitoring the process of determining payment rates, receivers, content of payment and disbursement process.

At village level, the benefits can be shared in the form of cash or non-cash or in the form of community development funds. Keeping track of a development fund is needed to ensure the benefits are directed to the priorities of villagers. Representatives from local organizations, villages, local governments and forest managers will join in the monitoring.

Some monitoring indicators can be applied according to the framework of the Carbon Fund, such as: number of carbon tons reduced from deforestation and forest degradation in ER Program, average % monetary benefits shared with beneficiaries in approved pilots, amount and date of disbursement for ER programs according to plans.

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,[145] be included.

15.1.2 Adaptive Collaborative Management Approach

The ensuring discussion of the ACMA was based on four important principles as follows: (i) 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; (ii) characterized by conscious efforts among such groups to communicate, collaborate, negotiated, and seek out opportunities to learn collectively about the impacts of their actions; (iii) 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, (iv) 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

[145] 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.

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:

a) 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 Viet Nam;

- 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.

b) 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.

c) Natural, physical and financial capital benefits

- Such capitals do not need to suffer as a result even though relatively high transaction costs seem to favour 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 reduces 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: (i) forest-dependent stakeholders have at least de-facto access to, and some control over forest resources; (ii) 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; (iii) 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 includings, 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.

15.1.3 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[146] all worked with and had support from the DPCs. How long this will take depends on whether the momentum gained by April 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.

[146] 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 there 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

The other technical criteria for the BSM (and BSP) will be: (i) 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; (ii) 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, (iii) 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. Additionally ACMAs will need to include representatives of all stakeholder groups on the management board to ensure a mix of representatives from local forest-dependent communities (to also include women representatives and the most marginalized of ethnic minority groups) alongside current management and technical staff. Stakeholders include the provincial REDD+ coordinators or their nominees (no PPC will permit Program funds to be transferred to ACMAs without oversight from the province).

The management board will need to be chaired by the Chairperson of the DPC or nominee because the existing forest management boards have no jurisdiction in non-forested areas and their jurisdiction in areas where boundaries are not clearly demarcated is also problematic. Moreover, if more forest land is to be allocated to individual households and LURCs subsequently issued this is impossible legally and technically by a forest management entity. It is necessary for the DPC to undertake this activity. However, the technical staff of the ACMA would be responsible on a day-to-day basis for Program based activities.

To ensure that as many activities as possible are also adequately devolved so that local communities can effectively participate in ways that are less perfunctory and lacking in depth as is the prevailing culture of participation sub-groups with full voting rights will be established in each forest dependent community. It is not proposed to establish new organizations at the sub-commune level but rather build upon existing traditional modes of

participation but expand these modes to minimize “elite capture”. However, it also proposed that while a demand-driven approach to activities that might be funded will be very important the menu of options to be made available need to ensure that proposed activities do not impact negatively on existing forest resources.

15.1.4 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 Viet Nam – notably issues surrounding customary rights to lands and territories – but activities that will proceed to meet Carbon Fund Methodological Framework Requirements including: (i) public disclosure to all stakeholders; (ii) continuation of design that uses the quantitative data from the SESA and qualitative data from stakeholder-based consultations; (iii) ensuring that any BSP is transparent; and, (iv) benefit-sharing arrangements reflect the legal context of Viet Nam 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 Viet Nam 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 Viet Nam 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:

(i) Tenure rights;

(ii) Carbon rights;

(iii) Revenue sharing rules;

(iv) Sharper focus on poverty;

(v) Social needs and priorities;

(vi) Cultural rights;

(vii) Ecological/biodiversity values;

(viii) Ability to deliver emissions reductions and removal credits;

(ix) Agreement to measure, monitor, report and verify results; and

(x) Capacity to govern.

Local communities by-and-large stress (i), (iii), (iv) and (v), while sub-national organizations stress (iii), (ix) and (x). At the national level all criteria are being considered although there is somewhat less emphasis on (iv), (v) and (vi) and more emphasis on (ii), (iii), (vii), (ix) and (x). 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 Viet Nam whatever model it finally chooses it will be (i) necessary to integrate with non-monetary development needs (beneficiaries prioritize needs such as health, education and infrastructure); (ii) enabling adaptive management (participatory M&E enables benefit arrangements to evolve with changing community needs; (iii) effective dispute settlements (there is the need to develop "fair" benefit-sharing arrangements; (iv) 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); (v) there is the need for participatory decision-making (both benefit providers and recipients alike should be involved in design and administration of benefits); (vi) 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, (vii) structuring of benefits to accommodate near-term needs (adoption of a hybrid approach that combines direct performance incentives with input-based disbursals).

a) Categories of beneficiaries

The current laws of Viet Nam defines 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 Viet Nam 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 have 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[147].

15.2 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).

[147]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.

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 Viet Nam. 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 Viet Nam.

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.

15.3 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 Protection 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 Viet Nam, which is generalized as follows:

a) 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.

b) Law on Forest Protection and Development

Law on Forest Protection and Development (2004), targets and classifies the forests into three types: (i) Protection forests; (ii) Special-use forests; (iii) 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: (i) Economic organizations;(ii) Households, individuals; (iii) PFMBs, SUFMBs; (iv) People Armed Forces; (v) Science and Technology, vocation training institutions on forestry; (vi) Overseas Vietnamese investing in Viet Nam; (vii) Overseas organizations, individuals investing in Viet Nam, 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.

c) 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 favourable 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.

d) 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 Viet Nam 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.

e) 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 a forests [protection] contract, they will not get benefits from this revenue, but they can benefit from other State programs and projects.

f) 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.

g) 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.

h) 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 14/8/2006 of the Prime Minister issuing forest management regulations and Circular 35/2011/TT-BNNPTNT dated 20/5/2011 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 11/12/2014 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 capitalise on the PFES approach, provinces with little on 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 9/9/2015 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.

i) Some examples from PFES

Decree No. 99/2010/ND-CP on the Policy on PFES is the primary legislation regulating PFES in Viet Nam. 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 incentivise REDD+ interventions in Viet Nam.

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. 2013a). 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.[148]

[148] 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.

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' accountability and capacity.[149] 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.

j) Transparency

The transparency issue in Viet Nam 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. [150]

[149] As above.

[150] 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).

15.3.2 Current legal constraints for facing benefit sharing mechanisms

- Most benefit distribution programmes in Viet Nam 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.[151]

- 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 logical outcome will be the finalization of BSM agreements and monitoring and control mechanisms established.

- Specific legal issues to be addressed include: (1) The rights to carbon, land and forests, particularly forest allocation and associated land use rights. In Viet Nam, rights of land users are among the fields with insufficient legal basis, since future

[151] 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.

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[152] 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).

[152] 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[153] and non-carbon benefits[154] 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 Viet Nam 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, Viet Nam 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

[153] 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".

[154] 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".

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.

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 legalizible access to forest resources the poor and the near poor cannot afford to be effective stewards of the forest.

The ER Program recognises 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).

(i) Improved forest governance;

(ii) Sustainable/ improved livelihoods;

(iii) Biodiversity conservation;

(iv) Climate change adaptation (includes better preparedness for natural disasters); and

(v) Involvement of ethnic minorities (respect).

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	Avoided or reduced cost for disasters floods, landslides	Investment in forest management. Forest wind breaks as defence against		Large benefit value through avoided or reduced impacts from

Non carbon benefit	Types of benefit	Future investments	Notes and quantification	ER-P example potential numbers of beneficiaries
for natural disasters /reduced impact		Typhoons; Watershed management		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

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.

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.

17 Title to emission reductions

17.1 Authorization of the ER Program

The Minister for MARD is already authorised 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 Emission Reductions

In Viet Nam, 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 Viet Nam, 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.

Name of entity	Ministry of Agriculture and Rural Development
Main contact person	Cao Duc Phat
Title	H. E. Dr
Address	No. 2 Ngoc Hai, Ba Dinh District, Ha Noi, Viet Nam
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Email	binhbm.htqt@mard.gov.vn
Website	www.mard.gov.vn/en
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 [155]

[155] Relevant section include 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 organising, coordination of all actions with other ministries and environmental organisations 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 Viet Nam's Intended Nationally Determined Contribution for the UNFCCC.

The Prime Minister has recently approved the Viet Nam Renewable Energy Development Strategy to 2030, outlook up to 2050[156].

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:

[156] Decision 2068/QD-TTg from the Prime Minister Approving the Viet Nam's Renewable Energy Development Strategy up to 2030 with an outlook to 2050.

- 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[157].
- 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.
- 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 Land Title registration system run through MONRE; in addition the government also has experience of running CDM projects.

The government is expected to run the REDD+ 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 Title Registration system together with similar levels of record keeping and burden of proof of title and avoidance of overlapping claims. However, a separate computerised open to public view Registry would be required.

If it is decided that the carbon title is attached to the land and is an asset as in a number of countries that use a land title registration, then it would need to be entered into the land registry. Registration Offices 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 title[158].

[157] Circular 29 /2015/TT-BCT Prescribing contents, sequence and procedures for preparing, appraising and approving the Biomass Energy Development and Utilization Plan(s).

[158] Viet Nam 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

Annex 1	Summary of the financial plan; Overview of the M&E Plan and MMR; Presence of rare and endangered species ; ER-P interventions and data; Description of land tenure in Vietnam; Determination of Reversal set aside in the buffer
Annex 2	Activity Data Report; Emissions Factor Report; Reference Level Report; Measurement Monitoring and Reporting
Annex 3	Growth in demand for power; Analysis of deforestation and degradation in the ER-P; Example of stakeholder consultations
Annex 4	Analysis of deforestation and forest degradation patterns in the REL and linkage to the proposed REDD+ intervention models; Design, scale and underlying assumptions of the ER-P intervention models; Financial and economic performance of the intervention models; GHG emission reduction estimates of the intervention models; Business models and feasibility for Acacia plantation restoration / transformation